Independent Review of the Innovation Centres Programme

Chaired by Professor Graeme Reid

Written Evidence

See p.9-10 of full report for list of contributors and call for evidence information

Independent Review of Innovation Centres Programme

Written Submission from Scottish Government – May 2016

The Scottish Government

The devolved government for Scotland has a range of responsibilities which include: health, education, justice, rural affairs, housing and the environment.

The Programme for Government sets out the policies, actions and legislation that the Scottish Government will take forward in 2015-16 to deliver our core purpose of creating a more successful country, with opportunities for all of Scotland to flourish, through sustainable and inclusive economic growth, and to equip Scotland for the challenges of the next decade and beyond.

SG policy interest in the innovation centre programme is from three perspectives:

- **Higher Education and Science Division** – which provides core funding via SFC and has policy responsibility for universities, including knowledge exchange and academic collaboration with businesses;
- **Innovation, Investment and Industries Division** - which has policy responsibility for innovation generally as well as for the life sciences and construction sectors; and
- **Other Divisions** – which have policy responsibilities for sectors of direct relevance to one or more of the innovation centres, such as oil & gas, health, aquaculture or digital, and for innovation aspects of particular sectors.

Call for Evidence

1. Is the original vision for the Innovation Centres programme current and correct?

The original vision for the Innovation Centre Programme was: "using the Scottish university infrastructure, human resources and research excellence as a platform for collaborations across the whole of Scotland, Innovation Centres will create sustainable and internationally ambitious open communities of university staff, research institutes, businesses and others to deliver economic growth and wider benefits for Scotland." (IC Review Call for Evidence - Annex D)

The Scottish Government see their investment in the IC programme (through the SFC) as having the potential to greatly improve university-business engagement by bringing together those best able to resolve many of the challenges facing industry in Scotland whilst harnessing new opportunities.

Scotland's universities are a key economic sector in their own right and they play a crucial role at the heart of the innovation system in Scotland – supporting other key economic sectors like life sciences and energy. This is why the Scottish Government has sought to help improve the links between our universities and the private, public and third sectors, to increase the economic and social benefits of innovation from Scottish universities.

The Innovation Centres are also intended to contribute to a cultural shift that brings the innovation and creativity of our academic sector to the heart of our business life and puts business at the heart of our academic sector. They should equally help the research community understand the needs of their particular industry and help industry understand the assistance that can be delivered through research.

We expect to see improvements in skills, processes, collaboration, productivity and performance leading to a significant longer term impact on our economy as a result of the innovation centres.

The initial business plans for the eight Innovation Centres (see Annex 1) suggested that the cumulative boost to Scottish economy could reach up to a £1.5 billion GVA and create up to 5,000 jobs across the wider economy.

Scottish Enterprise, Highlands and Island Enterprise and the Scottish Funding Council were expected to have commissioned a comprehensive economic baseline impact assessment to allow the success of the Innovation Centres to be fully monitored and evaluated. This was originally due to report in October 2014, and then be rolled out across the whole IC programme to allow for assessment in further detail of the jobs and GVA to which the innovation centres have contributed. The Scottish Government looks forward to further information on this exercise to allow reflection on the impact and benefit of this collaborative strategy against the funding that has been provided.

Responses to Questions 2-5 have been developed as a result of input from Scottish Government policy teams involved in some of the innovation centres to date.

2. From your experience so far, are the Innovation Centres delivering against this vision?

Stratified Medicine Scotland is central to the recently announced £4 million Scottish Government investment in the Precision Medicine Ecosystem (PME). The purpose of the PME is to accelerate commercialisation of precision medicine products and services. This is consistent with the Programme for Government and the Scottish Government's commitment to enhance innovation and entrepreneurship across Scotland's key economic sectors, create jobs and grow the economy. The PME investment was feasible due to the mix of commercial and academic expertise available within the SMS-IC. The Chief Scientist's Office therefore considers that the SMS-IC is delivering against the overall vision for the Innovation Centres.

Digital Health Institute has created an internationally ambitious open community. While it is as yet too early to comment on the economic impact and sustainability of DHI, there is recognition of the need for DHI, recognising the significant potential of digital health (both economically and, crucially, in terms on impact on health & wellbeing. The ability of DHI to network outwith Scotland has been an added bonus, and has enabled Scottish Government policy officials to tap into a previously under-used network of expertise.

Oil and Gas Innovation Centre seems to be well keyed into the wider oil and gas industry. They are a key and influential member in the oil and gas Technology Leadership Board (TLB). It is tackling challenges facing the industry, identified by industry, which have the potential to be influential in delivering growth. OGIC has definitely been a force towards greater and more effective academia/business collaboration. There is strong evidence of good practice in their collaboration with industry leaders through the TLB. OGIC was instrumental in bringing the oil and gas Technology Centre to fruition in collaboration with industry, which has the potential to be a world-leading initiative.

Data Lab has worked closely with our Universities and is funding 40 student places on MSc courses in data science at three Universities (Dundee, Robert Gordon and Stirling). As a key part of these courses, students will be assigned to industrial organisations which will ensure both the students gain practical work and industries get access to the knowledge and skills of students to look at the data related problems they have identified. The Data Lab has also worked with the University of St Andrew's to introduce a new Engineering Doctorate qualification to pursue data-driven research. These students will spend the majority of their time with Industry aiming to produce innovative solutions to problems they face. In addition, the Data Lab has been collaborating with the Strathclyde Business School to design a data science education programme with a focus of upskilling senior managers on the benefit of data science in the workplace. They are hoping to

make this more widely available into the EU and Internationally. It is clear from this that the Data Lab is linked up to a range of Universities across Scotland and is effectively bringing together academia with industry.

Construction Scotland Innovation Centre appears to engage well with the wider industry both independently and through the Construction Scotland Industry Leadership Group where it serves as a member. CSIC has supported 29 projects to date against a five year KPI target of 275. Although uptake has possibly been slower than expected, it has definitely encouraged more effective business/academia collaboration. As innovation becomes more entrenched in the sector, it follows that more projects will flow.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

Stratified Medicine Scotland - Stratified medicine is central to the vision of future healthcare from the perspective of the NHS, third sector, pharmaceutical and medical device industries. In its white paper, *The stratification of disease for personalised medicines* (2014), the Association of the British Pharmaceutical Industry states "the ABPI believes that a focus on stratified medicine development, as part of an integrated stakeholder healthcare strategy in the service of patients, continues to represent a major opportunity for the UK to demonstrate world-class leadership." A value of £14 billion has been put on the global market for tests, therapies and solutions linked to stratified medicine, and this is expected to grow to £50-60 billion in 2020.

It's worth noting that the PME, centred around the SMS-IC, has already generated international pharmaceutical industry interest, with the potential to generate a considerable inward investment to Scotland. If these (and other) approaches come to fruition, then the SMS-IC will have fully demonstrated its utility in attracting industry-led activity.

Digital Health Institute - there has been excellent collaboration with stakeholders in the health sector, and emerging collaboration with other stakeholders involved in the delivery of health & social care. Within Scottish Government, we see the role of health & social care providers (NHS etc.) as being key in setting the challenges, not industry – rather it is for industry to be involved in helping some of those challenges, whilst still leaving sufficient space for industry to be able to 'disrupt' through innovation that is not necessarily service-led.

Within healthcare, Digital Health is central to the future delivery of health & social care. NHS Chief Executives have set out their commitment to the DHI, and Scottish Government will be publishing a strategic narrative for digital health & care. There have been a number of healthcare-led challenges, facilitated by the DHI under the auspices of the Ecosystem (which has involved Scottish Government from the outset), which has led to substantial collaboration with industry and significant potential for real changes in service delivery. This appears to be an excellent model, and one we are keen to see continue.

Data Lab has sound governance structures in place with representatives from the academia, business and industry and government. It has an Innovation Advisory Board (IAB) consisting of data holders from both the public and private sector, solutions providers, problem holders and universities, with representation from each of the major sectors served. Membership is drawn from partner companies, public sector organisations and universities. It also has an Education Advisory Group tasked with understanding the needs of local industry in terms of skills and education requirements. The Group identifies and oversees the development of online courses, continuing professional development courses and other forms of teaching materials that can be used to educate local industry professionals. These ensure that industry has effective input to the work of the Data Lab.

Oil and Gas Innovation Centre – while Scottish Government does not see all of the work that OGIC undertakes against its priorities, those that have been seen appear to be fully driven by industry. The projects OGIC is involved in through the TLB could be described as very challenging due to need for industry to develop a more collaborative culture, but OGIC has done well to help drive this forward.

Construction Scotland Innovation Centre - The programmes, projects and focus for CSIC appear to driven by industry. CSIC is keen to ensure this is the case and recognise that it needs to reach out to industry at all levels. CSIC is aware of skills issues within the sector, particularly in relation to Modern Methods of Construction and articulate views through their membership of the Industry Leadership Group. Projects appear to be challenging and have the potential, if successful, to significantly improve the sector and deliver economic growth.

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

Stratified Medicine Scotland - The relationship is evolving as the technology advances (e.g. next generation sequencing) and new initiatives are announced. The Precision Medicine Catapult, an initiative aimed at making the UK the world-leading destination for development and delivery of stratified/precision medicine, was announced by Innovate UK in April 2015. Headquartered in Cambridge, the Precision Medicine Catapult has a Glasgow hub that is co-located with the SMS-IC. It will be interesting to see how the relationship between these two initiatives develops.

Digital Health Institute – We are aware that there has been good academic input to DHI, but part of the purpose of the innovation centres is to disrupt behaviour, and this needs to extend to disrupting the way that academia work. Part of the 'sell' of the innovation centres is their agility; aiming to turn around projects (including evaluation) in a matter of months. This is a big selling point for both industry and civic society, as there is often a huge frustration at how long it takes for innovations to 'emerge into the light'. However, we are not aware that academia have, on the whole, adapted to this new way of working. For many, it seems as if DHI, and possibly other innovation centres, are simply being seen as another funding stream to continue doing interesting work at their own speed.

Oil and Gas Innovation Centre – the relation between business and academia appears to have evolved positively as a result of OGIC's influence.

Data Lab completed three innovation workshops with a further four planned for this year. These workshops are designed to help break down the barriers between industry, government and academia. They have also launched their first innovation call for projects aimed at companies in the finance sector. In addition to this, the Data Lab now has a pipeline of over 40 innovative projects. These are spread across a wide range of range industries, academic institutions and physical hub locations. These have attracted both large and small sized industry partners, with almost 50% of opportunities with local Small and Medium Enterprises (SMEs).

Whilst it is early in its existence to identify measurable benefits to business, a good example where the Data Lab has engaged effectively with business was the Data Talent Scotland event held in March 2016. This was described as a collider event bringing together 150 postgraduate data science students and a further 200 data enthusiasts, 11 universities and 50 businesses from across Scotland. The purpose of the event was to connect new data talent and education with industry providing businesses with a fantastic opportunity to access the best of Scotland's data science talent and education. This was deemed to be a highly successful event.

In recognition of what the Data Lab has achieved and is looking to achieve, it is considering ways of promoting data science activity in Scotland so that it is recognised internationally. There are early

signs that some countries are making comment on the amount of innovative activity going on here in Scotland.

Construction Scotland Innovation Centre - There is no doubt that the relationship between business and academia has become more collaborative, largely through the influence of CSIC. However, there is still some way to go to foster the culture of innovation within the business base. CSIC will shortly appoint a Communications and Marketing manager to further promote the overall awareness and understanding of CSIC and its role. CSIC is visible at a large number of construction events and has a growing presence through social media.

5. How effective and proportionate has the oversight of Innovation Centres been?

Stratified Medicine Scotland – The Scottish Government is represented on the SMS-IC board. We are confident that the SMS-IC is effectively managed, with an appropriate degree of oversight from the funders.

Digital Health Institute – There appears to be good oversight through the SFC of DHI's KPIs, but at the moment, all KPIs are related to the business and academic outputs, and not the sector-specific priorities. This means official reporting is often too removed from needs of the relevant services. It would be helpful if impact outcomes could be added to the KPIs on individual services where appropriate.

In relation to DHI's governance arrangements, the Board has not always had appropriate links with policy or delivery. It is currently too heavily influenced by the interests of the founding partners which has led to the Board tending to act in an advisory capacity rather than a governance activity, with little wider visibility. This is not a reflection on the DHI itself – they are merely operating in the framework provided to them – but it is recognised as a weakness by the DHI and by Scottish Government. This is particularly the case when it comes to being able to influence thinking and changes at a strategic level within the wider health & social care planning landscape. This review may provide an opportunity to consider the scope to change the Board and strengthen its governance function.

Data Lab - Governance arrangements seem to strike the right balance allowing freedom for the Data Lab to operate without unnecessary intervention and engaging effectively with industry, academia and government.

The Governance Board has representatives from each of the stakeholder groups and is strongly weighted towards industrial representation. As mentioned earlier, there is an Innovation Advisory Board with representatives from data holders in both the public and private sector and an Education Advisory Board that reports to the Governance Board tasked with understanding the needs of local industry in terms of skills and education requirements.

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

- The Innovation Centre programme has been an ambitious programme at the outset and it will take time to fulfil the original vision. All the Innovation Centres have responded positively to the challenges from industry and it is vital that they all build on the collaborative ethos of the programme and work together for the benefit of Scotland.

- Ultimately, the Innovation Centre Programme will be judged against what has been delivered. If individual innovation centres do not justify public funding, there is an issue over how SFC will manage its exit strategy from any innovation centre that is not delivering.

- There is also a question of SFC's long term strategy following the 6-year funding commitment (2013-2019) for the Innovation Centre programme. Are Innovation Centres able or expected to become self-sustaining? What would the SFC propose to do if an Innovation Centre is performing well but unable to attract sufficient funding from other sources? We would suggest that a clear exit strategy should be in place for each innovation centre.

- The Innovation Centres have all developed differently over the past two or three years. For example, OGIC has been instrumental in attracting the Oil and Gas Technology Centre (OGTC) to Aberdeen as part of the Aberdeen City Deal and should complement the OGTC. AS OGIC is a pan-Scotland organisation, it would appear it has an important role in ensuring the OGTC engages with all relevant academic bodies. However, the future of this particular Innovation Centre will depend on the evolution of the City Deal.

- The UK Government's Science and Innovation Audits are designed to map out local research, innovation and infrastructure strengths across the UK and will help identify and build on the potential of every region across the country by better evidencing investment decisions and highlighting opportunities for businesses. Given Edinburgh & the Lothians' involvement in the first wave of audits, it will be important that the outputs from the SIAs areas utilised to inform the future direction of Innovation Centres, such as Data Lab. However, it is also recognised that the Innovation Centre network is not based on geography.

- We would suggest that the Innovation Centres should continue to be encouraged to work in collaboration, for example via a challenge fund, on interdisciplinary issues to address specific challenges to industries in Scotland, pan Scotland.

- There is also an opportunity for Innovation Centres to consider how they engage with European funding programmes to make the most of funding opportunities that are available through programmes such as Horizon 2020.

- The Scottish Government's Innovation and investment Hubs in Dublin, London and Brussels provide opportunities for the Innovation Centres to collaborate beyond Scotland and move towards self-sustainability.

- Finally, the future direction and support for the Innovation Centres will need to be considered against the backdrop of innovation reform and simplifying the landscape, both within Scotland and at a UK level in relation to the proposed new UK Research and Innovation body.

Scottish Government
May 2016

Annex 1 - Innovation Centres: Economic Impact – Initial Figures

Innovation Centre	SFC (approved) **£million**	Total projected income – core and project (incl. SFC, public and industry) – *see note 3* **£million**	SFC Capital equipment (approved) (not included in total projected income) **£million**	Capital building (approved) (not included in total projected income) **£million**	Estimated jobs created	Estimated additional GVA **£million**
Stratified Medicine Scotland	8	14.8	4	5 *(RPIF)*	300-400	68
CENtre for Sensors and Imaging Systems	10	23	2.07	n/a	1000	374-596
Digital Health Institute	10	32.5	1.2	n/a	725	208
Industrial Biotechnology Innovation Centre	10	44	1.8	n/a	1500	128
The Scottish Aquaculture Innovation Centre	11	16	1.7	n/a	100	*see note 1*
Oil and Gas Innovation Centre	10.6	33	1.6	n/a	400	*see note 2*
Data Lab	11.4	25	n/a	n/a	344	156
Construction Scotland Innovation Centre	7.5	16	1.8	n/a	400	300
Total	68.5	204.3	14.17	5	4,869	1,456

Note 1: no GVA analysis/estimates available for SAIC at the time.
Note 2: initial OGIC business plan did not contain an estimated GVA figure. Instead OGIC articulated its impact in terms of enhanced oil recovery and current oil prices.

Dr Stuart Fancey, Director Research and Innovation, Scottish Funding Council

SFC's purpose can be found here: http://www.sfc.ac.uk/aboutus/aboutus.aspx

SFC leads the public sector partnership which supports the Innovation Centres and is (to date) the biggest investor in the programme. The team which works on the ICs within SFC sits in my Directorate and SFC's Board's oversight of the programme is provided by the Chair of the SFC Research and Knowledge Exchange Committee, with my support.

My submission should be read in the context of me and my team being very close to the Centres, supporting them since their inception.

1. Is the original vision for the Innovation Centres programme current and correct? (see Annex A)

In my view it is. Demand-led stimulation of innovation in Scotland's businesses, using university (and, to a lesser degree, college) expertise to solve problems, raise ambition and improve productivity fits even better to Scottish Government's view of innovation as an enabler of productivity than ever.

2. From your experience so far, are the Innovation Centres delivering against this vision?

The delivery of the Innovation Centres vision is proceeding at varying paces across the Centres. It is also important to remark that the Centres are quite varied in style and, now, form. The variety reflects the variety of industrial make-up and culture, varying as it does between Aquaculture, Construction, and so on. Their geographical coverage is not easy to gauge but some things are clear. To my knowledge most, if not all, ICs are making efforts to engage with businesses across the whole country though the perception of a lowland preference (based on their host universities and headquarters) is understandable. We (SFC) should not let up on the ICs national coverage and should highlight good practice in this area.

The type of projects carried out by the ICs varies. In the main I would say that their activities are focused on solving industry defined problems and co-creating opportunities for growth but projects such as the eradication of sea lice using feeder fish (SAIC) are very different from the project looking at stratification of pancreatic cancer treatment (SMS-IC).

The ICs were established, in part, to foster a change of culture towards innovation and ambition in businesses and to simultaneously help universities move to being more flexible and responsive.

There are many examples of good practice across the Programme. The strong industry leadership of SAIC, inspiring business confidence to co-invest at a high level, is a good example. The HND-MSc-PhD education programme of IBIoIC, developing the skills to exploit the growing IBio opportunity, is another. A third example might be the partnership working of DataLab and CENSIS working together (and with others) to address business needs which straddle technology areas.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

There is variation in industry engagement. Some ICs work with industry leadership groups (e.g. Construction), others have anchor companies who are providing industry leadership for the IC (IBioIC, SMS-IC). Industry leadership (and/or NHS leadership in some ICs) is a critical 'canary' for the ICs' success. Without evidence of demand from (and appreciation by) the business customers an IC is not justified. The demand (thematic focus, co-investment, donation of time and effort) that helped start the Centres has changed and will continue to change over time. We have seen these changes and will do so in the future but the element of business (and/or NHS where relevant) leadership is essential.

The Innovation Centres' role in skills provision is, again, varied, but it is interesting to reflect on the benefit it brings where it has been felt useful by the businesses the IC intends to serve. The ICs with large MSc programmes (and with some HND and PhD programmes in some cases) have worked hard to attract business support and input to curriculum and placement opportunities. This model of co-designed courses and strong industry engagement in delivery is an exciting one and is an example of good practice with wider academic application beyond ICs.

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

The IC programme is the new, and big, kid on the block. The IC staff are still learning how to make best us of the tools at their disposal (KTP etc) and are signposting to Interface (or being signposted by Interface) increasingly effectively.

An example of dramatic simplification caused by the ICs is the adoption of flexible work scheduling in a Scottish University institute to accommodate the expectations of a particular IC that short projects can be commissioned at short notice.

5. How effective and proportionate has the oversight of Innovation Centres been?

The governance of the programme is reasonably lean and, in my view, fit for purpose. SFC's Board (as the originator and major investor) 'owns' the programme and reports progress to Government. SFC's RKEC oversees progress for the Board. SFC's Director of Research and Innovation is responsible for the programme. A steering group of SFC, HIE and SE staff provide direction, support and ongoing development of the programme. This group is chaired by an Assistant Director from SFC, the operational lead for the programme. SFC, SE and HIE staff observe the operation of the IC Boards. Formal reporting to SFC against the IC Monitoring and Evaluation Framework provides reassurance quarterly, assessed by the steering group. Annually, the Chair of SFC's RKEC and senior staff from SFC, SE, HIE and independent bodies (RCUK, Innovate UK typically) meet the Centres to review progress and strategy.

It would be valuable to reflect on governance of the Innovation Centres themselves. We (SFC as funders, with SE/HIE as supporters) established the ICs as entities hosted by administrative hub universities. The individual IC entities have no legal existence – they are activities not companies. This initial positioning was deliberate for both policy and pragmatic reasons. The pragmatic reason is that SFC exists to fund universities (and colleges) so being able to fund the ICs through the university that hosts them was practical. The (more important) policy reason for positioning the ICs inside admin hub universities was to place industrially-led culture foursquare into the university setting and to give universities involved (not just the admin hub universities) a challenge to adapt practices, assumptions and behaviour to suit these new 'alien' entities.

The admin hub universities are awarded a grant from SFC to fund the activities of the IC that the admin hub university hosts. As a condition of that grant the admin hub university is asked to employ the IC staff, to ensure that an industrially-led Board with proper representation from public and private bodies is constituted, that SFC is involved in recruitment of the Board Chair and the CEO of the Centre, and that financial oversight is provide by the admin hub university as holder of the IC grant.

The relationship between the admin-hub university and SFC is the same as with any other SFC grant to a university – the university is responsible for the proper use of public money and the fulfilment of both specific and general conditions of grant. The role of the Board is then clearly not that of a Board of a free-standing company or charitable body. The Boards are (in reality) tasked with providing strategic and

operational guidance to the Centre team, strengthening major decisions (on funding or otherwise), holding the Centre team to account against Centre KPIs and reporting progress to SFC. We (SFC) have encouraged the Boards to think of themselves as more sovereign than they really are, partly to elicit stronger business engagement, partly to prepare the Centres for potentially more independent futures and partly to strengthen the commercial tenor of the Centres to achieve more ambitious and aggressive results. The bottom line is that responsibility for each Centre rests with the admin-hub university as no other entity exists to have a legal relationship with the ICs investors (mostly SFC).

This unsatisfactory governance arrangement is highly satisfactory, for the practical and policy reasons outlined above, while the only problems which arise are within the capacity of the IC Board and management to solve. When problems arise which expose the limits of the power of the Board then SFC and the admin hub university need to address those challenges. Such situations have arisen and, I am sure, will arise again.

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

I see the need for some ICs to move to more straightforward governance models. I see that some ICs will become self-financing but that most will need public support. This needs to be debated to ensure that this support generates sufficient return to society, economically or otherwise. I think we should create further ICs but think hard about it. Restricting ICs to technology seems unduly limiting. Innovation is possible in policy and in public service delivery. The IC model of demand-led innovation stimulation and value delivery could be extended. SFC and its partners should remain bold, demand significant outcomes and be brave enough to close Centres which fail to deliver. Conversely we should back and encourage those which are striving for great prizes, for the long term. This programme is as distinctive as research pooling and must be sustained to give its true return. As we watch that emerge, we will see divergence increasing and that difference is going to be a great strength of the programme in the years to come.

Finally: the programme is currently dominated by SFC investment and I hope that a stronger multi-agency ownership is developed.

The IC programme is a flagship programme, addressing Scottish Government policy objectives to place business demand in the driving seat of innovation support reform. The programme is beginning to blossom and it will pay back hugely, even as it evolves and adapts.

Independent Review of Innovation Centres Programme – Led by Prof Graeme Reid

Submission

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Who :- Individual
Confidentiality :- No
Confidentiality Reason :-

Q1 :- Yes, the vision is current and correct. Innovation Centres were selected to map onto the Scottish Government economic priorities. They are working with the Industry Leadership Groups in Scotland in an appropriate way which keeps their action plan to deliver the vision current.

Q2 :- Although only three years in existence they are already very much proving their worth. Additionally they are collaborating across Innovation Centres in a vibrant way. Creating Innovation Centres linking multiple universities to industry in an effective way is a very difficult and complex task. Universities in Scotland however, through the outstanding research pooling initiative, have now a proven and outstanding track record in partnership working. Development of the Innovation Centres is building on that success.

Q3 :- The pace of advancement of the Innovation Centres is determined to a great extent by the readiness of the industry sectors to adopt new technologies and different ways of working. All Innovation Centres are working closely with industry and the Industry Leadership Groups. As a civil engineer, I would draw to your attention, as an example, the very significant advances made with the Construction Industry Leadership Group which now has 13 universities working very closely together with industry.

Q4 :- There are many ways of highlighting the effectiveness of the Innovation Centres in producing a dynamic new relationship with industry. All Innovation Centres have early examples of success. Creation of the Oil & Gas Industry Innovation Centre just at a time of severe cutbacks in the oil & gas industry is proving to be of high value in providing avenues for diversification and retention of valuable skills in Scotland. Both industry and academia have been learning from the development of Innovation Centres. The process has been challenging for some host university administration HR and finance departments. The Innovation Centres have however overcome many challenges through sharing of good practice.

Q5 :- SFC has been actively involved with Innovation Centres throughout their development to date. In the first two years they were reviewed every 6 months. Bearing in mind the financial investment and the risks involved, this was in my view entirely appropriate.

Q6 :- Each Innovation Centre has already developed its own distinct identity. We need to be prepared to work with the Innovation Centres to allow them to sustainably adapt to create the most effective working relationship between industry and the academic partners. Continued close involvement of SFC as a catalyst is essential to ensure both academia and industry gain maximum advantage of the new and exciting relationships that are being developed.

2016 Independent Review of Innovation Centres

Preliminary Response by Scottish Enterprise

to the request for written evidence

27th May 2016

1. Is the original vision for the Innovation Centres programme current and correct?

The Innovation Centre programme has correctly set out to test the opportunity for universities across Scotland to play an increased role in supporting businesses to develop innovative business solutions to the challenges they face across competitive global markets. The opportunity here is to develop Innovation Centres in such way that they enable universities to become 'innovation partners of choice' for businesses, leading to useful innovation projects that drive growth of these businesses, which in turn leads to increased economic impact. The approach must, at the same time, deliver tangible benefit to the universities and reinforce further opportunities for closer working between academia and industry. This vision, including the overarching requirement for transformational change aligns strongly with the ambition across Scottish Government, and its agencies, to improve business innovation and R&D performance to drive productivity growth and to increase GDP performance.

2. From your experience so far, are the Innovation Centres delivering against this vision?

Areas you might like to consider:

How well are the Innovation Centres working across the whole of Scotland?

The Innovation Centres are delivering significant numbers of industry demand led projects (circa 143 projects to date) through their respective exemplar collaboration programmes. These exemplars will be critical in demonstrating the value that universities can bring in assisting to solve business innovation challenges.

How appropriately are the Innovation Centres collaborating with relevant stakeholders?

In general the Innovation Centres are taking a strongly proactive approach to collaborating with key delivery stakeholders. Part of the challenge here is for Innovation Centres to help reduce the perceived complexity of the business support ecosystem rather than add to the complexity. More work needs to be done to ensure the value proposition from the ICs to industry is clear, and that the relationships with the enterprise agencies provide clarity on who

does what and how messages are shared with the business base. To date most of the project activity of ICs has focused on projects where SFC funding can be applied to the university partner within a collaboration project. With time it would be good to see a balance of projects where the locus of activity is as much within the companies as within the universities. This would help businesses build their capacity to innovate at the same time help businesses to access enterprise agency innovation/R&D support.

Are the Innovation Centres offering collaborative knowledge exchange and research activities to help solve industry defined problems and co-create innovation opportunities for growth?

The Ekos led business survey and assessment of economic impact arising from the current portfolio of projects will be hugely helpful in answering this question which, arguably, needs to focus on innovation/R&D activities and how these activities help businesses to internationalise and access international growth markets.

How are the Innovation Centres helping to create a culture change towards greater and more effective academia/business collaboration?

Are there examples of good practice across the programme?

We have a joint competition which is live with IBioIC, which includes exploring collaborative project funding models. In addition we are proactively engaged with DHI, CENSIS, CSIC and Datalab in reviewing their projects pipeline as well as reviewing completed projects to indentify those which are ready for commercial scale-up. With all ICs there is considerable potential for supporting internationalisation of Scottish businesses. Examples of this include, but are not limited to, the opportunities for increased seafood exports via the work of SAIC, the inward investment potential for pharmaceuticals linked to SMS, as well as the off-shore resilience opportunities that OGIC is supporting. There are great business development and economic development opportunities across all of the above areas and considerable effort and energy is being applied in developing and learning best practice. However, overall it remains early days.

3. **To what extent do the priorities of Innovation Centres reflect those determined by industry?**

Areas you might like to consider:

Is industry appropriately engaged in the relevant Innovation Centres?

Innovation Centres such as SAIC, SMS, DHI, CSIC, OGIC and IBioIC set out with clear priorities from Industry as guided by industrial groupings and ILGs (Industry Leadership Groups). It will be important for the review to identify how board governance arrangements have helped ensure these priorities remain up to date and how they continue to reflect the industry's growth opportunities. Two innovation Centres are cross-cutting (CENSIS and Datalab) with their technologies finding application across multiple industrial sectors. For these ICs it is vital they reach out beyond the companies who already understand the innovation challenges and opportunities. Hence for both, out-reach programmes are essentia and, based on industry feedback to date, appear to be progressing well. From an SE perspective, the evidence of

industry will become compelling as and when we see significant numbers of innovative projects from companies that seek grant support to enable and accelerate their plans. In addition, SE takes the view that all main boards should have a majority representation from industry in order to ensure the focus on responding to 'industry demand' is maintained.

How are (or should) Innovation Centres respond to the skills needs of the industry sectors represented?

Innovation is both a driver of industry growth and a means of inspiring and empowering the workforce to embrace new and better ways of meeting the customers' needs. Hence skills, particularly around innovation, are vital to the remit of the ICs. Again, this is an area for the review to provide insight. The setting up of the MSc programmes has progressed well with strong support from industry and generally good levels of interest from applicants.

Are the industry-led projects 'stimulating and challenging' the Scottish research base in the most effective way?

For some Innovation Centres the industry timelines for solutions place challenges on the universities concerning staff availability and potentially around recruitment.

Are there examples of good practice across the programme?

There appears to be a high level of sharing of learning across the ICs, both formal and informal, and increasingly the ICs are sharing progress with the enterprise agencies. All of this is very positive. In addition, a number of ICs are approaching the enterprise agencies for guidance on project appraisal so that management team and effectiveness of route to market are appraised alongside appraisal of technical innovation. These are very positive developments and represent a significant opportunity for the enterprise agencies to share best practice and experience in management of project funds to achieve impacts.

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

   Areas you might like to consider:

   Do the Innovation Centres complement and exploit existing initiatives (e.g. Interface, the Knowledge Transfer Partnership programme et al) in the academia/business collaboration space?

   The landscape of public funding support for innovation and R&D is complex and hence the challenge is always to understand the needs of the business customer and then bring into play the correct format of support. We have used a series of workshops to help strengthen ICs understanding of the ecosystem and the roles of the respective stakeholders and this is certainly helping.

   Are there specific Innovation Centre activities, which have helped to simplify routes to innovation for business?

   The above workshops have provided a good starting point but more work needs to be done. For example there is an emerging need to provide industry, and the enterprise agencies with a clearer and more consistent picture of how the ICs support businesses (in particular given the diversity of

delivery models across the eight ICs). Moving forward it will be important to demonstrate that the ICs work with the other agencies/providers of innovation support to reduce the complexity of the landscape as viewed by industry – to avoid any concerns, either perceived or real, that the ICs add to the complexity of the business support ecosystem.

Are there examples of good practice across the programme?

The role of the main board of each IC has been hugely important to date in setting the priorities of the respective Innovation Centres. The collaborative working across the membership of the boards includes representatives from academia, industry, public sector and other organisations representing demand (including for example the NHS). Strong industry representation on these boards has been critical and the requirement that both Chairs and CEOs have a strong industrial background has been important.

5. **How effective and proportionate has the oversight of Innovation Centres been?**
   Areas you might like to consider:

   Are governance arrangements suitable for the programme as a whole and/or each Innovation Centre?

   The Innovation Centre Steering Group is working well. The formal governance arrangements that link the main boards to the administrative hub universities need clarification including the cases where Innovation Centres are planning to move towards a funding model involving a wider mix of public and private sources.

   How much clarity exists around how the performance of Innovation Centres will be assessed against the objectives of the programme?

   To date the innovation Centres are being measured against the targets set by their own boards, developed from their initial business plans. Ultimately the challenge is to demonstrate significant additional economic impact and hence going forward we must consider how the tracked KPIs demonstrate progress towards the delivery of new economic impacts.

   Is there an appropriate balance between an Innovation Centre's freedom to operate and the accountability necessary for a public sector initiative?

   There is significant freedom to operate. Programme governance is relatively light touch and hence relies strongly on the governance function of the main boards. An increase in leadership at programme level may help ICs to develop stronger alignment with other public funding mechanisms, help clarify regulatory requirement (including state aid) and reduce risks of unintended additional complexity of the business support landscape.

   Are there examples of good practice across the programme?

   Too early to comment.

6. **Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?**

   To date Scottish Enterprise has provided support to the IC programme at three levels:

   1/ Support to SFC in the development and delivery at a programme level.

2/ Direct guiding support to the Innovation Centres as they operationalise their business plans.
3/ Direct support to businesses to deliver on their innovation plans using a range of grant support mechanisms, already in place to support business R&D and Innovation.
To date, much of this support has focused on 1 and 2, with the expectation that increased activity in area 3 should follow, particularly as the exemplar projects demonstrate business value and stimulate new business interest.

Later in the review process, and once the findings of the business survey and economic impact assessment have been shared with SE, we would plan to provide further insight and guidance towards the future direction of the partnership led programme.

Background information for the 2016 Innovation Centres Review

Scottish Enterprise's role in supporting the Innovation Centres Programme.

The enterprise agencies (SE and HIE) agreed to support the Innovation Centres Programme on three levels:

- support SFC in the design, establishment and on-going management of the Innovation Centres programme;
- support individual Centres to become operational and prepare for project delivery;
- support businesses to engage with the Centres and realise commercial value through this engagement.

SE and HIE defined their financial support for the Innovation Centres programme as:

- access for businesses to existing SE/HIE business support mechanisms (envisaged as primarily R&D Grant support and other innovation products);
- core funding to specific Centres to enhance their offering to business; for example building capacity for business innovation, with the business case for each project appraised using the SE Project Lifecycle.

To date SE has committed significant staff resources to the programme, although as yet there have been few projects where industry has sought to access SE/HIE business support mechanisms to help the companies collaborate with Innovation Centres. This is due in part to Innovation Centres having their own funding resources (i.e. through SFC exemplar project funding) and the requirement to ensure correct balance between private and public funding contributions (to meet EU state aid rules).

A core SE team assisted SFC design and manage the initial bidding process, assess bids and put in place robust monitoring and evaluation processes. This team continues to assist SFC to manage implementation of the programme, assess progress with individual Centres and assist Centres to accelerate their transition to effectiveness through delivering workshops to increase understanding of public sector working and by increasing awareness of the capabilities of the Centres with internal SE company-facing business units.

Each Centre also has an allocated SE 'opportunity team' to help ensure effective two-way engagement; initially to assist each Centre to get established and more recently to assist each Centre with the development of a strong industry-led project pipeline through initiatives such as themed calls for projects and joint review of project portfolios.

In addition SE has committed a Director or equivalent to participate, as observer, on Innovation Centre main boards.

Increasing Levels of Business Investment in Innovation

While SE is signed up to all the shared objectives for Innovation Centres, the *'enhance demand-led knowledge exchange activity'* objective is our priority in order to stimulate increased levels of business investment in innovation (including BERD) which will drive increased demand for innovation support products and leading to increased economic impact. In pursuing this, SE has attempted to focus the Centres on addressing and

stimulating the type of R&D and innovation activity which best leads to growth of the Scottish company base i.e. innovation which underpins the development of new products/processes/services.

At a simplified level, business innovation/R&D requirements can be considered in three distinct forms:

1. Tactical problem solving, which helps businesses improve their market propositions with rapid timelines to embed solutions in the market place. Time to market is typically 3-12 months. This activity is important and often a first step towards a deeper engagement, but is already well-served by Interface and Innovation Vouchers so there is limited added value in Innovation Centres prioritising this type of activity.
2. Innovation that underpins the development of new products/processes/services where time to market is typically 12-36 months. For some sectors this requires access to appropriate scaling facilities to enable manufacture of technologies to be de-risked and processes tested before market launch. The chief focus of Centres to deliver projects in Technology Readiness Levels 4-7, fits with companies developing new products/services/processes and aligns with SE's innovation support products.
3. Strategic research which helps businesses understand the potential of new scientific and technological breakthroughs, to assist in identifying future potential areas for commercial exploitation (long term). This is currently mainly of interest to larger, globally operating companies and the value in securing collaborations with these companies is already well understood by the university sector and well supported through UK Research Councils. As Innovation Centres evolve, it is anticipated their offerings in this area will form key components of Scotland's propositions to attract research intensive Foreign Direct Investment (FDI).

To date, all Centres have used core SFC funding to launch exemplar projects to demonstrate the value they bring to industry. However we have yet to see significant numbers of business-led nearer-to-market projects which qualify for SE/HIE innovation grant support. There is an expectation that this will accelerate as the exemplar projects demonstrate value and capability to industry and as Innovation Centres move to a wider range of project funding sources (beyond the present core SFC funding).

HIE's response to the Independent Review of the Innovation Centre Programme

Highlands & Islands Enterprise (HIE) is the economic development agency which covers a diverse region extending from Shetland to Argyll, and from the Outer Hebrides to Moray, covering more than half of Scotland's land mass. It's role is to lead regional growth and development in line with Scotland's Economic Strategy (SES), and to seek investment opportunities that will be a catalyst for change. It delivers the four key strands of SES – innovation, internationalisation, inclusive growth and investment - for the Highlands & Islands.

Q1 Is the original vision for the Innovation Centres programme current and correct?

Yes. If we consider the facts surrounding Scotland's poor performance in BERD and high levels of HERD, then transformational change is required to align Scotland's excellent research base with the innovation requirements of our industrial sectors and stimulate business demand for innovation. However, we know the research base in Scotland is only one part of the innovation challenge. The changes required to improve alignment between universities and businesses are around a clear set of common goals, moving at the pace of markets and consumers, stimulating collaboration, and the innovation of traditional funding mechanisms accessed and applied by universities. Three years on, now that they are established, it may be time to ask more of the Innovation Centres in terms of how they can be more innovative in responding to market orientated opportunities.

There has been much debate across Scotland in recent years between key stakeholders, effectively challenging ourselves as to whether we are doing the right things and considering whether we are configured correctly to optimise innovation support and generate greater economic growth. ICs have been the newest additions to the innovation landscape and their vision has to fit with evolving policy in this area. This may mean some adjustment is required to certain aspects of their remit as they go forward.

In terms of simplifying the landscape, it is perhaps too early to tell. It is possible that by introducing eight ICs into the innovation landscape, we have complicated matters further. Given that each of the ICs is configured differently, it is not possible to have a single programme-wide view on this. It is still relatively early to call this, but the Scottish Government have a strong focus on de-cluttering the innovation landscape.

There is some current thinking around whether or not we are asking too much from the university sector. Is the degree of change and responsiveness to industry achievable under the universities' current structures and core priorities? Is there a naivety across partners and therefore are our expectations too high or misplaced? This is a current debate and could impact on the future direction of ICs.

Q2 From your experience so far, are the Innovation Centres delivering against this vision?

Broadly, yes.

Working across whole of Scotland:
Covering all of Scotland's geography and business base was always going to be a challenge and has not been entirely successful. That said, out of a total of 154 projects to date, 21 include business representation from the Highlands and Islands (across 10 companies), although only 3 include UHI as

an academic partner. There is a relatively uneven spread of activity with 9 (of the 21) projects developed with the SAIC, which is not surprising given that the aquaculture industry is almost entirely located in the Highlands & Islands. The EKOS work will shed more light on this, particularly on value of projects.

The physical location of the ICs, with none being located in the region, is detrimental to the easy access desirable for businesses located in rural parts of Scotland. It has proven difficult for Highlands and Islands based businesses to join networking sessions often taking place in the central belt, and awareness raising is challenging across our geography. Our regional university does not play a leading role in any of the ICs and consequently is not as involved in the IC programme as would be desirable.

Collaborating with stakeholders:
Enterprise Agencies, through our IC account teams and ongoing engagement, are growing our relationships with the ICs. The series of workshops provided to the ICs is helping to improve broad understanding of roles and activities across the innovation landscape, and quarterly meetings with the CEOs are also encouraging good communication. We should not underestimate the importance of this if ICs are to be effective players. Given the complexity of the landscape there is the potential for tensions to develop amongst stakeholders. Add to this the fact that confusion exists over some roles, and that each of the ICs behave, and are configured, differently, this is a key area to focus on in the review to ensure that all possible steps are being taken to limit negative behaviour which could result in a reduction of the impact of the IC programme.

HIE is working hard to build strong relationships (again from a distance) and has recently built a Business Innovation Team and clarified lead contacts for each of the ICs.

Solving industry problems:
The ICs are showing evidence of solving industry-defined problems. This is possibly too often at the individual business level, as opposed to more strategic industry challenges. Again, this varies across the group with, for example, IBioIC being fully aligned with a national strategic approach which has been fully informed by industry, and SAIC which, with its clearly stated Priority Areas, is strongly industry-led.

Culture change:
It is very difficult to measure their impact on culture change, and perhaps ICs need longer. There is some evidence of universities embracing a new way of working and placing a higher priority on IC/industry-driven projects, resulting in changing behaviours and funding mechanisms. For others it is still a struggle to adapt their research resource to respond appropriately to the projects. Traditional research funding mechanisms within universities continue to be a major challenge, with money driving behaviour. Where possible, we should showcase new innovative ways of managing this.

Within businesses, again it is difficult to test whether or not ICs have made it more attractive and normal to engage with the university sector. The survey of businesses being carried out by the Independent Review will be welcomed to shed some light on this.

Enterprise agency staff vary in their own experiences of working with Universities and Interface are a key partner for HIE in facilitating business/academic links. It is again difficult to assess if the introduction of ICs is helping to encourage more interaction.

It was recognised, from the very early stage, that culture change was going to be a long term process. This aspect of the vision for the ICs might need to be returned to by the stakeholders involved.

Good practice:
Each IC is different in the way it operates. Within their own operational approach there will be aspects of good practice. However, an overarching view might be that those ICs which were well informed (if not, led) by industry from the very beginning, are showing signs of being closer to business needs. This is also reflected in the make-up of some of the IC boards where those with a strong industry representation operate closer to the market place.

From HIE's perspective, we have formed a close working relationship with SAIC which has been supported by a joint funded Business Development post.

Q3 To what extent do the priorities of Innovation Centres reflect those determined by industry?

Refer to Q2 above.

Interestingly, most of the ICs have been heavily engaged in skills activities, largely focusing on Masters and PhD programmes. This was not identified as a key component of the IC programme, although funding was made available to ICs which will presumably have focused their attention, and that of the universities, to post-grad delivery. It appears that this activity has been strongly informed by industry. However, we should perhaps question the balance of focus, by the ICs, on the skills agenda versus industrial problem solving/opportunity grasping. There are other partners leading on skills activities. Also, the channelling of funding for post-grad courses, through the ICs, limits the opportunity for other Universities to engage. For example, the delivery of aquaculture education in the Highlands & Islands could become much more accessible if it was delivered in partnership with the UHI and located in the region.

In the setting up of the IC programme, it was intended that Industry Leadership Groups (ILGs) would be key to informing agendas and priorities. At the same time, it was recognised that ILGs (much like ICs) were not a homogenous group. What appears to be the case is that those ICs operating within an innovation eco-system which is well represented by an ILG have continued to be strongly industry focused and, to some extent, be held accountable to relevant ILG in the process. TAG and its relationship with DataLab and CENSIS is a good example. To a large extent, the IC can rely on the ILG steer. Without this, it can be difficult for the IC to get clarity on industry demand/priorities, although the enterprise agencies are in a position to fill that gap.

Good practice

Appendix A provides a short case study of a key SAIC/HIE joint project which attracted £451k of HIE funding. This was directly responding to industry needs.

Q4 How has the relationship between business and academia evolved since the creation of the Innovation Centres Programme?

This is difficult to report on, and will need to be informed by other forms of evidence received by the wider group of stakeholders, especially businesses. From the Highlands & Islands perspective, we are aware of 10 companies that have engaged in a collaborative R & D project with an IC (the 21 projects reported above contain multi-projects by company).

The existence of ICs in Scotland have not had a major impact in our region and we believe that the physical location of the ICs outwith the region is a major contributory factor.

Our experience is mixed.

HIE has recently taken steps to grow the innovation resource in the region. We have doubled the size of our regional Interface team to four people, and they are seeing an increase in referrals and innovation vouchers. We have established an internal Business Innovation Team which enables us to focus on key sector opportunities and provides more capacity within our staff resource to engage directly with the Innovation Centres according to business strengths in the North and West of Scotland. These steps taken should be complementary to the development of the IC programme, but it is difficult, at this stage, to analyse which elements of our enhanced innovation support have led to positive benefits in business-academic engagement. This would require more direct feedback from businesses.

Q5 How effective and proportionate has the oversight of Innovation Centres been?

Programme Governance:
The Partners established a Steering Group at the very start of the Programme, which has acted in both a strategic and operational capacity to guide the ICs. This has worked well and the partnership across the agencies has been strong. Representatives on the steering group have worked hard to influence all levels of their organisations to ensure ongoing commitment and support for the Programme. This has been challenging at times, and in retrospect an opportunity may have been missed to establish a formal Strategic grouping, at Director level, to ensure the vision of the Programme was maintained and supported by the most senior level of each stakeholder. The annual review process did provide an opportunity for Directors to be fully engaged in both taking stock and informing future developments of the Programme.

IC Governance:
Governance arrangements for ICs were never dictated but rather key criteria were shared to direct their development. They differ significantly from each other in a number of ways – in terms of industry involvement; balance between university and industry representatives; hierarchical committee and advisory board structures. It is our view that these different arrangements will be

having an impact on IC performance, but it is very difficult to understand fully how these impacts are manifesting themselves. In other words, it is not clear that there is an ideal governance scenario, but our view would be that strong business leadership and industry involvement are key determinants for success.

Performance management:
The steering group established a measurement framework and a set of KPIs through which to measure performance and impact. These were agreed across all stakeholders and strongly linked to economic impact. Revisiting the aims and objectives of the programme now, it is possible that a set of softer qualitative measurements could have been agreed that would assess wider impacts on culture change etc. The KPIs need to be considered over at least a 3 – 5 year time period and consequently it is difficult to measure impact at this stage in the process.

Whilst the approach taken may have met with some resistance from ICs, it was essential to be clear on the importance of economic outcomes, as well as being key for ongoing Scottish Governement support.

Freedom to Operate Vs Accountability:
The ICs were given a great deal of freedom to operate. HIE believes the balance between freedom to operate and accountability to the public sector purse is about right, but this relies on high quality leadership and governance from the outset and continuing. It took a number of years to recruit CEOs which could have resulted in slow progress where early governance arrangements were not fully in place.

Q6 Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

Current discussions on Innovation Reform across Scotland will need to be taken into consideration as we look towards the next five years.

Public sector funding constraints mean ICs should be tasked with looking at innovative ways of working together and leveraging budgets to support business R & D across the country. We need the ICs to BE innovative themselves in how they operate.

Joint funding for business projects (across stakeholders and ICs) has proven to be difficult to navigate. A new approach may need to be considered to address this.

Eight ICs were a significant addition to the Scottish innovation landscape, even though their introduction was staggered somewhat. Across all 8 they employ more than 120 staff, and this joins a busy landscape with other initiatives that have similarly grown over recent years. We believe that any future direction for the IC programme needs to be considered against this busy landscape and the Scottish Government's stated requirement for simplification. This is a good time to take stock of the full range of initiatives to help inform the future direction of the IC programme.

Some specific criteria for future success could be further developed on the back of this Review which could then determine forward arrangements.

To ensure full Scottish coverage, the ICs should adopt new ways of reaching into the Highlands & Islands as a core part of the operation. The physical location of staff and premises in the region would go some way to addressing the challenges of distance for our businesses and staff. This could be in the form of a co-location of a range of ICs which could further enhance cross-sector collaborations and their ability to address strategic business challenges. This would also provide an opportunity for UHI to become more fully engaged with the ICs.

Charlotte Wright
Highlands & Islands Enterprise
May 2016

Appendix A - Example of good practice

Developing Growth Sectors and increasing Competitiveness through Innovation:

Production of farmed mussels in Scotland has more than doubled since 2005 with nearly 9,000 tonnes produced in 2014 with estimated first sale value of just over £10 million. Industry ambition is to more than double this output to 20,000 tonnes by 2030. A major barrier to reaching optimum production is reliable mussel spat (seed). The cheapest and most common way of gathering spat is simply to allow them to naturally settle on ropes. However, reliance on natural settlement is a high risk strategy as the volume can fluctuate significantly from year to year. The product tends to grow in clumps, limiting size, quality and requiring laborious thinning.

Scottish Shellfish Marketing Group (SSMG) and NAFC Marine Centre (NAFCMC) have worked in collaboration with Highland and Islands Enterprise (HIE), University of the Highlands and Islands (UHI), Scottish Aquaculture Innovation Centre (SAIC) and Scottish Government Marine Scotland to frame and carry out a two year research project costing £1.87 million. This has commenced testing hatchery methodologies from world leaders in the southern hemisphere and will introduce techniques to enhance various aspects of production for species and environmental conditions in Scotland.

This collaborative R&D investment will only succeed if techniques to improve the quality of the product are fully commercialised. Partners believe this innovative project is the only way to assess if a commercial shellfish hatchery is feasible in Scotland, and is necessary to give the private sector confidence to invest in such a development.

Highlands and Islands Enterprise
April 2016

Innovation Centre Programme Review - further evidence submission from Highlands & Islands Enterprise – August 2016

HIE provided some initial thoughts to the IC Programme review in our evidence submission back in May 2016. As the Review has progressed during the summer, we have considered further the impact of the ICs in our region and the ideal model to build on this in future years. This short note responds to 4 key issues relating to location; the role of UHI; competition and duplication; TRL level.

1. The Question of Location:

   The question over whether the general lack of ICs being physically present in the Highlands and Islands is in any way limiting engagement has arisen on a number of occasions. HIE has deliberated over this and come to the conclusion that physical location is not the answer, at this stage. This is based on the following observations:

- HIE's relationship with SAIC is excellent and this provides a very good model – we can see what success looks like when things work well. SAIC is not located in the H & I.

- Key to success is the relationship between HIE and the IC at both strategic and operational level. In practical terms, ensuring that there is a clearly identified lead contact within HIE at both levels: Operationally, with a remit to forge relationships with key IC staff and promote and encourage IC services back through key staff in HIE (and onto the business community;. Strategically, to take their (observer) place on the IC board and provide two way communication relating to the strategic direction of the IC and how this aligns with HIE's Operating Plan. In order to ensure these relationships are effective, ICs could identify a regional lead person from their team to provide a consistent approach.

- Therefore, this is not, initially, about location in the region. However, what can be seen is that a successful relationship over time will/may naturally result in the necessity of regional location, when business demand and ongoing activity requires the physical placement of key IC staff.

- It is a fact, however, that developing these relationships is a particular challenge due to distance. The success of SAIC has been built on a two-way street involving SAIC staff being prepared to travel into the region often, and, of course, the location of a jointly funded Business Development Manager based in Argyll. Effort needs to be put into this relationship from both sides.

- HIE has offices spread throughout all geographical parts of the H & I and will make these open to all IC staff to use and access local knowledge and expertise. This should be encouraged.

- A quarterly surgery involving 2 or more ICs at any one time could provide an impetus for enhanced engagement with the region and these could be co-ordinated through the HIE-IC lead contacts. This can be picked up through normal operational activity (ie. not necessary to create a recommendation to make this happen).

- There should be, however, an onus on the ICs to ensure that they remain relevant to those businesses in the H & I which are covered by the topic, sector or activity of the IC, and that they are proactive in this. Spending time in the region (as they clearly do in the central belt), getting to know some of our businesses, would aid this and therefore part-time or long-term location in the region could be hugely beneficial to that end.

2. The Role of the UHI:

UHI is a new university made up of 13 Academic Partners, with no natural one-door into the institute in relation to ICs (ie. no recognisable Research & Enterprise office). This poses a challenge for ICs when communicating into the region and could result in missed opportunities for UHI academic staff as well as businesses in the region. There is evidence that Innovation and KT managers in academic partners are unaware of the ICs.

HIE believes that if UHI was able to develop an approach to IC engagement similar to that described for HIE above, that this would greatly strengthen the region's ability to pull IC activity and funding into the region. The IC programme was developed with the University sector and it is clear from the evidence gathered so far that where a university is the administrative hub for the IC, much activity grows out of the academics from within. Also, this can extend to universities in close proximity to the admin hub. UHI is not an admin hub, is not formally connected to any of the ICs and is hundreds of miles away from most of the hubs, and is therefore disadvantaged. Proactive steps need to be taken from both the ICs and UHI to strengthen links and build understanding. Until this happens, the disadvantage will be extended to the regional economy, given the importance of the University sector in ensuring that activity happens in the regional innovation ecosystem.

3. The Issue of Competition and Duplication:

HIE agrees that, in relation to the Innovation Centres, there are not enough behavioural guidelines across Scottish innovation actors to ensure a sensible and co-ordinated, one-stop-shop approach to how businesses access innovation support. We would support a recommendation that requires the key agencies (SFC, SE, HIE) and the ICs to create a template for how this could operate better, which would effect a change in behaviour in all partners. We think there is a great opportunity, if all parties are open about this, to address this issue.

It is worth noting, however, that in the H & I there is less evidence of this competition and duplication, as there are a smaller number of innovation specialists, so there is less confusion as to where businesses go for support. We will work with our Interface team, based in Inverness, to ensure clearer rules of engagement, and this will be aided by clearer national guidance in this area.

4. The Issue of Level of R & D activity (TRL):

From evidence gathered to date, particularly in the EKOS report, HIE would agree that the TRL level of intervention that we are seeing with the ICs is too low. This has therefore resulted in less opportunities than HIE would have hoped for the funding of commercially focussed projects. This is possibly compounded by the lack of a clear, informed referral

process from the IC to HIE. We would confirm the need for a strong recommendation for ICs to give this serious consideration in terms of how they operate in the coming years. It also highlights the need to consider the route of the financing of ICs, recognising that the SFC funding must go to the universities, and that this was in line with the vision and objectives of the IC programme at that time. Do we need to consider changing this as we go forward?

Morven Cameron
9 August 2016

Independent Review of the Innovation Centre Programme

Background to Interface

Since 2005, Interface www.interface-online.org.uk provides companies from all sectors and locations with a central point of access to the expertise available in Scotland's Higher Education and Research Institutions. Our core mission is "*to enable business-academic collaborations for economic and societal benefit*". The team, based the length and breadth of Scotland, play a major role in generating business demand for innovation - 53% of first-time company/university collaborations involved companies seeking expertise in a discipline different to their own business sector.

The Interface support to business includes;

- Bespoke translation and brokerage to match business requirements and academic expertise
- Facilitation of collaborative projects between businesses and researchers through knowledge sharing and co-creation of solutions for industry defined problems to support the development and commercialisation of new products and processes
- Establishing multi-party collaborative projects where groups of businesses and academics look to solve industry wide challenges (example in food and drink, creative industries, chemical sciences etc)
- Access to cutting edge and cost effective specialist facilities and existing technologies; and
- Advice on innovation related funding streams – most notably managing the SFC/SE/HIE Innovation Voucher Programme.

Over the past ten years, Interface has gained national and international recognition[1] for its track record in our customer centric approaches to translate the needs of individual or groups of businesses to outcomes that are delivering tangible benefits for the Scottish economy. An independent report by Biggar economics in May 2013 indicated that Interface currently generates £17 million GVA per year for the Scottish economy and supports more than 350 jobs. This impact was estimated to increase to just under £80 million GVA per year and 2,400 jobs by 2016.

A copy of the Interface Annual report can be found via this link: Interface annual report.pdf . Our response to the questions below is based on our extensive efforts across the Interface team to engage with each of the Innovation Centres on an individual and collective basis, recognising that each of the eight ICs is unique and distinct.

1. Is the original vision for the Innovation Centres programme current and correct?

While the vision for the IC programme is still broadly correct, we believe that more focus could be made on the development of large scale collaborations which have significant impact on particular industry sectors as well as on the wider economy. This would better differentiate the Innovation Centres, enhance complementarity to existing initiatives within the Scottish innovation landscape and reduce confusion amongst businesses.

2. From your experience so far, are the Innovation Centres delivering against this vision?

There are examples of where the ICs have identified clear themes to be addressed collectively and have taken on broader industry challenges through business to academic collaboration [eg. SAIC,

[1] http://www.raeng.org.uk/policy/dowling-review
http://acola.org.au/index.php/projects/securing-australia-s-future/saf09

SMS-IC]. CENSIS has acted as a catalyst for securing further sources of funding from external sources such as Scottish Enterprise's collaborative R&D support for the £6M Mirage Project. There are, however, instances where the focus is on smaller one to one projects which are unlikely to have the impact which might be expected from the levels of investment and are unlikely to achieve the vision of "*sustainable and internationally ambitious open communities*". There is no doubting that since inception, some of the ICs have experienced significant changes which may have impacted on their ability to deliver against the vision. These include sector specific economic downturn and senior staff turnover.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

From the early stages of drafting the business plans, industry has been involved in determining the IC priorities. However, in the current implementation phase, levels of industry involvement appear to vary across the ICs, reflecting differences in their "innovation readiness". Good practices include the particularly strong strategic direction and clear focused themes by industry for SAIC and SMS-IC and the community building activities by Datalab [eg. Data Science Boot Camp]. IBioIC have adopted a membership based approach which has led to considerable engagement, particularly at their annual conferences and in developing skills programmes. Our view is that other ICs have found it harder to bring industry along, to invest cash in R&D collaborations and in the co-creation of "stimulating and challenging" innovative opportunities for growth. For example, CSIC supported projects are frequently led by academics and the IC has been challenged to encourage businesses to commit resources.

4. How has the relationship between business and academia evolved since the creation of the Innovation Centres programme?

Interface both operational and at Board level works in close partnership with industry, business and public sector parties across Scotland in order to avoid duplication and deliver enhanced impacts. We seek to align our strategic priorities, to clearly define our roles and responsibilities, to avoid duplication and maximise the benefit which we can deliver across the sectors we operate. It is within this context that we have sought to engage with the ICs.

Since inception we have committed senior resource to building engagement with each of the Innovation Centres seeking collaborative ways of working and opening channels of communications. In addition the Chair of the CSIC, as a member of the Interface Advisory Board along with our common funders SFC, SE and HIE, ensure complementarity and good channels for communication and influence.

At a meeting in February 2016 the Interface Advisory Board approved a measurement framework for Interface's engagement with each of the eight Innovation Centres. The overarching aim in the development of this measurement framework was to evidence activity which will contribute to a mutually supportive environment which will help us to achieve impact for the Scottish economy. The outcomes which were set out in the framework were designed to reflect the aspiration of the Interface Board and funders to streamline resources and pool knowledge to the benefit of the wider Scottish innovation ecosystem.

These outcomes, as approved by the Board are as follows: -

- Channel academic to business collaborative projects via Interface and Innovation Centres in order to help build sustained business to academic relationships
- Provide mutual support, align activity and avoid duplication – ensure no "wrong door" for businesses

- Stimulate demand for business to academic intervention
- Share intelligence

From these outcomes the Board approved a series of business engagement and marketing communication metrics which Interface will use for annual reporting: -

- Interface facilitated academic – business projects delivered with Innovation Centre support
- Businesses introduced to Interface by Innovation Centres for exploratory scoping of academic expertise
- Interface team participation in Innovation Centre facilitated scoping workshops
- Interface and Innovation Centre joint case studies demonstrating alignment and co-operation
- Participation in demand stimulation events and activities which demonstrate alignment and co-operation

Our efforts to maximise complementarity include:-

- **Individual engagement plans** prepared and agreed by all the ICs. These have been designed to provide a framework for Interface and the individual IC to work together effectively and productively – to ensure smooth bi-directional referrals, avoid duplicating effort, enhance activity and allow both organisations to operate successfully in their respective space. Each of these plans sets out shared goals; individual organisational aims and objectives; engagement and cross referral opportunities; joint approaches to promotion and demand stimulation and provides a monitoring framework.
- As part of the monitoring framework as agreed within each of the Interface / IC engagement plans **regular meetings** with the Interface Head of Sector Relationships and a nominated individual from IC are presented as a means to engage. The desire is for regular meetings but with a frequency deemed as appropriate for the level of engagement expected (eg SMS-IC is held on an annual basis others are monthly phone calls or quarterly face-to-face). When held they have provided a useful means to update on company enquiries; inform of any changes eg eligibility criteria, processes etc; seek to improve referral processes; share intelligence; discuss opportunities for joint promotion and demand stimulation etc.
- CSIC and DHI have involved Interface and the two enterprise agencies in **Project Advisory Group / Approval Panel** and scoping workshops. This level of involvement helps us to align activity, have sight of current projects, creates a better understanding of approval criteria and how they are applied and allows agencies to add value to the decision making process and the scoping of projects.
- During their initial set up phases, SAIC and OGIC we delivered joint events for businesses to show the distinctiveness of each of the programmes.

Our observations would be that

- The priority to have engagement with Interface is not consistent across the ICs. The engagement plans or regular meetings would not take place without considerable resource and proactivity from Interface.
- While not universally the case there is a culture within some ICs that challenges the need for collaborative working across key stakeholders in the innovation ecosystem as per the original aims and objectives of the programme. We recognise that there is a balance to be struck between delivery of business plans and dedicating time to partnership working but from our experiences in the drive to build the brands some ICs have been single minded in promoting their message to the exclusion of other key players.
- Our experience is that much of the productive engagement happens at an operational level and, at Interface's instigation; we have held joint meetings with business engagement and marketing staff. These have proved a useful means to create a better understanding of each

organisation, establish where the touch points might be, where the opportunities for referrals are and how to address any particular barriers to successful engagement.

- Despite clear messaging and proactive engagement there is still confusion within some ICs around the role of Interface, with the perception that we are only a grant giving body for Innovation Vouchers. In parallel there is evidence of ICs promoting themselves as the organisation which can broker individual business to academic connections and duplicating processes. This is effectively within the space in which Interface has been operating successfully for over 10 years and we continue to find ourselves placed, inappropriately, in a competitive position and adding to business confusion.
- As Innovation Centre individual project evaluation and approval processes become more robust it would be helpful if Interface and the other stakeholders were brought in earlier. There is little useful contribution which can be made at a later stage when an approval panel is finalising a recommendation to the Board. Interface recently contributed to a re-scoping meeting for CSIC approval panel (TAG) where it was agreed that this approach should be adopted.
- The engagements between businesses and academia fostered by ICs are central to the delivery of the Innovation Scotland Forum action plan but many of the ICs may not be aware of the full detail of this collaborative working across key stakeholders in the innovation ecosystem.

We consider that there are a number of opportunities to ensure greater complementarity between ICs and Interface: Suggestions would include:

- A re-emphasis of the clear rationale for ICs and Interface and a clear distinction of the target market and anticipated interventions. There is a danger of duplication of Interface activity where ICs are concentrated on smaller projects [<£100k] which focus on the needs of an individual company rather than delivering impact for the wider sector that are internationally ambitious. These smaller projects come about for different reasons and are managed differently by each of the ICs. Some projects already have an academic lead and so there is no need for Interface input. One IC recognised early on that by utilising Interface matching service to identify suitable academic partners they could focus on delivering their own strategic priorities. Another IC has acted in a competitive way and has at no time sought support from Interface to identify appropriate academic partners.
- We have continually sought to engage with each IC to understand how to "escalate" businesses that are innovation active and have received support via Interface brokerage or Innovation Voucher programmes to individual ICs so that there is a clear pathway of innovation development. For example, the SAIC PIAs have provided a framework which makes it easier to know what kind of businesses or projects to refer in to the IC, provides clarity and understanding if a project is rejected and helps to avoid confusion amongst businesses. The CM2000 Case study provides a clear example of a business escalating from Interface engagement to wider support for the commercialisation of their product via support from DHI. http://www.interface-online.org.uk/case-studies/cm2000
- We would expect ICs to have good networks and relationships with their partner universities within their field of sectoral expertise. There are times, however, when a business enquiry falls outside the IC scope or there is a requirement for an academic partner in a discipline outside the IC's network or domain of knowledge. It is in these situations where Interface can add real value but this has not always been recognised. There have been occasions when an IC has proceeded to broker a relationship beyond their existing networks duplicating effort and resources.
- There is anecdotal evidence to suggest that some ICs have experienced challenges with their HEI partners' ability to deliver projects within a reasonable timeframe. This has led to

frustration amongst IC project staff and to the businesses they seek to serve but the situation could be addressed by involving Interface to help identify academics unknown to the IC but which have both the capability and the capacity.

- SE has recently run workshops for each of the ICs with the objective to maximise alignment, ensure each organisation plays its correct role, to reduce the perception of complexity of funding support and to help develop collaborative strategies and ways of working to maximise the opportunity for economic impact in Scotland. These have involved Interface as a key stakeholder and have provided a useful opportunity to outline our role, to correct misunderstandings and to identify ways to better align activity.
- In order to maximise resources, it would be mutually beneficial to have a platform for Interface to engage with the eight ICs collectively to enhance communication and partnership working eg. via the regular meetings of the CEOs, the joint marketing meeting for the ICs, the business development IC meetings etc.

5. How effective and proportionate has the oversight of Innovation Centres been?

Good monitoring and review processes are in place for each of the ICs as developed in partnership by the key stakeholders of SFC, SE and HIE. In addition, the cycle of review meetings led by the SFC REKC Committee Chair has ensured that there are robust and regular mechanisms in place to monitor progress. Greater oversight from key stakeholders including the Chairs of each of the ICs from an early stage to ensure that ICs more effective alignment with existing initiatives such as Interface would have been welcomed.

Other formal or informal groupings have also been put in place to avoid duplication of effort and to enhance the knowledge of the ICs of existing good practices across the HEIs eg. the Innovation Centres Administrative Hub Group that has been established by the Universities Scotland Research and Commercialisation Directors Group is helping share best practices around legal templates etc.

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

Our desire would be the existing ICs focus on clear industry defined themes which create significant impact for the sector they operate and for the wider economy. We recognise that it is still very early days for the ICs both in terms of their operational procedures and delivering transformational impact for the Scottish economy as a return on investment. The future evolution of the existing ICs should include responding to challenge fund calls and acting as a catalyst for securing Innovate UK and H2020 funding to support transformational projects co-created with industry.

Whilst the current eight innovation centres are still at an early stage and unproven we don't see the advantage of introducing new ICs into other sectors that are perhaps less innovation active or more fragmented. We would suggest that large-scale, transformative projects could be achieved through a flexible approach to multi-party working which is responsive to industry demand. Business to academic intervention is an integral part of an overall innovation response across key sectors. The Food and drink Innovation Response that is being developed as partnership working by the industry leadership group, Enterprise agencies, Scottish Government, SFC and the Universities provides a good model for other sectors.

Through Interface sector relationship activity, we are encouraging businesses in key growth sectors to become innovation active, introducing new products, services and processes in order to increase Scotland's competitiveness. Our goal is to encourage a culture of innovation and through multi-party activity within key sectors involve more companies in academic collaborations creating a pipeline of businesses to ICs, Interface internal business engagement and other support from the wider innovation ecosystem. This multi-party activity model has been successfully applied in the

food & drink sector via common interest groups to deliver impact including company growth. There is significant scope to develop this further in food & drink and into other SME rich sectors for example creative industries and tourism.

There is evidence that this approach is an effective way to encourage businesses to innovate and grow and there are benefits to both businesses and the HEIs (including ICs) as outlined in the following table:-

Universities, Innovation Centres and Research Institutes	Industry
• New projects identified • Additional funding levered in • Available grant funding identified and delivered • Generates new business leads • Gives academics an insight for business to academic activity and demonstrates what can be achieved • Industry increasingly consider HEIs as partners of choice • Stimulates new avenues of research and opens up ideas for different ways of doing things • Opens up new markets for exploitation of existing research • Allows HEIs to engage and work with a greater number of SMEs without increasing their workload • Inter departmental, discipline and institution introductions made through Common interest groups • Provides HEIs with opportunities to improve the way they work with businesses, increasing capability and capacity • Learning from industry experience, particularly through the learning journeys • Offers networking opportunities in a non-threatening environment • Increases university awareness of the opportunities available to engage with industry and what its requirements are • Provides business focused support material for curriculum teaching • Enabling cultural change within academia moving towards greater collaboration between disciplines and institutions	• Shared solutions to existing challenges • Creates and fosters a culture of collaboration • Access to knowledge • Mitigates risk and helps to reduce the barriers to innovation for businesses – see ideas tested before being put into operation • Provides critical mass opening up international markets • Economies of scale • Growing fledgling indigenous companies into sustainable businesses • Peer to peer support • Encourages innovation readiness within individual businesses • Encourages companies with no prior experience of academic collaboration with the increased likelihood of future collaborations as a result • Promoting a greater understanding of industry needs through academic communities; helps to build connections and foster innovative ideas • Opens up opportunities throughout the supply chain • Helps to build an innovation network within the sector or sub-sector • Improves awareness amongst companies of the way in which university research expertise can help their business • Offers the opportunity to pool company cash contributions, important for small and micro businesses

Innovation Centres

Question 1.

1. **Is the original vision for the Innovation Centres programme current and correct?**

Whilst the vision is current and correct it should go further in describing where we expect to see the centres delivering added value compared with other mechanisms for supporting innovation based on industry/HE interaction. Essentially this should be about how 'open communities', as described in the vision, will deliver economic growth and wider benefits for Scotland. Understanding the 'how' is vital for any early evaluation of the performance of innovation centres. Important aspects of 'how' include: the facilitation of knowledge exchange mechanisms within collaborative communities which in turn helps to lock IP generated in Scotland into Scottish economic outcomes; optimising industry pull vs research push elements of KE through iterative virtuous circles (I would call this a 'virtuous upward spiral'); and creating opportunities for SMEs and micro-businesses in the relevant sectors to engage and benefit from being part of a collaborative, innovative community where pre-competitive resources can be shared more easily.

2. **From your experience so far, are the innovation centres delivering against this vision?**

The innovation centres are still at an early stage in their development and some are newer than others so our expectations need to be tempered by this understanding. At present it is not clear the IC activity is evenly spread or fully engaged across Scotland and may be missing out on the expertise and knowledge of some of our leading research centres. With regard to the experience in Dundee some of the ICs have engaged with us regularly and others much less so whether or not we have relevant experience and resources. One potential role of ICs which seems to be under represented at present would be to create strong links with other agencies and to facilitate links between universities, businesses and, for example, Scottish Government, Scottish Enterprise and other agencies where appropriate.

The funding models to support collaborative research also seem relatively weak with limited funding available (eg. a maximum of £50K per project). In these circumstances, projects are often underfunded with at least one IC wishing to fund at 80% FEC whilst at the same time wishing to impose commercial terms such as payment on achievement of ambitious commercial milestones. Such risks are only appropriate if there is the opportunity to profit. You can't mix academic funding levels with commercial risk taking. This speaks to a much more fundamental issue which often confounds business/university collaboration. There is a need for mutual understanding and respect for the differing cultures and business models which industry and HE operate under.

3. **To what extent do the priorities of innovation centres reflect those determined by industry?**

From the Dundee perspective, ICs are focused on meeting the needs of industry. We have been frustrated by the tendency that involving commercial partners of varying size in any project leads to complex contractual arrangements (somewhat ironically given that universities are often themselves accused of creating such problems) which slow the process down. We have an example of a grant

with the Digital Health Institute involving a multi-partner collaboration which has so far taken 6 months to agree terms. This is an example of a problem to be resolved and not a criticism of the concept of innovation centres themselves. We might also question at this early stage in their development the extent to which ICs have been marketed to smaller companies who are innovation novices and to the possibility of leveraging third party funding (such as via Horizon 2020).

4. **How has the relationship between business and academia evolved since the creation of the Innovation Centres Programme?**

There are examples of ICs tending to work directly with academic communities rather than with and through the innovation services resources that many of our universities have in place. This can lead to very different perception of the nature of the relationships between business and academia. For example, reports that the relationships have not changed at all since the inception of the ICs, to a specific comment regarding the Digital Health Institute which states that the model is effective in both bringing business and academia together and offering opportunities to strengthen and develop ongoing partnerships between HEIs and industry. There is likely, at this early stage, to be very varied responses to this question depending on the particular IC and which community is addressing the question. We therefore need to recognise and propagate good practise wherever it is found in order to improve the future performance of ICs against the vision.

5. **How effective and proportionate has the oversight of innovation centres been?**

There is a dilemma here that relates to an overarching objective to simplify the innovation landscape in Scotland which can conflict with the need for flexibility and heterogeneity in terms of methods of operation which must reflect differences in the sectors which each IC serves. So, for example, universities have had to agree 8 separate collaboration agreements with the ICs rather than a single, overarching agreement. If, however, oversight imposes rigid modes of operation and reporting that ignore fundamentally different requirements this in itself would be a problem. It would be useful at this stage to review the practises and approaches that have developed with the intention of determining where simplicity and a common approach are beneficial and where flexibility is most needed.

6. **Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre Programme?**

Extending my comments from question 5, there may be benefits in some 'coming together' of ICs to determine where there may be benefits in sharing some modes of operation (and where flexibility is essential). For example, should there be an overall 'IC Scotland@ brand with common approaches to funding calls, websites etc. Universities have now adopted common standard templates for contracts with companies which could be considered for all ICs. Generally funding levels (per project) need to be increased and reflect the very different business models in operation in universities and business. Demonstrating added value, especially in relation the additional aspects of vision noted in response to question 1, is critical for the future evaluation of ICs.

Not all of the ICs circulate details of problems and opportunities that have been identified from their discussions with industry. We have experienced some ICs that appear actively not to want to share this information, but want direct access to details of academic expertise so they can match up

Universities and industrial partners themselves, which seems at odds with the aim of creating open networks and ignores two aspects of existing resource (universities' own innovation services who know their academic communities well, and Interface, which brokers relationships between universities and businesses, aimed mainly at SMEs.

Professor Sir Pete Downes
Convener
Universities Scotland

Universities Scotland submission to the Innovation Centre Review

About Universities Scotland

We are a membership organisation working for the Principals and Directors of Scotland's 19 higher education institutions. We develop higher education policy and campaign on issues where our members have a shared interest.

Submission

1. **Is the original vision for the Innovation Centres programme current and correct?**

We are supportive of the vision for the Innovation Centres programme and welcome the chance to input to this Review.

2. **From your experience so far, are the Innovation Centres delivering against this vision?**

Given the broad and ambitious nature of the vision it is too early in the life of the whole Innovation Centre programme to accurately make this judgement. We will be interested in the outputs of the economic review, and how this time limitation is factored into the final report.

We are also aware that Innovation Centres are at various stages of development and cover a diverse range of sectors. It is correct that these Centres evolve to meet the different demands of each sector, but this will be a development process, which requires time, so this Review should be conducted in the spirit of continuous improvement. We would note that we have seen detailed feedback on individual Innovation Centres provided from institutions. Universities themselves, depending on their discipline mix, will interact with different Innovation Centres and therefore have, collectively, a diverse experience. The points of comparison each institution can provide will be useful in this Review to enable sharing of best practice and improvements across the programme.

We note the most recent annual review of the Innovation Centres and the existence of a monitoring and evaluation framework. It would be useful that the annual review (at least) be made publicly available. This is important for transparency of use of public funds and to understand the interim measures the funders have used to understand the rate of progress.

In terms of cultural change within institutions, Innovation Centres can play an important part but we would highlight the significant efforts undertaken within universities to continue to embed a culture of Impact (including working with businesses) and to develop enterprise and entrepreneurial skills amongst staff and

students. [1] Relatedly, we have received positive feedback on engagement events organised by Innovation Centres as a valuable forum to work towards establishing these 'open communities'. Innovation Centres can have a valuable role, due to their sector focus, in promoting innovation within businesses too (given the currently low business R&D investment in Scotland)[2] and offering a central focus for peer networks for their sector. [3]

Moving toward sustainability is a focus for all Innovation Centres but realistically this will be over a longer term horizon. There may be scope for funders to consider the Catapult funding model which is recognised as international best practice. [4] We also note that, whilst sustainability will be an important outcome, that public support may always offer routes to stronger outcomes and so public partners should maintain a route to support.

3. **To what extent do the priorities of Innovation Centres reflect those determined by industry?**

A key consideration in the innovation ecosystem is the importance of improving business demand for innovation (in all forms) and therefore there is a need to consider both push and pull in the performance of the Innovation Centres.

The Review may usefully reflect on the new skills provision from the Innovation Centres including Masters provision and PhDs. Our discussions with industry representatives has, across the board, emphasised the critical importance of talent and Innovation Centres could add value here. Such studentships crystallise partnerships with businesses, are drivers of innovation in their own right and, with many students then recruited by the companies, offer a route to a longer term culture change and enduring innovation relationship with the university. For the university such studentships offer excellent opportunities for individual students and add to the breadth of departments' industry partnerships.

The Boards of the Innovation Centres are majority industry representation which ensures the activities of the Centre are industry-led.

Individual Centres can point to emerging examples of significant investment by industry in IC projects, an early indication of strong partnerships and activity focussed on industry demand.

4. **How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?**

The landscape is complicated and it is crucial that there is good connectivity between the different interventions and strong referral systems across all parts of the system.

[1] Universities Scotland's 'Making it Happen', 2015
[2] NCUB's 'Growing the Value of R&D in Scotland' 2015
[3] NUCB's 'The Step Change: Business-University Collaboration Powering Scottish Innovation'
[4] Review of the Catapult Network, Dr Hermann Hauser, 2014

Feedback has indicated that this connectivity has not yet been fully achieved and there is work to be done to better integrate with the landscape, including connecting into Interface. There are also opportunities to better leverage opportunities through engagement with initiatives such as the KTP centres, enterprise agency offerings and UK/EU level opportunities (particularly to support the onward development of initial projects which may enable access to large funding streams). Furthermore feedback indicates there is scope to better connect Innovation Centres with those universities that are not admin hubs. We expect that the Innovation Centres can grow into this role once fully established, however, it will be important that duplication in this space is minimised and that we work together to enhance collaboration wherever possible.

Scottish universities undertake world-leading research[5] which is the key to the innovation system – there is the potential for this excellence in combination with initiatives such as the Innovation Centres to provide a unique Scottish brand which further leverages investment into Scotland, given the already strong performance of Scotland in attracting investment on the strength of research. [6] This international aspect could be an important focus for the future of the Innovation Centres.

5. **How effective and proportionate has the oversight of Innovation Centres been?**

As Universities Scotland we are represented on the Innovation Centre Admin Hub Group and we understand that there have been some difficulties in set-up and finalising processes, which is understandable given the nature of the Innovation Centres. Partners have worked constructively to overcome this. A better connection at Board level will help to increase mutual understanding of process and practice so we consider that it would be valuable that there is an institutional /admin hub representative on the Innovation Centre boards (i.e. a senior officer representing the institution). We also see value in having a representative of RCDG (Research and Commercialisation Directors' Group) involved with governance structures such as the CEO Forum to clearly connect with the university knowledge exchange functions.

We have received input noting potential duplication of functions between Innovation Centres and university business development functions, as well as a concern on the high management costs of each Centre. While this may be necessary as part of the set-up of the Innovation Centres we offer this observation for discussion.

6. **Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?**

As with many investments, a long term approach is needed. We know that public sector investment in research increases business confidence and facilitates business

[5] http://www.universities-scotland.ac.uk/bite-size-briefings/research-excellence-framework-2014/
[6] Ernest and Young. EY's attractiveness survey: Scotland 2015: Scotland on the world stage, 2015

investment.[7] Similarly we would expect that a long term view of the Innovation Centres will encourage business confidence in becoming involved and enable establishment of strategic relationships.

Sustainability should remain an aim however there needs to be care to calibrate the drive towards this to the circumstances of particular industries and to recognise that public funding should always be an option if there is a case for it maximising sought outcomes.

Joint working between public agencies in developing the Innovation Centres has been welcome. Additional thought might helpfully be applied to how companies engaged with Innovation Centres can call on enterprise body support and how the enterprise bodies might more systematically 'refer in' companies to Innovation Centres and universities more broadly.

For further information

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[7] Department for Business, Innovation and Skills' 'Leverage from public funding of science and research', 2013

ICAHG

Is the original vision for the Innovation Centres programme current and correct?

ICAHG considers that the original vision is current and correct.

2. From your experience so far, are the Innovation Centres delivering against this vision?

ICAHG was originally set up in 2014 by SFC and the then Chair of Universities Scotland's Research & Commercialisation Directors Group (Dr John Rogers – Director of Research & Enterprise at the University of Stirling) to "provide a forum for the universities who act as administration hubs for the ICs to share emerging good practice and assist the SFC and the ICs in their development and review of the portfolio of ICs", and is currently chaired by the current RCDG Chair, Dr David McBeth (Director of RKES, Strathclyde).

ICAHG has assisted in establishing better guidance and sharing of good practice among the entire IC community (SFC, the universities, and more recently the IC leadership etc). The original membership of ICAHG was a representative from each university acting as an IC admin hub, together with representatives from the SFC.

In the last 6 months the IC CEOs group has been added to the ICAHG mix with a single representative and proper Terms of Reference for ICAHG have been established (See Appendix 1). However it is probably fair to say it is only in the recent past that the ICAHG membership has started to gain a proper overview of the broader IC scene beyond each member's "individual" operational experiences.

So far, the consensus view of ICAHG in relation to this question can be summarised as follows:

1. It is still very early in the overall IC Programme, which is seen as at least a 5-10 year process, to be making judgements about overall delivery of the ICs Programme against the original vision;
2. All of the individual ICs are clearly trying to deliver against the original vision but are characterised by a diversity of industry sectors, start dates, IC leadership styles, operational processes and procedures, and governance approaches – all of which have influenced the start-up phases of each IC;
3. Some ICs are clearly delivering many aspects of the vision very well (we cited SAIC, OGIC, CENSIS, DATALAB and IBioIC) while others may be somewhat further from delivering the vision due to one or more of the factors in the preceding point;
4. For those ICs for which start-up phases were extended due (in whole or in part) to issues involving operational matters especially in respect of governance, HR/ recruitment, procurement and financial management, operational processes & procedures etc, clearer guidance from the SFC and/or an earlier establishment for ICAHG or something like it could have reduced this source of delay;
5. For those ICs for which start-up phases were extended for other reasons, we address this issue in more detail in the response to Question 3.

One aspect of the vision as ICAHG understands it was that In relation to the longer-term positioning of the ICs within the innovation *funding* landscape, the ICs should have an explicit role in deploying their collaborative funding to escalate innovation activity towards larger sources of funding e.g. Industry Consortia, Innovate UK (including Catapult), European innovation funding, etc. ICAHG considers this aspect as very important and that ICs should be differentiated (from other actors/products/services in the innovation space) as having deeper industry sector knowledge and as creating longer term and deeper relationships with companies/public sector bodies. We are aware that SAIC and perhaps one or two of the other ICs have already demonstrated this type of escalation which is very encouraging.

Where there are existing actors/ products/ services such as Interface, Knowledge Transfer Partnerships and SFC Innovation Vouchers we would expect the ICs to use these products as appropriate to advance their "escalation" agendas and our one note of caution is in relation to ICs

devising their "own" products/ services in the same space. ICAHG members reflected on the above and hoped that as each IC evolved, and through dialogue with its industry stakeholders and the SFC, its targets and KPIs under the agreed Monitoring & Evaluation Framework with SFC would evolve to reflect the appropriate activities for the stage in its development.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

ICAHG noted that the ICs set up today fall into three main categories of "sector(s)" addressed:

(i) ICs addressing well-defined industry sector – Aquaculture, Oil & Gas, Construction;
(ii) ICs addressing emerging industry sector(s) – Stratified Medicine, Industrial Biotechnology, Digital Health and Care
(iii) ICs addressing multi-industry-sector(s) – DATALAB, CENSIS

It has probably been more straightforward for the ICs in category (i) to articulate industry (and other user organisation) demand into their priorities than in the other two categories. In category (iii) the technology bases have the potential to service many if not all major industry sectors and it is inevitable that decisions on priorities will need to be made in the round using experts who straddle knowledge of the emerging technologies and the markets they will serve.

We consider that the composition, level (large company/ small company), and involvement of people from outside Scotland (and even the UK) on ICs' Industry and Scientific Advisory Boards would be a sensible step to address some of the challenges of industry priorities in categories (ii) and (iii), and we understand that at least some of the ICs in category (i) are using this approach.

Finally the Enterprise agencies (principally Scottish Enterprise and Highlands & Islands Enterprise) have the potential – directly and via their advisory structures such as the Industry Leadership Groups ("ILGs"- in the case where these map on to the sectors of the ICs) to contribute to the industry demand component of the ICs Programme. We are not sure that this has happened as widely as might have been expected to date – especially at the operational level where it might have the most practical impact.

However we feel only industry can comment with real authority as to whether its priorities are being addressed by the ICs Programme.

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

ICAHG considers that it is too early to generalise in relation to the above point.

There are numerous examples from the ICs Programme of really high quality knowledge sharing between business representatives and academic representatives from Scotland at all levels from Main/Governing Boards, Scientific and Industry Advisory Boards and Assessment Panels of ICs, as well as via attendance at workshops, sandpits and other events that ICs have facilitated.

Moving beyond the anecdotal there are obviously several sources of data available to SFC that may be useful in providing some independent calibration of the above. The SFC's own "KT Metrics" return is one such source of data (some of it direct, some of it proxy), as is the HEBCIS return collected annually by HESA. Elements of the recent analysis of Scottish companies' innovation activities and motivations conducted by Scottish Enterprise, which we understand Prof Reid's Review has already seen, could if repeated periodically provide another mechanism by which to assess more quantitatively how the relationship is evolving.

We do however accept that the innovation support landscape in Scotland has become increasingly complex in recent years and we are optimistic that the Scottish Government's simplification agenda for innovation support will be the catalyst to a more widespread step-change in the relationship between business and academia.

5. How effective and proportionate has the oversight of Innovation Centres been?

With hindsight the SFC may have been more directive to the recipients of IC funding (both the admin hub universities and the Industry-led Boards of each IC) in relation to the levels of governance and oversight that were appropriate in setting up ICs. ICAHG also think that with hindsight and with reference to our comments in section 2 above, SFC could have been more directive about the basis or bases on which ICs should fund and manage projects in universities i.e. insisting on harmonisation of practice from the start especially in relation to funding "intervention rates" for projects involving universities. However we feel there is little merit in dwelling on these issues as they are largely resolved now.

One point which ICAHG has made to its SFC representatives on a number of occasions is the recommendation that the main governing Board of each IC should always have a member from the senior management team (e.g. Chief Financial Officer, VP (Research & Innovation), Dean of Faculty/ School) of the relevant admin hub university in order to ensure that the chain of accountability between SFC and the IC is as strong as it can be. We understand that this is now the case with most if not all ICs but it is a recommendation we stand by.

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

- ICAHG considers that the Innovation Centres Programme should continue as a long-term strategic intervention by the public sector in Scotland to improve the innovation landscape in Scotland and increase the contribution of innovation to the success of the Scotland's company base. To be clear, we envisage that the public sector will require to fund the IC Programme at some level for the foreseeable future and we would advise against compelling individual ICs to achieve independent financial sustainability in the short-term. Our vision is that successful ICs in the long-term will become increasingly less dependent on "core" public funding as the industry sector(s) they address re-invest in the ICs and their projects at a higher level. Perhaps a Fraunhofer-like model of 1/3 industry; 1/3 public sector core and 1/3 public sector competitively won project funding could be a model to aspire to in the longer-run;

- In our view there is no need *per se* for the ICs to become independent organisations, and the work of ICAHG to date has largely sought to create the conditions by which the ICs can operate effectively as part of the SFC-funded landscape and within the HEI Sector;

- There appeared to be a consensus among ICAHG members that the IC Programme itself (as opposed to individual ICs) perhaps did not have enough visibility across all the relevant stakeholder sectors – industry groupings, higher education and even perhaps the public sector. It was mooted that the results of Prof. Reid's Review might provide one opportunity to have a "whole-programme" event or conference (perhaps with a Minister) and with invitees from all Scottish stakeholder groups as well as from the UK public sector organisations with Research & Innovation remits to highlight the purposes and success to date of the IC Programme;

- We would urge SFC to involve ICAHG in its early thinking (at strategic as well as operational level) in relation to any changes to the IC Programme that are being considered. With the IC CEOs now represented at ICAHG this now seems less of a risk in any case, but for all the IC stakeholders' benefit it would be better if we all learned from the challenges that have been overcome in getting to the present position in any new high level developments.

- We would recommend that all the ICs be given the opportunity to be re-invested by SFC at the end of their first funding period. In doing so, the SFC should test and give serious

consideration to the operations and business models in use – with reference to conclusions about good practices from Prof. Reid's Review - prior to re-investing in each IC. SFC should potentially increase its investment in those ICs which have already proven that they are delivering the vision and enhancing innovation in Scotland – by a combination of performance against their KPIs, demonstration of impact, demonstration of satisfaction from industry and HEI stakeholders and of course whatever else is concluded from Prof Reid's Review;

- We would commend the SFC for addressing the innovation needs of other industry sectors where a "full" IC is not currently seen as the best solution and for supporting initiatives in, for example, Future Textiles and Creative Industries. We would encourage the SFC to maintain this approach and to provide a (funded) path of aspiration for proto-ICs that may in due course join the full IC Programme.

Appendix 1: Terms of Reference of ICAHG

INNOVATION CENTRES ADMINISTRATIVE HUB GROUP (ICAHG) **TERMS OF REFERENCE**

Purpose / Role of the Group:
ICAHG ("the Group") was set up in 2015 by the then Chair of the Research & Commercialisation Directors Group ("RCDG") of Universities Scotland, which in turn is a sub-group of Universities Scotland's Research & knowledge Exchange Committee ("RKEC"). ICAHG was set up to provide a forum for the Universities who act as administration hubs for the Innovation Centres (ICs) to share emerging good practice and assist the Scottish Funding Council and the Innovation Centres (ICs) in their development and review of the portfolio of ICs.

ICAHG is seen as a short-life working group of RCDG and its terms of reference are:
(i) to share, discuss and make recommendations relating to emerging operational issues for ICs among the administering hub universities;
(ii) to share, discuss and make recommendations relating to strategic issues for ICs among the administering hub universities, the SFC and the ICs;
(iii) to discuss and propose good practices that SFC may wish to promote across all the ICs in future in order to achieve consistency of practice that meets the needs of all the stakeholders in the ICs;
(iv) to provide a mechanism for more regular and structured communications between representatives of the ICs, the SFC and the universities acting as administration hubs;
(v) to address appropriate issues of the Independent Review being conducted in 2016, managed by SFC.

Membership:
A quorum of 5 attendees comprised of at least one representative from SFC and one representative from the ICs, the Chair, and at least 2 other representatives from hub universities.

- Research & KE Directors, or nominated representatives, from each HEI that is an administrative hub university for an IC (currently Edinburgh, Glasgow, Strathclyde, Stirling, Heriot-Watt and Edinburgh Napier).
- Representatives from SFC (Research & Innovation Directorate) who are observers on IC Boards.
- Universities Scotland representative (Senior Policy Officer).
- A representative of the IC CEOs group.

Members should send (the same) designated deputy if they are unable to attend.

Accountability:
It is the responsibility of the current Chair of RCDG to manage and chair the ICAHG meetings and liaise with RCDG, RKEC, Universities Scotland secretariat and SFC in relation to the business of ICAHG.

Review:
ICAHG is seen as a short-life working group of RCDG rather than a standing sub-group of RCDG. However given the strategic nature of ICs and the likely timescales until ICs are a self-sustaining and a permanent part of the landscape in Scotland it is expected that ICAHG will have a lifetime of at least 3 years. Terms of reference for the Group should be reviewed annually, as should the continued need for the group.

M**eetings:**
There will be a minimum of two meetings per academic year.

Meetings take place at the Scottish Funding Council offices at Haymarket, Edinburgh, or at Innovation Centres offices, and are organised by the Chair or his/her Secretariat support.
The meeting is chaired by the Chair of RCDG.

The term of the RCDG Chair is 2 years and in the absence of an agreement to the contrary the Chair passes from the current chair to the next Chair alphabetically by name of institution.

The Chair may be supported by a Secretariat to prepare agendas, papers, and request updates on actions for the Group, and attend the meetings to take minutes. The Secretariat is usually provided by the Chair's institution unless other arrangements are agreed from time to time among the Chair, the Scottish Funding Council and/or other members of the Group.

An agenda will be set by the Chair, sometimes seeking items from members of the Group, and at other times according to sector priorities and matters arising from previous activity.

A standing item on the agenda will be the feedback from the ICs CEO Forum. The IC CEO representative on Group will provide this for the papers for each meeting.

Papers will be circulated electronically one week in advance of the meeting to each member of the Group.

Sharing of Information and Resources:
Documents will be stored with RCDG papers.

RCDG is working with Universities Scotland to determine if it is possible to have a central repository where documents and other resources relevant to RCDG can be held and made available to the group members. Several options are currently being investigated.

Independent Review of Innovation Centres

1. Is the original vision for the Innovation Centres programme current and correct?

The University of Aberdeen welcomes the opportunity to contribute to this independent review. The responses reflect the views and comments from researchers who have been working with the current Innovation Centres (ICs).

Overall, the vision for the ICs programme is still current and relevant. However, in some of the ICs, there appears to too strong a focus on the infrastructure, and growth of IC staff (some of which may deliver R&D to companies). Some thought needs to be given to whether the ICs compete with researchers for industrial collaborators.

2. From your experience so far, are the Innovation Centres delivering against this vision?

All ICs aim to realise the vision in different ways and are at different stages of set up and establishment. Different models of engagement have been deployed.

Although progress has been made in relation to engagement with business through the ICs , more could be done. Practice varies, and there may be a case in identifying and sharing good practice. In relation to some ICs, some industries are not getting the full benefit from working with academic institutions across Scotland. There is a need for ICs to be more inclusive in terms of academic partners, and to enable access to funds and opportunities to all academic partners.

There is a danger that ICs with too narrow a focus could act as a barrier rather than enabler in terms of engagement with industry, and this should be guarded against.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

Responses reflected that practice varies widely across the current Innovation Centres. Some appear to have quite narrow, academia defined foci, while for others the focus is determined largely by industry. While flexibility is required for different ICs to interact and set priorities in different ways, it appears that the engagement with industry in defining priorities has been patchy. It would be helpful to encourage increased engagement with academic partners to enable appropriate refocusing of priorities between the partners.

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

Although engagement with industry is currently challenging, particularly in the oil and gas sector, some ICs are perceived as helpful to understand the needs of industrial partners. Some researchers have commented that the focus of ICs can be either too narrow, thereby excluding certain avenues of collaboration, or too inflexible to accommodate new initiatives.

Overall, engagement with industry remains an issue. It has not been as extensive as anticipated, and in some cases not necessarily facilitated by the IC.

5. How effective and proportionate has the oversight of Innovation Centres been?

The governance arrangements have many similarities, and ultimately the liabilities for the ICs lies with the institutions. There is a perceived lack of transparency in decision making and allocation of funds and general poor internal communication. Awards appear to be concentrated in a small number of institutions that are leading the ICs, with other academic partners struggling to secure funding for engagement for their projects and partnerships.

There is not a great deal of oversight which is visible to universities and no high level budget approval, so it is difficult to assess oversight and whether it is at an appropriate level. Higher levels of academic representation at Board level may help address these issues.

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

There are areas for improvement such as a very clear framework of expectations for stakeholders, and improved transparency in decision making and allocation of funding through the ICs. Identification and sharing of good practice across all ICs would improve engagement with industry and transparency in decision making.

The restriction to industry led applications stifles innovative research – a more mixed approach to partnerships would lead to improved knowledge transfer. Level of project funding and timescales could be reviewed to enable broader engagement and a larger variety of projects. In many of the ICs, there has been such a focus on infrastructure that the availability for project funding between industry and academia is limited.

Some types of projects (e.g. evaluation of research, or research areas with a perceived 'poor fit' with the original remit) appear to be excluded – it is important that the remit of ICs is flexible enough to adapt to changing research areas, staff turnover within institutions etc.

Identification of common elements within the 'innovation journey' may be useful in order to streamline support and measure success.

Further information is available from Professor Bryan MacGregor, Vice Principal Research & Knowledge Exchange (e-mail b.d.macgregor@abdn.ac.uk; tel. [redacted]), Dr Elizabeth Rattray, Acting Director Research & Innovation (e-mail: e.rattray@abdn.ac.uk, tel. [redacted])

21 June 2016

Independent Review of Innovation Centres Programme – Led by Prof Graeme Reid

Submission

Name :- Simon Bright
JobTitle :- Head of Research Services
Org :- Abertay University
Tel :- [redacted]
Email :- s.bright@abertay.ac.uk
Who :- Organisation
Confidentiality :- No
ConfidentialityReason :-

Q1 :- We note the original vision of the Innovation Centres was to create sustainable and internationally ambitious open-communities of university staff, research institutes, businesses and others to deliver economic growth and wider benefits for Scotland (SFC circular SFC/06/2012). We believe this vision is still current and correct, as the Innovation Centres can play a key role in facilitating collaborative research and knowledge transfer with key sectors of the Scottish economy.

Q2 :- We have sought to work actively with the Innovation Centres. For example, we recently hosted a joint OGIC/IbioIC workshop to develop research collaborations of the use of biotechnology in the oil & gas industry. Abertay was also one of the five universities participating in a Digital Health Institute university engagement event in May. It should be noted that much of our engagement with Innovation Centres has been during the last few months. It could be argued that Innovation Centres have been slower than might have been hoped in developing strategic links with universities. We would hope to see the development of these strategic links with universities accelerated

Q3 :- We believe that the Innovation Centres respond effectively to specific industry needs for immediate technical solutions. Where they are less effective is in engaging with businesses to develop long term priorities to help key sectors of the Scottish economy to adapt to major structural changes. For example, in relation to the oil and gas industry, we believe the continued competiveness of this industry could be enhanced through accessing the expertise within universities on human resources management and visualisation technologies, which could be used, for example, in risk modelling.

Q4 :- We note that there are examples of successful collaboration. Overall, these tend to be focused in collaborations to address specific technical issues. We believe that the Innovation Centres could play a wider role in developing sustained and

strategic longer term partnerships between universities and key sectors of the economy.

Q5 :- There are no specific issues we would wish to raise under this heading.

Q6 :- The Innovation Centres' vision to create sustainable "communities" of researchers and businesses to create sustainable growth is still relevant, and perhaps even more so than when the Centres were initially created. We believe the Centres can play major role in extending these communities. Much of their work has focused on delivery of technical solutions. Although this is to be welcomed, many of the large scale strategic issues which Scottish industry face require longer term solutions which bring together the expertise of a broad range of research disciplines. We believe that the Innovation Centres could play a more prominent role in facilitating this strategic discussion between universities and business.

Abertay University

SO/GB
20 June 2016

Professor Graeme Reid
Chair of Independent Review of Innovation Centres Programme
Scottish Funding Council
Apex 2
97 Haymarket Terrace
Edinburgh
EH12 5HD

Dear Professor Reid

INDEPENDENT REVIEW OF INNOVATION CENTRES PROGRAMME

Thank you for your letter inviting evidence for the Review of the Innovation Centres Programme. I am writing as Vice-Principal and Deputy Vice-Chancellor (Academic) for Abertay University. Abertay is a modern university with approximately 5500 students and 200 academic staff, with an ambition to be a centre of excellence for interdisciplinary research focusing on the delivery of practical solutions to business, society and government.

My comments on the questions referred to in your letter are attached.

I would be very happy to discuss these comments with you or a member of the Review team.

Yours sincerely

[redacted]

Professor Steve Olivier
Vice-Principal and Deputy Vice-Chancellor (Academic)

Enc

From the office of the Vice-Principal & Deputy Vice-Chancellor (Academic)

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1. Is the original vision for the Innovation Centres programme current and correct?
The original vision of the Innovation Centres was to create sustainable and internationally ambitious open-communities of university staff, research institutes, businesses and others to deliver economic growth and wider benefits for Scotland (SFC circular SFC/06/2012). This vision is still current and correct, as the Innovation Centres can play a key role in facilitating collaborative research and knowledge transfer with key sectors of the Scottish economy.

2. From your experience so far, are the Innovation Centres delivering against this vision?

Abertay has sought to work actively with the Innovation Centres. For example, we recently hosted a joint OGIC/IbioIC workshop to develop research collaborations of the use of biotechnology in the oil & gas industry. Abertay was also one of the five universities participating in a Digital Health Institute university engagement event in May.

It should be noted that much of our engagement with Innovation Centres has been during the last few months. It could be argued that Innovation Centres have been slower than might have been hoped in developing strategic links with universities. I hope to see the development of these strategic links with universities accelerated.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?
The Innovation Centres respond effectively to specific industry needs for immediate technical solutions. Where they are less effective is in engaging with businesses to develop long term priorities to help key sectors of the Scottish economy to adapt to major structural changes. For example, in relation to the oil and gas industry, the continued competiveness of this industry could be enhanced through accessing the expertise within universities on human resources management and visualisation technologies, which could be used, for example, in risk modelling.

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

There are examples of successful collaboration. Overall, these tend to be focused in collaborations to address specific technical issues. The Innovation Centres could play a wider role in developing sustained and strategic longer term partnerships between universities and key sectors of the economy.

5. How effective and proportionate has the oversight of Innovation Centres been?

There are no specific issues I would wish to raise under this heading.

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

The Innovation Centres' vision to create sustainable "communities" of researchers and businesses to create sustainable growth is still relevant, and perhaps even more so than when the Centres were initially created. The Centres can play major role in extending these communities. Much of their work has focused on delivery of technical solutions. Although this is to be welcomed, many of the large scale strategic issues which Scottish industry face require longer term solutions which bring together the expertise of a broad range of research disciplines. The Innovation Centres could play a more prominent role in facilitating this strategic discussion between universities and business.

21st June 2016

Professor Jonathan R Seckl
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Gary Bannon
Scottish Funding Council

Dear Gary

University of Edinburgh response to Reid Review of Innovation Centres

1. *Is the original vision for the Innovation Centres (ICs) programme current and correct?*
   The broad vision for ICs (from SFC IC brochure) is that they "blend academic creativity and invention with industrial insights of markets, customers, timelines, value and impact". This vision is still pertinent today, but much remains to be done to achieve it.
2. *From your experience so far, are the Innovation Centres delivering against this vision?*

Not uniformly:

- On academic creativity: DHI's portfolio of projects does not include many of our strongest research groups, yet there are strong translational research activities in medicine/healthcare in several Scottish universities. DataLab (although a comparative newcomer) shows deeper engagement, perhaps because it draws on the SICSA network and on the existing, mature innovation activity around data at Edinburgh. CENSIS has strong interactions with industry and academia in the West of Scotland, but these are weaker in the East.
- On markets: ICs have been excellent at growing awareness of their areas of application and in providing matchmaking services (relating interested companies to interested researchers). This is necessary but is not, of itself, sufficient to grow innovation. There remains a need to find better ways of following through once markets and matches are identified.
- On customers: This requires products to be produced as a consequence of IC activity. For many ICs, the product pipeline has been significantly slower to deliver than anticipated. The number of engagements with SMEs is greater than with larger companies but this inevitably results in small scale, shorter term projects with few big wins and a smaller scale of growth and innovation for Scotland.
- On timelines: there has been a slow start to their development, with challenges in finding and employing the right type of staff. There has also arguably been too much focus on building "bricks and mortar" rather than creating genuinely pan-Scotland innovation hubs, through understanding and exploiting existing landscape of, and opportunities from, University-company interactions. ICs inevitably add an additional layer between industry and universities and, with that, the cost in time of working through that layer. That cost is justified by the assumption that ICs stimulate key collaborations that would be slower to happen (or would not happen) without them. This is a balancing act – a lengthy partnership negotiation might be justified if the end result is of great impact – but our sense is that the current balance is towards lengthy negotiations rather than direct impact.
- On value: This comes to universities from ICs by stimulating our translational research in ways that align with our ambitions in research/education. ICs, however, have differing engagement strategies: DHI's aim (when at Edinburgh) was to draw away from university operation, which led to disengagement; DataLab is working more closely with universities (via SICSA) and, we believe, is generating value more rapidly for them for both industry and academia. It is interesting that several ICs have chosen not to be hosted by University or Industry, which potentially adds to costs.
- On impact: This comes to the commercial/public sphere from ICs by aligning with the aims of key organisations or sparking startups. Some ICs (e.g. DataLab) align directly through projects. For other ICs (e.g. DHI) it is harder to see the alignment but this may reflect the application areas.

3. *To what extent do the priorities of Innovation Centres reflect those determined by industry?*

   This question reflects a flaw in the inception of ICs. The unique ability of an ideal IC should be to identify key areas of impact that could not have been determined by industry, public sector or universities alone but can be identified via the deep cross-culture understanding that an IC provides. This is a complex landscape and in some cases industry drivers dominate while in others we are reliant upon university-driven innovation. Some have developed effective relationships with industry, others less so (or at least with only a small subset of industry). Each IC has a fundamentally different landscape in this respect. DHI has strong procurement potential (via NHS and other healthcare organisations) and strong research activity (in medicine and population health) with an industry base that is comparatively weak so we would expect its landscape to be constructed by understanding deeply the research base and using this as a driver to stimulate/create new industry activity. CENSIS and DataLab have more generic demand (data science and sensing and imaging needs) across all industry and public sector so it can range more freely but must pick winners by engaging with key university and public sector groups. Greater take up of IC expertise is needed, which requires more communication, outreach activity.

4. *How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?*

   It is too early to say, as the ICs have only been in existence for 3 years maximum. Good relationships are emerging e.g. IoT Boost projects, Informatics Ventures and DataLab, DataLab and CENSIS in the IoTUK joint initiative; some excellent work has been going on, typically around niche areas of knowledge/activity, rather than sector wide. The larger Scottish universities have strong innovation programmes, many of which pre-date the ICs (e.g. the AspeKT programme in informatics at Edinburgh, BioQuarter in Edinburgh) and which have been further stimulated by the focus on impact (RCUK and REF). They also have good connectivity into broader UK and international programmes (e.g. Farr, ADRC, Catapults, EIT Digital, etc) and to RCUK funded innovation activities (e.g. MRC's Proximity to Discovery programme). Edinburgh connects to all of these and balances its portfolio of research activity against the translational facilities they provide, as well as managing a collection of direct industry links and its own, internally supported innovation activities. We frequently act as a conduit between these activities (a recent example being the connection between DataLab and the EIT Digital European network which enables DataLab to participate in EIT projects via Edinburgh, the only Scottish node in the EIT network). There is the potential to engage more effectively with and lever other more recent RCUK pathways to impact and impact activities e.g. EPSRC Impact Acceleration Accounts, BBSRC Excellence with Impact for strategic programmes of scale.

5. *How effective and proportionate has the oversight of Innovation Centres been?*

   The original ethos of ICs was that each should, with a high level of autonomy, stimulate innovation in industry by connecting to our research base. Universities hosting ICs were encouraged to act as administrative hubs, with each IC's strategic direction set by an industry-focused board and with accountability ultimately to SFC. This has empowered ICs to develop their independence but it then follows that universities are encouraged to view them simply as one of a selection of independent entities through which to translate research. For instance, a research idea originating in Edinburgh with potential impact in healthcare might be supported via MRC P2D, EIT Digital, the DHI IC, the SMS IC or the DataLab IC. All of these are autonomous and only "joined up" via Edinburgh's own translational research strategy, which is (mostly) independent of that for any individual IC. So the push for autonomy has been effective but the price is to distance the ICs from university research strategy. There has also been little or no connectivity between ICs and little evidence of the sharing of best practice. There is a requirement to address this in future, and SFC oversight/leadership as to what is expected would be helpful.

6. *Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?*

   Sustainability is a key issue. The DHI demonstrates this. It has committed much of its SFC grant to sensitising industry and public sector to the market opportunities; matchmaking between researchers and industry; and building a product pipeline. However, it's pipeline is not operating strongly enough to generate significant income back to DHI; nor has it sufficient industry buy-in to survive on subscriptions. Several ICs have built a management, facility and operational structure that will incur significant costs going forward. The review may offer an opportunity to take an objective view across ICs, to form a strategy for sustaining the effort (either individual or collectively across ICs). Given the emerging role of major Scottish universities as hubs for innovation and technology transfer, we would hope that we could play a role in sustaining the effort that goes beyond simply granting autonomy to each centre.

   One section that has largely been missing from this particular innovation space has been significant engagement with SE. SE staff routinely sit on IT boards, but there has been little concerted effort from SFC, academia, SE, industry to work together across this space. This lack of coordination is to no one's benefit. The joint funding model of SFC supporting academia and SE supporting industry is attractive and synergistic, but requires effective engagement and timely delivery.

One of the recent success stories in Scotland has been that of research pooling. Some pools neatly interface with some ICs e.g. SICSA and DataLab. More could be done to increase interaction and collaboration between research pools and ICs.

ICs are very much in their infancy but there are already some encouraging signs of ICs working together, e.g. the recent submission of DataLab and CENSIS to lead the one-Scotland bid for a digital Catapult centre. SFC might consider ways to further encourage this.

The Innovation Centres did not just "appear" into an empty landscape. There had already been extensive work by Universities/Colleges working with, for example, European Structural Funds, to create innovation hubs based around University expertise and industry. The opportunity is still there to build on this existing activity, rather than spending significant development time setting up parallel activities to this existing work. Feedback for industry/company end users is that they would appreciate this. For example, the Construction Innovation Centre was widely known to have emerged from Napier University – where a great deal of industry-academia expertise still resides – so there has been confusion about the "location" of the CIC in Glasgow. The OGIC also does not appear to be exploiting effectively some of the industry-academic collaboration in Glasgow or Edinburgh in oil and gas knowledge.

A final point. Funding via SFC is directed at Universities and related educational bodies and thus only indirectly to ICs. Such quasi-commercial entities might benefit from a more commercial funding stream and ethos. Some hybrid of SE and SFC funding, with ICs as companies limited by guarantee, or equivalent, might bring a more industrial challenge and rigour to their operation. Indeed this approach is mooted for SMS-IC. This may have broader applicability as ICs move towards their more operational phases after the current set-up and intiation activities.

Yours sincerely,

Jonathan R Seckl, Vice Principal

Innovation Centres (IC) Review

The University of Glasgow (hereafter referred to as the University) is the second largest academic institution in Scotland employing 6000 staff, teaching > 25,000 students and generating a turnover in excess of £500m per year. Annual research income is in excess of £180m and Glasgow is a member of the prestigious Russell Group of research-intensive universities.

The University led the proposals for and development of two of the eight Innovation Centres (ICs) namely Stratified Medicine Innovation Centre (SMS-IC) and the CENtre for Sensor and Imaging Systems (CENSIS) and is also the West of Scotland Hub for DATALAB. For SMS-IC and CENSIS Glasgow is the administrative hub for both organisations.

The written evidence below is submitted on behalf of the University Senior Management Group and selected senior professorial staff involved with the IC programme. ***Please note that feedback below reflects the differences that exist between each IC's activities, collaboration models, progress and the experience of engagement. In consequence the feedback ranges from overwhelmingly positive in the case of SMS-IC to mixed with CENSIS and DATALAB. For example, although SMS is still in its infancy, and has challenges to overcome, its impact has already been transformative on Scotland's position as a global leader in precision medicine. The IC has also directly led to the creation of a new and vibrant life sciences cluster at the Queen Elizabeth University Hospital, with the potential to transform the local, national, and UK economy.***

General Comments
The University recognises the need for new ways to provide stronger translation of academic research to business for economic growth and therefore welcomed the IC initiative. In summary Glasgow has the following general observations on the IC programme:

1. We believe that the original vision that *"Using the Scottish university infrastructure, human resources and research excellence as a platform for collaborations across the whole of Scotland, Innovation Centres will create sustainable and internationally ambitious open communities of university staff, research institutes, businesses and others to deliver economic growth and wider benefits for Scotland"* is still relevant and correct.

2. Progress to date with the ICs is seen as successful but the University recognises that it is too early in the evolution of the IC initiative to quantify their impact given that developing and executing collaborative R&D projects takes time and companies must then invest further funds beyond the IC programme to develop and launch product.

   The University has participated in a number of projects with ICs to date and these include:

Innovation Centre	Number of Projects
SMS-IC	11
OGIC	2
DATA LAB	3 (2 pending)
CENSIS	5

   The above projects have enabled new relationships to be established between the University and Scottish-based companies. It is expected that this activity will continue to grow over time.

3. The ICs are succeeding in driving engagement between academia and business with a number of initiatives highly complementary to our University's own business development activities. However, with the exception of SMS-IC, the speed and scale of the IC activity remains modest. It is expected that activity will continue to accelerate as the volume of projects/collaboration increase and early project partners start to launch new products and/or services.

4. The measurement of success for the ICs will ultimately be through the number of new products and/or services they help to create, wealth creation and how each IC performs against the projections contained within their original proposal approved by the SFC. Delivering this aim is a 10 year journey. We strongly recommend that a long-term view needs to be taken, tempered by outcomes of this review.

5. ICs have encountered challenges in establishing legal frameworks for projects. These challenges have arisen from both sides of the academic-industry partnership. We recommend flexibility from the ICs over use of their standard contract and collaboration models with university and industry partners to expedite the formation of new relationships and reduce transaction times.

Outlined below are specific comments related to SMS-IC, CENSIS and DATA LAB. These comments have been gathered from consultation with the University's senior academic staff.

Stratified Medicine Scotland Innovation Centre (SMS-IC)

The Stratified Medicine Scotland Innovation Centre (SMS-IC) is already delivering significant value in line with the original vision for the IC Programme. The first phase has been completed (infrastructure and successful operations) and clear plans are in place for the next phase, which will deliver sustainability and wider economic growth through the creation of the Scottish Precision Medicine Ecosystem. Specifically:

- The SMS-IC is already harnessing the research excellence, infrastructure and human resources of four Scottish Universities (Glasgow, Edinburgh, Aberdeen and Dundee) in a strong and productive collaboration with NHS Scotland, large and small industry (in particular Aridhia and Thermo Fisher, but also more broadly), the Chief Scientist Office and Scottish Enterprise, to create the Scottish Precision Medicine Ecosystem and position Scotland as a global leader in precision medicine.

- The partnership of academic, NHS and industry collaboration within SMS-IC is very strong and real. SMS-IC has catalysed a true culture change, and is now very much embedded in both academic and industry engagements. The strength of the collaboration resulted in the 2015 Life Sciences Award for Innovative Collaboration by Scottish Enterprise.

- The SMS-IC has developed a business model enabling academic/NHS/industry collaborations to be formed around specific opportunities within the precision medicine marketplace. These collaborations are creating precision medicine products, services and technologies aligned to global market demand. We have a number of programmes underway led by SMS-IC that are already delivering economic growth, opportunity and market confirmation of our strategy and business model, including:

  - Using the SMS-IC informatics platform to host a pan-European adaptive clinical trial programme for Alzheimer's drug development. This involves 13 European countries and 35 collaborative partners including the majority of the biopharma industry. The initial programme is 5 years and Euro 64M with an expectation that significant additional funding will be available from industry partners. SMS has an opportunity to play a cornerstone role in the informatics discovery and delivery over the next decade attracting funding and opportunity to Scotland (http://ep-ad.org/).
  - The SMS-IC informatics platform is enabling collaboration between the University of Glasgow, NHS Scotland, Philips Healthcare and Aridhia to adapt a predictive physiological algorithm for the management of traumatic brain injured patients in ICU to a precision medicine software product that can embedded within Philips ICU products and marketed globally. Funding drawn in from Innovate UK to deliver phase 1 product with an expectation of further industry funding during 2017.
  - A national and international precision medicine programme to improve clinical services and undertake ground-breaking clinical research for MS patients involving NHS Scotland, Universities of Glasgow and Edinburgh, Biogen, and academic partners in the US and London. In common with all our programmes, this attracts significant external funding and the opportunity to build a leading position for Scotland.

- The location of the SMS-IC at the new Queen Elizabeth University Hospital (QEUH) has been the catalyst for significant development with industry, creating a new and vibrant life sciences cluster at the hospital campus. The presence of SMS-IC on the University of Glasgow's Innovation Floor at the QEUH, has led the Precision Medicine Catapult (PMC) to locate the PMC Scottish Centre of Excellence adjacent to SMS-IC, and this is already attracting interest from companies (including overseas companies) who wish to collaborate with the SMS-IC.

- The SMS-IC is actively collaborating with stakeholders across Scotland, the UK and overseas. In the first instance, these stakeholders are NHS Scotland, academic leaders, global thought leaders in precision medicine, large Pharma, Innovate UK, and government. The initial focus has been to position Scotland with the credibility, technical capability and capacity to deliver precision medicine in a global market, using a limited number of chosen exemplar projects to evidence this. It is anticipated that benefits for local SMEs will arise further downstream, particularly as part of the supply chain for clinical trials and diagnostics.

- The SMS-IC was set up as an industry-focussed and industry-led innovation centre, and it has maintained this ethos throughout. SMS-IC is helping to address the very significant economic problem of rising healthcare costs, which are rapidly becoming unaffordable for the NHS, and the economic challenges for the pharmaceutical industry of identifying and bringing new medicines to market. The SMS-IC is using the triple-helix partnership of academia, industry and NHS to address these challenges using innovation to benefit the NHS and Pharma, create significant opportunities for Scottish SMEs, and ultimately benefit patients.

- The SMS-IC is now positioned as the focal point of the Scottish Ecosystem for Precision Medicine, and will act as a one-stop-shop for marketing Scotland's strengths in Precision Medicine and delivering services and products to the market.

- SMS-IC was set up as an industry-focussed and industry-led innovation centre, and it has maintained this ethos throughout. A growing number of SMEs are already benefiting and the

SMS-IC aims to engage more actively and broadly with life sciences SMEs as it enters the next phase of its activity.

- The SMS-IC is now positioned as the focal point of the Scottish Ecosystem for Precision Medicine and is acting as a one-stop-shop for delivering Precision Medicine services and products to the market. This is designed to meet the needs of industry, notably big Pharma, wishing to do business with Scotland – and ensure Scotland is easy to engage with, and is agile and effective.

- The SMS-IC is actively responding to the skills needs of this new industry (precision medicine), and has set up a unique MSc degree programme in Stratified Medicine & Pharmacological Innovation, which has involved five Universities and was designed with industry. All students are offered a placement opportunity with industry, and this is already benefitting Scottish SMEs. The third cohort of students will graduate this year, with close to 100 students having completed the programme over its three years. It is planned that the programme will be reviewed at this stage to ensure that graduates continue to meet the needs of industry, and to take feedback on what might be improved. The success of this programme was recognised by the 2015 Herald Higher Education Award for Employer Engagement.

- The relationship between the academic and industry partners of the SMS-IC was the initial catalyst for the creation of the Innovation Centre, and this relationship has grown in depth and breadth since the IC was created.

- Challenges which remain, for both the academic and industry partners of SMS-IC, include:
    - Agility and the constraints of operating as a multi-partner consortium: SMS-IC is currently undertaking an options appraisal of different organisational structures
    - Accessing funding from Scottish Enterprise (SE). Although SE has been an active participant and strong supporter of the SMS-IC, as a funder of last resort it has had very limited impact on the ICs pressing need for infrastructure funding at a time when there is a recognised global race to implement precision medicine. This is also compounded by SE's policy of only funding SMEs, which limits their ability to support SMS-IC at this crucial early stage.

- SFC has been very supportive of the SMS-IC, providing guidance and oversight, providing an appropriate balance between freedom to operate and accountability. It is an active participant, with Observer status, at SMS-IC Board meetings. Their funding of the MSc in Stratified Medicine & Pharmacological Innovation has been hugely helpful in attracting students to this new programme designed with industry to meet the industry skills requirements of precision medicine.

- The significant in-kind support of the University of Glasgow as administrative lead for the SMS-IC has been crucial in the overall governance and management of the IC – including human resources/recruitment, financial, procurement, contractual, general management and legal.

- It is important that the evolution of the Innovation Centres' objectives and metrics are taken into account as part of the assessment, and that the assessment of performance is not simply a tick-box exercise.

- The current organisational structure limits SMS-ICs agility with regards to contracting, largely due to the constraints of operating as a multi-partner consortium with unlimited liability for all parties: SMS-IC is currently undertaking an options appraisal of different organisational structures, and SFC's guidance and support in this regard will be important for future success.

- It was envisaged from the outset that SMS-IC would become a company, and a milestone for a review was put in place. Such a company structure is also desirable to increase the agility of SMS-IC (e.g. speeding up contract negotiation) and to limit the liability of the consortium partners (currently unlimited). As described above, SMS-IC is currently undertaking an options appraisal of different organisational structures. However, the ability of any new structure to continue to benefit from SFC funding at this early stage is crucial, and by way of a specific example it is important to ensure that SMS-IC is supported and continues to flourish until it is fully self-funding. This is likely to be a significant challenge for all Innovation Centres.

CENSIS

CENSIS operates from the INOVO building in the centre of Glasgow. Its offices accommodate its staff, laboratory/engineering resources, technology demonstrator and hot-desking for drop-in activities with industrial, academic and start-up collaborators. CENSIS is focused on funding collaborative projects, mostly between HEIs and industry, in response to industry-led need and in the mid-TRL levels. These selection criteria have been applied robustly by CENSIS and the University is aware that it has led to some frustrations and disappointments within academic partners.

CENSIS' current projects are in the environmental, offshore, manufacturing, healthcare and defence sectors. These involve seven HEIs and research centres engaged with 32 companies. CENSIS has supported the design and execution of these projects with its business development, engineering and project management teams. Feedback from companies indicates that these resources, not normally available to support conventional academic/industry collaborations, make a significant difference to project quality, execution and closure. The University is aware that from the outset CENSIS' governance board embarked upon a strategy to build to industry-led collaborations that would be game-changing in scope and impact. This has proved more challenging than expected for CENSIS as the Innovation Centres are unable to fund industry directly. Nevertheless after a long gestation, funding for the £6M MIRAGE project was approved involving a partnership between a number of SMEs and the University which builds on the capital infrastructure funded at Glasgow when CENSIS was established; additional such projects are in the pipeline.

The University welcomes CENSIS's investments with multinational company contributions in new infrastructure such as the Connected Devices Centre and the Low Power Radio Network which is making a contribution to our Smart Campus initiative. We also support their engagements with the Digital Catapult and their involvement in discussions around a future Sensors Catapult, which we expect as a result to have a strong Scottish component.

The University has been highly supportive of CENSIS. Issues have arisen with finance, contracting and HR functions but with flexibility and cooperation these have been resolved. Glasgow seconds a Contract Manager one day/week at the CENSIS premises to assist with the rapid development of collaborative agreements.

The University is aware that CENSIS is currently undertaking a sustainability modelling exercise and is aware that given the low level of R&D in the corporate environment in Scotland, public sector

funding will be needed to sustain the Innovation Centres in the medium-term with migration to a mixed-economy model being the ultimate goal.

- The internal experience and perception of CENSIS from academic staff within the University's College of Science & Engineering is a mixed. Academic staff feedback is that CENSIS can be a difficult organisation with which to engage and greater communication is required on how to initiate projects.

- Equally CENSIS is recognised as having devoted considerable time in nurturing and initiating new industry engagement with universities. This is evidenced by the projects in process and those completed. However, CENSIS only reaches out to universities when a project is at the stage of seeking an academic partner.

- Those projects which have been funded are seen as bringing valuable relationships and knowledge transfer for the academic groups engaged although the extent of this is still perceived as being modest

- Project funding application paperwork and project management is seen, in some cases, to be disproportionate to the scope and scale of the project being funded which has led to tensions. It is anticipated that as CENSIS becomes more experienced then more measured approaches will be adopted.

DATALAB

- The experience and perception of The DATALAB IC from academic staff within the University's College of Science & Engineering has been mixed. It is acknowledged that there have been some initial problems which DATALAB have acted upon and the feeling is that it is starting to achieve its aims in facilitating greater industry-led interaction with universities.

- MSc, EngD and PhD funding programmes are regarded as a positive development and it is believed that they will facilitate new/useful links with industry on which further collaborations can be built

- Specific feedback from the University's academic staff with the DATALAB staff through its formation period to date reflects the statement above and includes:

    - The application process for project funding is seen as being unclear at present and it is suggested that a more structured approach is devised with panel deadlines clearly advertised on the website.

    - Greater engagement on working with academia to identify and develop proposals is encouraged as this will build stronger relationships and likely reduce lead times from conception to execution.

    - The level of project management bureaucracy is seen to be disproportionate, a belief which is shared by the industry partners, especially given the small values involved.

    - Contract negotiations combined with project management bureaucracy have introduced delays and additional administrative costs. It is suggested that DATALAB adopt a more standardised and flexible contract approach as a mechanism to minimise transaction costs and reduce time to contract.

- The location of DATALAB staff in Glasgow is well received with the connectivity enabling useful interactions and introductions to third party organisations already being made. A number of staff reported that they would like to see more events based in the 'Hubs' e.g. workshops with companies, Tech meetups. Physical co-location is seen as a positive attribute.

Evolution or Future Direction of the IC Programme

1. The evolution of the IC model is going to take time. Each IC will develop in a different way, with different structures, reflecting the nature of each sector and the corporate needs/opportunities therein. This means greater flexibility and creativity in the way ICs are funded to enable them to transition to new structures for growth/sustainability is going to become increasingly essential as the ICs progress through their start-up phases. For example, it might be that in some ICs, it might be considered appropriate to put resources into the relevant HEI and, where necessary SE should be empowered to do so if and when this would lead to the best commercial or innovative outcome.

2. As part of the evolution of the ICs, the funding landscape in Scotland must also evolve so that grants for companies to participate in IC projects are seamlessly available to allow the acceleration of participation in an IC programme. This is crucial for the transition of new products/services into the market. For example, this may require 'grant products' currently residing within Scottish Enterprise becoming part of the IC resource.

3. The building of strategic partnerships with large multi-nationals with a strong commitment to open innovation is an activity that the ICs should develop. Engagement with these organisations can bring significant benefits, ranging from insight into global market opportunities to the co-development and early adopter customers for IC enabled product opportunities.

Independent Review of Innovation Centres Programme – Led by Prof Graeme Reid

Submission

Dear Professor Reid,

Some notes here in this email for your Independent Review of Innovation Centres Programme. Thank you for the invitation via Gary Bannon to contribute individually. I am Head of Research at The Glasgow School of Art and an *ex officio* member of Universities Scotland Research and Knowledge Exchange Committee.

Our engagement with the Innovation Centres

The Glasgow School of Art (GSA) is a core and founding partner of the Digital Health Institute (DHI), and a signed-up member of the Construction Scotland Innovation Centre (CSIC). We were founding members of the unsuccessful proposal for a textiles centre, that led in the end to the Textiles Futures Forum. We were involved in the development groups towards a centre for Creative Industries, and remain very committed still to developing an appropriate formation for Creative Industries through the flagship Innovation Centres Programme to support this identified area of strength within the Government's Economic Strategy.

Rationale for the ICs Programme

We understand the ICs intent to deliver for Scotland a strategic, 'step-change' in HE business engagement (representing more or a partnership) and a contribution to strategic and inclusive economic growth. Models to propel the IC enterprise in Scotland were/are the Innovate UK Catapults and German Fraunhofer Institutes.

ICs and wider landscape for innovation support in Scotland

Perhaps not seamlessly integrated. Scottish Enterprise were influential (arguably too much so, given that they did not contribute significant funds) during the application and set up process. SFC relied on them heavily to lend innovation support knowledge. But colleagues have complained of tensions in the system. SFC viewed as 'not sharing' their database of supported companies (I don't know how true that is). SE staff incentivised to promote SE's own 'products' (proof of concept grant etc.). Closer links with the SFC's generic KE and innovation support to HEIs. The ICs are well understood by universities: most if not all are involved in at least one. Support probably varies depending on centrality of involvement.

Criteria for support for projects within ICs

There is a preference for companies to invest their own cash in the projects submitted. Some of those seeking to collaborate, however, can't afford to spend

much (e.g. social care organisations). Innovation support generally predicated on usual set of economic impact measures – jobs created or safeguarded, value of IP, increased sales, profits, turnover etc. This can lead to slightly contorted justifications, when there's a research interest, and expertise to match in the HE sector, that doesn't map on to such indicators perfectly.

Benefits to partners involved

At this stage the reportable KT impacts are less than might be expected, because the major impact has been receipt of significant funds from SFC – but we can't report that income back to the SFC in the KE Metrics (and our HESA HEBCI stats have to match the SFC ones). It remains to be seen how long term and strategic the relationships become, and the non-SFC income to us is a fraction of the SFC income. Our role in DHI has probably changed the sector's perception of GSA and its capacity to support innovation.

Future evolution of the ICs

Developing models appropriate to other economic sectors that don't lend themselves to the current ICs – e.g. Creative Industries, Tourism (lots of microbusinesses, geographically dispersed etc.). The solution could be availability of funds (greater and more flexible than an Innovation Voucher £5k) for collaborative projects, rather than creation of big infrastructure. Solutions for Creative Industries at the service of the Government's Economic Strategy are within reach as the commitment from Scottish HEIs and stakeholders in the domain is strong.

We see GSA's expertise in applying design thinking to innovation in business, as demonstrated effectively and to plan for DHI, as a strength that can be shared across the range of ICs in the next phase of the programme. This 'cross-selling' amongst the ICs could be an indicator of maturity in the IC model.

We meet Ekos on Tuesday 21st June to feed into the review process and will build on some of these notes then. I hope that you see some interest here and that some of these points chime with those received from others.

With best wishes for your work ahead,

Ken Neil

Professor Ken Neil MA(Hons) MFA PhD PGCert FHEA

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Independent Review of Innovation Centres Programme – Led by Prof Graeme Reid

Submission

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Who :- Organisation
Confidentiality :- No
Confidentiality Reason :-

Q1 :- The University of Stirling is fully supportive of the original vision for the Innovation Centres programme and believes that it remains current and correct.

Q2 :- We recognise that it is still relatively early in the life cycle of the Innovation Centres programme and so any judgements on their performance must be set in that context. We believe that the Innovation Centres are generally making good progress towards delivering the original vision and are increasingly offering a range of collaborative knowledge exchange and research activities to a broadening academic and business community. The Scottish Aquaculture Innovation Centre, for example, with which we are most closely familiar, is now delivering a strong and expanding programme of research and development projects, led by industry need and developed through facilitated discussions between the research base and companies. The scrutiny of this programme by an international scientific advisory committee is, we believe, and example of good practice. Across the Innovation Centres programme as a whole, we question whether the balance of activity between developing programmes of collaborative funded activity and developing the infrastructure of the Innovation Centres themselves has been appropriate and we urge that enhanced attention is given to the former as the Centres continue to develop and mature.

Q3 :- Industry engagement in, and leadership of, the Scottish Aquaculture Innovation Centre is strong and, we believe, an exemplar for the whole programme. This seems also to be the case across the programme more generally, although we have less direct experience of this. Inevitably, industry concerns are primarily with relatively short term, already identified issues and challenges and we believe more could be done to challenge both the business and research communities to engage in longer term foresighting to identify emerging issues and opportunities for innovation. In terms of skills, we recognise the very substantial need to continue to support the development of the future workforce for existing and emerging sectors. Some Innovation Centres are playing a modest role in this and could undoubtedly do more,

but we believe this issue is much broader than the remit for the Innovation Centres programme. Their role in skills development should continue to be focused within the context of their collaborative R&D programmes (e.g. Masters and PhD projects as part of Innovation Centre programmes).

Q4 :- There is a clear and pressing need for simplification of the innovation support system within Scotland. Innovation Centres should be an integral part of that system and some good connections have been made with other agencies and organisations, such as Interface. More attention is required to this area, however, as it seems that Innovation Centres have largely established themselves as additional rather than integrated organisations in the landscape. This creates additional complexity for both business and academic interactions. At the individual project level, however, business and academic relationships are undoubtedly being enhanced by the Innovation Centres.

Q5 :- As we have already stated, the University of Stirling has always strongly supported the vision for the Innovation Centre programme. Perhaps inevitably with a new venture of this type, however, we do not believe that the operational implications of the balance between industry leadership, freedom to operate and accountability for public funds were fully though through by the Funding Council in establishing the programme. This has created some tensions between the Innovation Centres and their host universities which has unfortunately diverted time and energy into resolving those at the expense of project development. Collectively, we are continuing to work through those issues but there is, we believe, an urgent need for clarity and common, agreed approaches around the operational guidance for Innovation Centres.

Q6 :- A programme of this nature cannot deliver the fundamental change in culture and economic impact which is sought within a five year timespan. It is imperative that clear, detailed commitment is made to long-run public sector financial support as the platform for continuing the development of the programme so that the sustainability of the endeavour can be properly mapped out and planned. We would also re-iterate the need for improved integration of the Innovation Centres, with the research base and with the enterprise agencies and other innovation support organisations. We believe that a closer alignment between Innovation Centres and their host universities in terms of operational practices would deliver significant efficiencies (utilising the universities' infrastructure and processes as a resource and thus avoiding duplication of expense and effort) without compromising the industry leadership of the Innovation Centre programme. It would also, we believe, further enhance business and academic relationships through closer partnership working.

UNIVERSITY OF STRATHCLYDE

Is the original vision for the Innovation Centres programme current and correct?

Scotland's economy is still facing the same challenges that it was at the time the Innovation Centres Programme was launched, so we consider that the original vision is very much still valid.

2. From your experience so far, are the Innovation Centres delivering against this vision?

It is important in responding to this question to stress that the University of Strathclyde has deep involvement and a leadership role in some ICs – for example we are the admin hub for, and host, IBioIC and we have very recently agreed to become the admin hub for DHIC. For other ICs such as OGIC, CENSIS and DATALAB, Strathclyde has participated significantly (and will continue to do so) in funded projects and programmes with industry partners. Our institutional approach is to try and engage with all the ICs – for example we organised a meeting between SAIC and potentially relevant academics and researchers from Strathclyde in order to try and help the ICs understand relevant Strathclyde strength - but we still have very limited exposure to some of the other ICs and no funding from them so it is difficult for us to generalise

It is also important to stress that we would still consider the ICs Programme to be at a relatively early stage despite the first "wave" of ICs coming to the end of their initial funding agreements and so our response should also be tempered by this.

With reference to IBioIC which is the IC with which we have the longest and closest relationship – as the admin hub and as the site of much of the relevant academic capability/ leadership - we consider that the IC CEO and his team have engaged widely within Scotland with both the company base and the research base (including but not limited to HEIs). We feel that this has been reflected in the spread of projects and initiatives that have been funded - of the 11 major industry-led IBioIC projects, 5 separate universities are engaged across the whole of Scotland and if the PhD studentships and Feasibility Projects are included 2 more universities and 2 public sector research establishments are also involved. IBioIC has a clearly defined project review process which ensures that applications are reviewed by independent individuals from both of IBioIC's scientific and commercial advisory boards (see Appendix 1). Together with the wide distribution of funding, this substantiates that IBioIC is working across the whole of Scotland in a transparent and non-parochial manner and is collaborating with relevant stakeholders on funded projects that appear to be in line with the ethos of solving industry-defined problems and co-creation of innovation opportunities for growth. We would further highlight the training work that IBioIC has initiated through the development of PhD, MSc and HND programmes, which can ensure that the future Industrial Biotechnology industry sector can access the required skills at all levels to be successful.

With reference to DHIC, although Strathclyde is set to become the admin hub from the 1st July 2016, we are already working closely with the DHIC Board and management team to assess its project review processes with respect to the current strategic priorities of the Scottish Government, National Health Service and individual businesses in the Digital Healthcare sector.

Without visibility on the detailed workings and activities of the other Innovation Centres it would be wrong to comment beyond the following observations:

- As noted above we have had good engagement with OGIC across several innovation projects and initiatives – OGIC would appear to be conducting itself in line with the vision and there is clear evidence of escalation of relationships with industry partners through our OGIC-funded projects;
- We have encountered rather more teething problems in finalising our funded projects with CENSIS and DATALAB but the situation is again improving and we think this reflects the increasing experience on both sides;
- We have also been particularly pleased with the levels of communication and transparency from the Aquaculture IC (SAIC) – although we are only a very modest participant in its work, SAIC has made a real effort to be up-front about what it is doing, why it is doing it

and the impact of its work. So again, SAIC would appear to be working in line with the vision.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

This would appear to be a question that only industry can answer with authority.

In respect of the ICs where we are involved directly in the governance and operations, there are clear mechanisms for industry priorities to be factored into the ICs work. For example with IBIoIC both the Scientific Advisory Board and the Commercial Advisory Board (which play a large part in selection of both R&D themes and individual projects) have members from academia and industry – see Appendix 1. The Advisory Boards draw on IBIoIC's membership model which sees 30 Core Industry member companies of all sizes in IBIoIC's 4 thematic areas of Health, Industrial, Agriculture and Marine. Overall we feel that the membership model, which does not exclude IBioIC from working with non-member companies, provides a more sustained engagement between the industry voice and the IC planning process and it is in line with our own approach to Industry Centres (see section 4).

Again it would appear from our interactions with other ICs that OGIC and SAIC (at least) have similar approaches to adoption and actioning of shared industry priorities within their programmes.

It might be useful if, in future the ICs were explicitly charged with communicating intelligence they gather from business back to their university stakeholders in order that universities can anticipate future areas of potential activity across all their activities e.g. research, KE (including CPD), teaching etc . This intelligence could be around potential research areas of interest or future skills required.

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

This is a very general question. It may be more appropriate for Strathclyde to say that as a University we have worked consistently for several years to engage at all levels with industry (local, national and international – large and small) to factor industry challenges and innovation opportunities into our institutional research strategy. Since 2009, Strathclyde has catalysed an unparalleled series of investments in strategic Industry-led Centres. The Advanced Forming Research Centre ("AFRC") launched in 2010 in partnership with Rolls-Royce, Boeing, Mettis Aerospace, with £20M of investment from Scottish Enterprise is a model for Industry-led R&D collaboration at Technology Readiness Levels 4-7. The success of AFRC in turn led to its selection as one of the nodes of the UK Catapult in High Value Manufacturing ("HVM") and over £20M of Innovate-UK programme funding. We have replicated this approach in several other industry sectors – Power Networks Demonstrator Centre (PNDC), Centre for Continuous Manufacturing and Crystallisation ("CMAC") and, more recently the Advanced Nuclear Research Centre ("ANRC"). In each case the Industry Centre is typically complemented by major R&D programme grants and Centre for Doctoral Training (CDT)-type programmes, usually won competitively.

Wherever possible we engage with academic partners from Scotland and beyond through relevant research pools (e.g. Scottish Research Pool in Engineering ("SRPE") in the case of AFRC, Energy Technology Partnership and SRPE in the case of PNDC) or via bespoke collaborations – CMAC grew from an EPSRC-funded Centre for Innovative Manufacturing consortium with Glasgow, Heriot-Watt and several English universities. The concentration of critical mass in relevant R&D has in turn helped attract Catapults (e.g. the HQ of Offshore Renewable Energy, the Scottish node of Satellite Applications), Innovation Centres, Fraunhofer-Centre for Applied Photonics, etc.

We would like to think that some of our experience gained from the above journey played a part in the SFC's development of the IC concept in the first place and we have very much welcomed the additionality that the IC Programme has offered to the Scottish Innovation landscape.

We do however accept that the Innovation support landscape in Scotland has become increasingly complex in recent years and we are optimistic that the Scottish Government's simplification agenda for Innovation support will be the catalyst to a more widespread step-change in the relationship between business and academia.

5. How effective and proportionate has the oversight of Innovation Centres been?

As noted at the time SFC launched the ICs Programme there was always liable to be some risk as a result of the need to allow individual ICs sufficient autonomy, at the same time as recognising that the ICs Programme is a publicly-funded initiative that is administered via individual universities.

On the whole we feel that the level of oversight has been proportionate with perhaps one or two exceptions where it has been insufficient. With hindsight the SFC may have been more directive to the recipients of IC funding in relation to the levels of governance and oversight that were appropriate in setting up ICs. We also think that with hindsight and with reference to our comments in section 2 above, SFC could have been more directive about the basis or bases on which ICs should fund and manage projects in universities i.e. insisting on harmonisation of practice from the start especially in relation to level of funding interventions. However we feel there is little merit in dwelling on these issues as they are largely resolved now.

The Innovation Centres Admin Hubs Group ("ICAHG") was set up to "provide a forum for the universities who act as administration hubs for the ICs to share emerging good practice and assist the SFC and the ICs in their development and review of the portfolio of ICs", and is currently chaired by Dr David McBeth (our Director of RKES). ICAHG has assisted in establishing better guidance and sharing of good practice among the entire IC community (SFC, the universities, the IC leadership etc). We will continue to support ICAHG in having this type of role at least until the IC system is fully "mature".

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

- Firstly it is important for us to affirm that we consider the Innovation Centres Programme should continue as a long-term strategic intervention. In our view there is no need *per se* for the ICs to become independent organisations, as is demonstrated by the harmonious and productive working relationship between IBioIC and Strathclyde.

- We would recommend that all the ICs be given the opportunity to be re-invested by SFC at the end of their first funding period. In doing so, the SFC should test and give serious consideration to the operations and business models in use – with reference to conclusions about good practices from Prof. Reid's Review - prior to re-investing in each IC. SFC should potentially increase its investment in those ICs which have already proven that they are delivering the vision and enhancing innovation in Scotland – by a combination of performance against their KPIs, demonstration of impact, demonstration of satisfaction from industry and HEI stakeholders and of course whatever else is concluded from Prof Reid's Review.

- In relation to the positioning of the ICs within the innovation *funding* landscape we consider that the ICs should have an explicit role in deploying their collaborative funding to escalate innovation activity towards larger sources of funding e.g. Innovate UK (including Catapult), European innovation funding, etc.

- We agree that different ICs may adopt different models in response to the industry sectors that they address. However, we feel strongly that ICs should be differentiated as creating longer term and deeper relationships with companies/public sector bodies, as we hope IBioIC will continue to do, rather than operating in the same space as organisations and products such as Interface, Knowledge Transfer Partnerships, SFC Innovation Vouchers etc.

- Finally, we think that it is important for a number of reasons for the IC's to have increased profile and visibility beyond Scotland. The recent awards of "Additional Sponsorship" from the EPSRC to various universities in Scotland, targeted at Catapult engagement, were only extended in terms of eligibility to IC's once Strathclyde raised the question with EPSRC. It is important that as the UK Green Paper's recommendations about UKRI start to be implemented we ensure that the IC's are clearly identified as part of the UK innovation landscape even though they are physically located and primarily funded in Scotland

Appendix 1: Scientific and Commercial Advisory Boards of IBioIC

Scientific Advisory Board

Academic Members	**Industry Members**
Prof Derek Stewart, James Hutton	Dr Ian Archer (Chair), IBioIC
Pro Dominic Campopiano, Edinburgh	Mr Ted Chapman, GSK
Dr Nick Tucker, Strathclyde	Dr Reubne Carr, Ingenza
Dr Michele Stanley, SAMS	Dr Alan Kennedy, Diageo
Dr Nik Willoughby, Heriot Watt	Dr Douglas MacInnes, MBL
Dr Ian Watson, Glasgow	Dr Ian Hodgson, Fujifilm
	Dr Eric Whale, CelluComp

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	Jim Laird, 3f bio
	Charlie Bavington, GlycoMar
	Andy Gunn, GSK

Sarah Petrie (chair & observer)

Independent Review of Innovation Centres Programme – Led by Prof Graeme Reid

Submission

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Who :- Organisation
Confidentiality :- No
Confidentiality Reason :-

Q1 :- The influence of Innovation Centres is developing as was originally envisaged and we recognise that these new structures require time to mature and develop fully. Whilst the relationship of Innovation Centres with larger commercial partners seems well developed there does appear to be further opportunities to engage with SME's who because of their small size may find it difficult to resource the interaction. As a university with strong aspirations to be at the heart of Scottish Innovation and economic growth we have on occasion felt hampered by our geographical remoteness from some of the ICs. We would welcome routes to enable us to showcase our work and for our staff to interact more fully with ICs.

Q2 :- We have already hinted at potential geographical issues and will continue to seek ways to constructively interact with ICs. The ICs have succeeded is in the delivery of a range of high-quality conferences, expos and technology showcases – the IBioIC annual meeting is an exemplar. These meetings have brought together a wide selection of stakeholders and demonstrated clearly to SMEs attending that universities work well with industry. Some ICs have clear calls seeking support to solve specific problems. We would encourage ICs to reflect further on how they can support translation of University expertise and IP into economic value for Scotland ie how they pull KE from Universities alongside pushing industrial question out.

Q3 :- As one would hope, ICs reflect the priorities of a number of important global industries and it seems realistic to expect benefits for the Scottish economy. Industry led projects are variably well expressed but many of them are indeed challenging and stimulating.

Q4 :- In part. There is a mixture of behaviour. Data Lab and OGIC are firmly engaged in managing the relationship between companies and Universities.

Q5 :- The Boards of the ICs are varied but each is different. Due to the timing of ICs being announced all the ICs have slightly different structures and use different

management processes and each IC appears to use a different agreement style for their business with companies and Universities. There is an opportunity to a more uniform approach.

Q6 :- St Andrews is strongly committed to developing a Science Innovation Park at Guardbridge which will support translational activities for ourselves and other major stakeholders. We aim to be major contributors in the areas of Advanced Functional Materials, Big Data and Sustainability all of which we anticipate will be important contributors to the Scottish Economy. We would welcome discussions with SFC, ICs and SE on how we can collaborate to deliver this vision most effectively for Scotland and St Andrews.

Independent Review of Innovation Centres Programme – Led by Prof Graeme Reid

Submission

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Confidentiality :- No
Confidentiality Reason :-

Q1 :- The University is wholly supportive of the original vision behind the Innovations Centres, which we understood to be about identifying the needs of industry, driving innovation into industry and facilitating cross company and university interactions. Our interactions with the Innovation Centres have been through roadshows that we have initiated to bring the Innovation Centres to clusters of institutions within the North East of Scotland, as well as attending briefing meetings led by the Innovation Centres. We are a hub for the DataLab Innovation Centre and are involved in the academic advisory board for CSIC. We have direct project involvement with DataLab, OGIC, IBioIC and CSIC. From these interactions it is our belief that the original vision is current.

Q2 :- Each of the Innovation Centres is at a different stage of development and therefore its progress toward that vision varies. In the early stages the Centres have been focussed on process and promotion. Some Innovation Centres made the transition to active projects quickly, whereas others have been influenced by the external environment e.g. the challenge of oil price on investment in innovation for CENSIS and OGIC and the challenge of the willingness to embrace innovation in some sectors such as CSIC. The initial year of CSIC's operation has started to identify best practice in this regard. Some examples of good practice are:- IBioIC has delivered at an incredible and exciting pace with excellent industrial involvement and we expect will lead to robust biotechnology collaboration with business with particular emphasis on the use of waste streams and the bioeconomy. IBioIC has funded many industrial-academic partner projects, four well-funded PhD rounds (approximately nine each time), Masters programmes and more recently HND, developing essential skill sets for the future of biotechnology in Scotland. In addition two specialised equipment centres have been established to facilitate evaluation/application. IBioIC has also organised several delegations (industry/academic) to countries with excellent active biotechnology strategies such as Canada. Whilst these are very useful it is unfortunate that only industrial member can get any assistance in travel. In future we would like to see that being extended to the academic community too.

OGIC appears to have been very successful in 'collaborating with relevant stakeholders, offering collaborative knowledge exchange and research activities, and creating a culture change towards greater and more effective academia/business collaboration'. Examples of good practice across the programme include very active Expression of Interests and the award of collaborative innovation projects as well as the MSc Oil and Gas Innovation course. They have also collaborated with DataLab to support projects which deliver value in both sectors. DataLab and Censis have been proactive in engaging with the community both with individual academics and with the University. CSIC has supported around ten projects in the first year and these are quite well spread across Scotland. Most of this project work has been instigated through partnerships between discrete industry and (single) academic partners, and this is perhaps an area in which the Centre can try to work better in the future. CSIC has a large academic constituency and trying to support that community to work collectively seems key to future success. Much of the work so far has also tended to concentrate on products (e.g. materials), perhaps to the detriment of other parts of the vision dealing with process (including design), service and vision. Having said that, more recent developments (including the planned offsite fabrication, and, Building Information Modelling hubs) will go some considerable way to addressing this and hold the potential to draw in wider multidisciplinary teams. Since not all Innovation Centres have been proactive in liaising with the University we have established a programme, in conjunction with colleagues in the North East to engage more directly with them. For example, the DHI university outreach event in May 2016 brought RGU, University of Aberdeen and UHI together and created opportunities for inter-institute and inter-disciplinary working. We would encourage the Innovation Centres to continue to collaborate to align, where appropriate, business processes, to look for opportunities to collaborate between themselves and to provide productive feedback to responses and applications from the University. We would encourage the Innovation Centres to share best practice in terms of engagement with their client groups.

Q3 :- In our experience, CSIC has operated across a number of thematic areas (including construction, design, ICT, energy, environment and infrastructure), each of which has both industry and academic leads. This has led to very interesting and productive discussion and debate, and the IC is considering how best to learn from this to instigate activity and action. Some recent good practice has moved the activities towards workshops/debates rather than limited-invite meetings, and this will help to define future themes. Within IBioIC there is excellent industrial engagement from SMEs to GSK giants and this has been demonstrated by involvement at IBioIC conferences and networking events, which have led to new collaborations and funding. It has supported good skill development at all stages from HND to PhD. We are also aware of very active engagement with industry from OGIC, Censis and Digital Health. This would appear to clearly translate to calls for

projects but we are unable to comment to what extent it truly reflects the priorities of industry.

Q4 :- IBioIC has funded a wide range of projects between industry and academia. From our experience we can directly link a successful KTP application from initial discussions that were held at an IBioIC 'speed dating' event. Our experience with CSIC has shown that projects are still brought forwards by industry partners working alone, or by industry/academic partners. In many cases, these have been redirected towards Interface or other funding if appropriate, with the CSIC acting to ensure that ideas are supported and can develop. In terms of good practice, the CSIC is well placed to instigate debate and have a positive 'disruptive' influence on the construction industry which is known to be notoriously reticent when it comes to R&D and innovation. Similarly OGIC and DataLab have brought together industry academic partnerships which have the potential to flourish beyond the initial engagement.

Q5 :- In general we perceive the governance arrangements to be appropriate and that there is adequate transparency in the award of projects. However we perceive that the level of pre project engagement varies between different Innovation Centres and different Institutions. We have no evidence that this does not provide a level playing field but as an institution it has made us consider how we should more proactively engage in the future.

Q6 :- We believe that regional hubs are the key to a more proactive engagement. In the longer term in the North East the recently announced City and Region Deal provides an opportunity to embed the work of the Innovation Centres within the local economic development plans. We are aware that OGIC are already playing a role in this initiative.

SFC Innovation Centres Review – June 2016
Institutional Response – Heriot-Watt University (HWU)

1. Is the original vision for the Innovation Centres programme current and correct?

The Innovation Centres (ICs) are still in their early stages so the overall impact of their achievements is still difficult to gauge. The strategic vision of the ICs could have been defined better, in particular why ICs were the appropriate response to the market problem.

A number of the ICs are working effectively at an individual IC level, but there are several areas where the vision could have had greater impact:

1. Clarity of engagement with other existing initiatives in Scotland (e.g. Interface), currently the lack of clarity can result in duplication of effort and confusion in the landscape.
2. The oversight process of the ICs seems to be evident at an individual IC level but should be more transparent at a higher 'overview' level, including more examples of sharing best practice e.g. in contract negotiations where some projects have been protracted as standard conditions not being used
3. There is a significant investment in administrative/staffing costs and duplication in admin functions across the centres. The balance between staff costs against the level of project funding seems to be inappropriate. A goal of the ICs should be to become self-sustaining, but it is hard to see this being viable with such a heavy staff burden. In addition, each IC requires significant office space and facilities, which is further duplication of effort and facilities

In certain key sectors (e.g. energy, finance, digital/creative), economic factors are driving significant change in both business needs & business models. With input from the relevant industry groupings, there is a clear opportunity for refocussing of the ICs to provide wider benefit at the local (Scottish) level, the national (UK) level and increase globalisation of industry-led collaborative R&D outputs supported by the ICs.

A key role for the centres is engagement with existing Scottish initiatives such as Energy Technology Partnership (ETP), Research Pools (SUPA, ERPEM etc.), Interface, the KTP hubs in the East, West & North and the University Knowledge Exchange & Commercialisation offices; HWU contact with the ICs has been strongest with those that we interact with on an administrative (OGIC), teaching basis (Oil/Gas, Industrial Biotechnology) or those we have pro-actively sought support from (CENSIS, OGIC, IBioIC) – beyond our core interactions, the engagement with the academic community appears inconsistent across the centres.

2. From your experience so far, are the Innovation Centres delivering against this vision?

The ICs have generally been good at delivering individual projects but have yet to achieve the objective to create a 'sustainable and internationally ambitious open-community of university staff, research institutes, businesses and others to deliver economic growth and wider benefits for Scotland'.

In terms of the individual ICs, HWU can only comment on those ICs we work most closely with - HWU is administrative hub for Oil & Gas IC (OGIC) and strongly engaged with the Industrial Biotechnology IC (IBioIC) through the recently launched £1.7M Bioprocessing facility on the HWU Edinburgh campus.

CENSIS, as the most established IC (>3 years of operation), appears to have engaged broadly with industry across Scotland and has identified >170 companies in their sector, although the delivery of ten projects during this period appears low. Heriot-Watt has been involved in CENSIS projects with MacPhie of Glenbervie and the £6M MIRAGE program. The majority of CENSIS contacts are predominantly in the West of Scotland and University support has in the main part come from universities in Glasgow. OGIC has successfully initiated 17 industry projects with HEI partners across Scotland, which indicates a high level of industry interaction. Heriot-Watt are the academic partner for four of these projects, with a further under discussion. We have also had interaction on two industry projects and one PhD studentship sponsored by IBioIC. Some other ICs (e.g. Data Lab) have been slow in setting set up, or engaging with partners.

The ICs offer a broad range of funds to support industry interaction including R&D projects, MSc and Engineering Doctorate studentships. The CENSIS Engineering Doctorate Scheme is a potential clash with other RCUK supported doctoral training centres (CDTs) throughout the UK and this funding could be better utilised. The MSc courses available also seem to duplicate existing courses that already serve the sector well. In most cases, it is too early to gauge the full impact of the ICs as this can take several years from the launch of any new product/process or service.

On R&D funding, there is some confusion around the application process and the funding itself – ICs offer different intervention rates (e.g. % support to company), different levels of funding (from £5K to £100K+) and cover different FEC returns to HEI partners. There would be a case for a common approach across the ICs to ease the administrative burden and help industry navigate within an already crowded innovation funding landscape.

As a leading technology provider to the ICs, HWU would like to see greater expenditure on industry led collaborative development that exploits research from the academic knowledge base or is supportive to joint funding proposals with RCUK, Innovate UK, the ITF, and relevant Catapults. To facilitate collaborations, ICs should adopt the 'standard template

models' already in use across the Scottish University sector and being further developed within the Innovation Scotland Forum initiative.

A hub and spoke model is operated within several of the ICs; but there does not appear to have been much spoke activity. It is also not clear what role the IC technical staff play in the support of industry projects, with CENSIS in particular having a high percentage of technical staff.

Examples of good practice:

To support KE Office engagement with ICs, HWU has a dedicated point of contact for each and has recently initiated offering IC staff the opportunity to attend monthly meetings to present on opportunities/ meet KE & research staff. There has been a visit by the Construction-IC and invitations to the other ICs to follow.

The ICs have initiated numerous, well targeted and successful industry events to increase interaction between industry and academia, including an annual technology summit (CENSIS). There is good interaction between CENSIS and other innovation centres with a particularly positive interaction with OGIC to develop sensing solutions to the oil and gas industry.

Although not ICs in their own right, 2x major SFC supported industry facing programs – Textile Futures Forum and Interface Food & Drink are exemplar in creating significant industry/university engagement, the setup of industry groupings (Scottish Craft Distillers , Cold Pressed Oil Seed Rape etc.) and demonstrating cross sectoral innovation.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

HWU can only comment on its own experiences; CENSIS collaborative projects have been conducted in areas including defence, energy, food & drink, sport and healthcare demonstrating wide interaction between multiple sectors across Scotland. Industry input was significant in developing the priorities for IBio-IC and Aquaculture-IC and is still evident through the strong industry presence at the annual conferences.

Following its start-up, IBio-IC has engaged quickly with the Scottish biotech community and (through recent investment in capital equipment) is supportive of the scale-up of early stage ideas being developed within Scottish SMEs. To support broader engagement and greater collaboration across the sector, IBio-IC has changed from smaller exemplar type projects towards larger Accelerator projects, which may reduce SME engagement but it is (at this time) too early to judge impact.

OGIC has invested most of its efforts in raising its profile with industry and all of the projects it sources are generated by industry. It has a Project Review Panel entirely drawn from industry and the changes to the sector, driven by the oil price, underpin its funding decisions. OGIC only has 6 completed projects and as yet, no systematic way of assessing whether they achieved the aims of ICs.

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

The ICs are another channel through which industry and academia can interact increasing the quantity of engagement, however, there is no real evidence of overall change in the quality or level of the interaction.

HWU receives >200 industry enquiries /year from Interface – Interface remains the primary vehicle for industry to interact with academia in Scotland via a well-documented enquiry & feedback process, knowledgeable staff, easily accessible website and clear routes to funding.

CENSIS does however possess a detailed knowledge of academic capability in their sector and can quickly identify suitable partners without the need for a prolonged initial engagement. There are also business development functions within HEIs, which could provide some of the same support as innovation centres, such as facilitating collaborative projects, engaging industry etc. It is not clear that this interaction is fully exploited and should be further explored.

HWU is current chair of the East Scotland KTP Centre Advisory group and is disappointed by the lack of engagement of the ICs with the centre since their inception – KTP projects are highly successful in embedding innovation, upskilling staff and developing new markets within industry partners of all sizes.

Through the ICs, HWU has engaged with some companies that it may not have otherwise have engaged – this is positive, and HWU is of the opinion that there is significant potential (and scope) to improve and increase on the level (and quality) of new company engagements. The availability of funding to support collaborative working helps nurture those relations but whether these will be one off transactional arrangements or lead to longer term strategic partnerships will take longer to assess.

University KE offices are experienced in managing the IPR within industry led collaborative R&D programmes; commercial exploitation and Impact is key but there is a pressing need to manage expectations of the IC, the University and industry partner and this could be achieved through communication, engagement and greater mutual understanding.

5. How effective and proportionate has the oversight of Innovation Centres been?

HWU is a representative member of the OGIC Board, the IBio-IC scientific group and the IC Administrative hub.

The Knowledge Exchange offices within individual universities report annually to SFC within the outcome agreement, provide data at a UK level to HEBCIS and in some cases publish annual reports to evidence IMPACT – as publicly funded bodies, the ICs must be held accountable for expenditure vs IMPACT, increase transparency of their process and procedures, and be open to scrutiny in a similar manner.

We are mindful of the significant public investment made within the former Intermediary Technology Institutes (ITI) and do not believe that the current level of oversight of the ICs is sufficient at the highest level for the ICs to deliver the maximum benefit to Industry across Scotland. Existing publicly funded industry facing programmes (Energy Technology Partnership, SUPA, Interface, research pools) are successful in engaging industry and driving innovation and we believe that through open dialogue, there are significant, transferable learning opportunities available to the ICs.

The metrics-based approach to reporting and review have pushed ICs towards project activity and further away from the wider vision of bringing HEI and industry together to work together on a single strategy. It should be emphasised that measuring the success of the latter does not lend itself to metrics.

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

With 8 ICs operating independently of each other, there is a significant administrative burden and duplication leading to inefficiencies; a large portion of this funding could be better utilised for collaborative industry programs rather than supporting IC infrastructure and staff – we suggest a greater commonality of R&D funding (perhaps co-ordinated centrally through SFC) into which IC-industry-university projects would bid.

Each of the ICs operates a different model, and although it may not be a case of one-size-fits-all, there is scope to examine the respective operations, processes, procedures, and contracting, in order to align and streamline across ICs where possible.

HWU would welcome closer interaction with the ICs and the university Business Development/ Knowledge Exchange teams by engaging them in early project development where they can add most value.

Scotland has a limited pool of research active companies - the increased use of 'common contact databases' and the sharing of existing intelligence should be examined to support collaboration and supply chain opportunities that impact across multiple sectors (Oil/gas/engineering/renewables/transport etc.)

HWU would welcome greater signposting of opportunities & cross-working between existing players (ICs/Research pools/Interface/KE offices etc.) - this would create better value for money and improve outcomes for industry. Examples of good practice include collaborations between OGIC/CENSIS, IBio-IC/OGIC and SA-IC/IBio-IC.

Without charging for services to industry or adopting a subscription based model, it is not clear how the ICs could become self-sustaining in the longer term.

Edinburgh Napier fully supports the SFC investment in University to business engagement and welcomes the opportunity to participate in this review.

1. **Is the original vision for the Innovation Centres programme current and correct?**

The SFC's vision for the Innovation Centres is:

Using the Scottish University infrastructure, human resources and research excellence as a platform for collaborations across the whole of Scotland, Innovation Centres will create sustainable and internationally ambitious open communities of University staff, research institutes, businesses and others to deliver economic growth and wider benefits for Scotland.

Experience from ERDF-type projects indicates that initiatives such as the Innovation Centres often take time to set up, become established with the full impact from the investment only being realised 5 years and beyond after commencement. This is likely to influence Innovation Centre progress at approximately the mid-point of the SFC 5-year commitment to funding and true of "open communities" which are yet to become established even though the Innovation Centres appear to be connecting with many industry and University partners.

It also appears that the portfolio of University-business relationships funded through the respective Innovation Centres involve Universities which would have been naturally associated with the host Innovation Centre or with Universities who had a leading role in bid preparation i.e. the Innovation Centres have not yet started to connect industry demand with a new cohort of University providers. It may well be that Innovation Centres maturity will result in an increase in the number of participating Universities and in turn form "open communities."

Financial independence from public funding will be dependent upon generating sufficient industry engagement and investment in order to sustain the operational overheads in each Innovation Centre. Financial sustainability within the original five-year period post establishment of Innovation Centres will be a challenge and the likelihood is that public subsidy will be required beyond the initial 5 year commitment.

The sustainability challenge is compounded by each of the 8 Innovation Centres having substantial management overhead. Further, it can be argued that the business development component of Innovation Centre staffing overlaps with similar resource which is already available in, for example, Scottish Enterprise, the Business Gateway network and within Councils e.g. the Innovation strands of approved and pending "City Deal" partnerships. Further, it is a fact that Knowledge Transfer Grant (KTG) investment by Universities has enabled the Universities themselves to have experienced and competent business development teams. This has been recognised by the Innovation Scotland Forum (ISF). Accordingly, consideration may be given to some rationalisation of the outward facing resource to avoid duplication of effort and concomitant inefficiencies which may involve some of the stakeholders mentioned earlier.

2. **From your experience so far, are the Innovation Centres delivering against this vision?**

Areas you might like to consider: How well are the Innovation Centres working across the whole of Scotland? How appropriately are the Innovation Centres collaborating with relevant stakeholders? Are the Innovation Centres offering collaborative knowledge exchange and research activities to help solve industry defined problems and co-create innovation opportunities for growth? How are the Innovation Centres helping to create a culture change towards greater and more effective academia/business collaboration? Are there examples of good practice across the programme?

Innovation Centre activity is not separately reported and it is therefore difficult to quantify the extent to which the Innovation Centre cohort is delivering. Each Innovation Centre does appear to

have representation of relevant stakeholders in each Centre board. It is anticipated that the boards will in turn influence the alignment of each Innovation Centre with industry defined problems and the creation of new opportunities for growth in University–business engagement. It remains to be seen whether Innovation Centre elicited industry demand is additional to that which would normally be reported by the University sector through, say, the KTG returns.

The Innovation Scotland Forum (ISF) recognised that the so called "innovation landscape in Scotland" actually worked well and that KTG investment over a decade had significantly improved the professionalism of University "enterprise", "commercial services," "business and enterprise" Offices. However, the ISF also noted that University readiness to work with businesses had not been matched on the business side of the equation. Accordingly, the ISF set this as a challenge for Interface / Scottish Enterprise - along with the Innovation Centres - to improve business understanding of how best to engage with Universities. Of particular note are the recurring issues of intellectual property and financial management.

As an example of good practice, the University collaboration towards reaching agreement on a portfolio of so – called "common contracts" for use by each Innovation Centre across the spectrum of University business engagement mechanisms (e.g. categories normally reported in the KTG return from consultancy; contract research; Innovation Vouchers; KTPs etc.). This University-led activity will help to harmonise the contracting between Universities and business and support Innovation Centres. Each common contract will be accompanied by easy-to-read the guidelines to "talk" industry partners through the contract essentials thereby accelerating the conversion of interest to contract exchange.

3. **To what extent do the priorities of Innovation Centres reflect those determined by industry?**

Areas you might like to consider: Is industry appropriately engaged in the relevant Innovation Centres? How are (or should) Innovation Centres respond to the skills needs of the industry sectors represented? Are the industry-led projects 'stimulating and challenging' the Scottish research base in the most effective way? Are there examples of good practice across the programme?

The Innovation Centre portfolio is matched with priority industry sectors in Scotland with each Innovation Centre Board including industry representation such as members from the relevant Industry Liaison Groups (ILG's) and other representative organisations. However, there is little evidence to support any significant uplift in demand-side pull for innovation beyond that which would otherwise have occurred although it is accepted that the Innovation centres are in early stages of development.

It is anticipated that that greater impact will arise from coalescence of presently disparate "touchpoints" with industry and the establishment of a genuine innovation pipeline from quantifiable industry demand identified by the Innovation Centres and aligned with the Universities (and Colleges?) connected to this network as important "service providers." This holistic approach would more effectively and efficiently connect demand with innovation *and* skills provision spanning Industry – School – College – University.

Accordingly, the Innovation Centres should also connect with Sector Skills Councils and other such agencies to simultaneously match *skills* requirements with the educational sector as well as tapping into academia ability to help industry solve problems and commercialise research by stimulating business investment in innovation.

Thus far, it appears that the distribution of Innovation Centre-commissioned projects involving Universities peaks around a band £40-£70,000. This is indicative of what would be characterised as relatively small to medium scale projects and these relationships remain typically 1:1 industry: University partnerships.

It may well be that Innovation Centre maturity will result in larger scale, multi-partner projects, perhaps benefiting from the increasing use of "open innovation" platforms.

4. **How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?**

Areas you might like to consider: Do the Innovation Centres complement and exploit existing initiatives (e.g. Interface, the Knowledge Transfer Partnership programme et al) in the academia/business collaboration space? Are there specific Innovation Centre activities, which have helped to simplify routes to innovation for business? Are there examples of good practice across the programme?

This review is taking place, around the midpoint of the SFC 5-year funding commitment to Innovation Centres. It is known from historical ERDF – type projects that impact can still be measured beyond this period. The relationships with the Universities appear to be growing in productivity and impact and based on experience to date it is hoped that relationships initiated by the Innovation Centres will continue to mature into more substantive relationships as distinct from transactional type business. This has yet to be proven, but may well become an Innovation Centre "outcome. It is however too early to say definitively whether the Innovation centres have increased the appetite for KTPs, but there is little evidence to suggest any significant uplift.

The "innovation landscape" in Scotland remains complex from a business perspective with multiple touch points with agencies of economic development, interface and with the colleges and Universities. It may be argued that the establishment of the Innovation Centres themselves has increased this complexity. It is important that they connect to other "stakeholders" including "Interface."

Interface is a useful brokerage service available to those companies inexperienced in working with the University sector. Interface can provide a useful routing of business enquiry to University capability and, following recent effort, this routing can also be to University facilities. The Innovation Centres also prospect across their respective industry sectors stimulating business investment in and demand for innovation. There is also a finite number of innovating businesses and a more efficient and dynamic between, for example Scottish Enterprise-Interface-Innovation Centres may be worth exploring with a view to ensuring that the respective touch points with and services provided to business are cohesive.

5. **How effective and proportionate has the oversight of Innovation Centres been?**

Areas you might like to consider: Are governance arrangements suitable for the programme as a whole and/or each Innovation Centre? How much clarity exists around how the performance of Innovation Centres will be assessed against the objectives of the programme? Is there an appropriate balance between an Innovation Centre's freedom to operate and the accountability necessary for a public sector initiative? Are there examples of good practice across the programme?

Any operation which sits between two so-called "cultures" will experience certain tensions between established behaviours typical of each. This is the Innovation Centre experience and is part of the challenge which presented to all involved. Most notable has been the governance arrangements between Universities as public sector organisations and corporate norms in particularly recruitment and procurement.

Until financial sustainability is achieved and independence established from public sector funding this tension will remain unless greater understanding is engendered. However, as recognised by the Innovation Scotland Forum in January 2015 this is a specific Action for the Innovation Centres

working in partnership with, for example, Interface and Scottish enterprise i.e. to strive to continuously improve industry understanding of these public sector requirements. The SFC Innovation Centre Administrative Host Group could contribute to this. This prospects of mutual understanding is enhanced by having Directors of Finance (and HR?) as board members as members or in attendance and Innovation Centre board meetings.

6. **Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?**

The University welcomes continued funding to increase university-business engagement. The innovation centres are important nodes in the Scottish Innovation landscape and, at the midpoint of the initial five-year commitment an opportunity is exists to refine how the Innovation Centre cohort sits within the landscape and connects to other stakeholders often having similar objectives.

The recent approval of City Deal partnerships with others pending presents a potential framework upon which greater common purpose and efficiency could possibly be achieved by coalescing University, College, enterprise agency and Council aspirations for greater economic development arising as a result of greater collaboration spanning skills and innovation.

Independent Review of Innovation Centres Programme – Led by Prof Graeme Reid

Submission

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Confidentiality Reason :-

Q1 :- The original call in 2012 for Innovation Centres cited a vision that would support transformational collaboration between universities and businesses. The aim was to enhance innovation and entrepreneurship across Scotland's key economic sectors, create jobs and grow the economy. What has evolved in practice are Innovation Centres in primarily STEM sectors dominated by larger multinational companies. There has been no equivalent transformation in supporting emerging, high growth sectors that are dominated by SMEs and microenterprises. Further, the Innovation Centres have failed to fully embrace opportunities around service innovation and have continued to adopt a narrow definition of innovation, based primarily on technology driven innovation. The portfolio of Innovation Scotland does not reflect the Scottish Government's Economic Strategy and many of its key sectors: Creative Industries, Financial and Business Services, Food and Drink and Tourism. In addition to having untapped innovation potential, these sectors are crucial to graduate start up and student employability. This has future implications for supporting innovation needs around skills and training in order to develop the next generation of researchers and knowledge exchange practitioners through masters and post-doctoral level provision.

Q2 :- Despite a cluttered landscape of intermediaries, we find the Innovation Centres difficult to engage with. There is a lack of transparency and visibility in terms of their achievements to date. For an institution rooted in economic sectors that are not supported by the Innovation Centre programme, it has been difficult to obtain visibility concerning their achievements or to learn from their good/best practice.

Q3 :- In the sectors where we operate, they do not. We continue to lobby for the creation of an Innovation Centre in Food and Drink. The Food and Drink industry continues to be one of the strongest performing sectors in Scotland's economy, and Scotland's Universities produce some of the best food/agri-food research in the world. It is anomalous not to have Food and Drink as part of the Innovation Scotland portfolio of Innovation Centres. The Scotland Food and Drink Industry strategy is a

blueprint for Innovation - investment in R&D has been identified as one of the key components to drive growth in GVA and turnover, with a pipeline of new innovations to feed into both the UK and export markets. Indeed, the sector has set its own steeply accelerating R&D industry targets for 2015- 2017, and embedding innovation is a core part of the industry culture.

Q4 :- The creation of Innovation Centres in some, but not all, of the priority economic sectors has caused unnecessary confusion in university/business engagement. Additional tiers and routes to innovation are available in some but not all sectors. Scotland needs to play to its strengths, and use its university-business interface to drive the innovation capacity of the private sector, and inward investment from overseas. Universities have a key role to play, especially with SMEs who typically underperform in this area, and by increasing the domestic talent supply of graduates and research postgraduates to exploit science and innovation. It is important that the innovation ecosystem in Scotland recognises the diverse role of universities and their differing points of entry into often complex innovation chains. There needs to be an increased emphasis on co-creation activities and "open innovation". To fully understand the wide spectrum of university research, from basic to applied, a more nuanced understanding of innovation is required.

Q5 :- We would welcome increased transparency regarding the achievements and impact of Innovation Centres. It would also be helpful to those institutions and sectors not engaged with Innovation Centres were the Innovation Centres able to share good practice.

Q6 :- We believe that, to be truly transformative, Innovation Centres must embrace a broader understanding of innovation, particularly around service innovation and new product development – key innovation pathways in many of the emerging priority economic sectors. The research base and anchor institutions have an important role to play in increasing the innovative capacity and investment of SME private funds in research and development. Historically the Innovation Centre model has assumed a "one size fits all" approach which has made engagement and application of the Innovation Centre funding intervention almost impossible for non STEM sectors dominated by large numbers of SMEs and microenterprises and where supply chains are complex.

Independent Review of Innovation Centres Programme – Led by Prof Graeme Reid

Submission

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Who :- Individual
Confidentiality :- No
ConfidentialityReason :-

Q1 :- We believe that the original vision that "Using the Scottish university infrastructure, human resources and research excellence as a platform for collaborations across the whole of Scotland, Innovation Centres will create sustainable and internationally ambitious open communities of university staff, research institutes, businesses and others to deliver economic growth and wider benefits for Scotland" is still very current and correct.

Q2 :- The Stratified Medicine Scotland Innovation Centre (SMS-IC) is already delivering significant value in line with the original vision for the Innovation Centres Programme. The first phase has been completed (infrastructure and successful operations) and clear plans are in place for the second phase, which will deliver sustainability and wider economic growth through the creation of the Scottish Precision Medicine Ecosystem. Specifically:
The SMS-IC is already harnessing the research excellence, infrastructure and human resources of four Scottish Universities (Glasgow, Edinburgh, Aberdeen and Dundee) in a strong and productive collaboration with NHS Scotland, large and small industry (in particular Aridhia and Thermo Fisher, but also more broadly), the Chief Scientist Office and Scottish Enterprise, to create the Scottish Precision Medicine Ecosystem and position Scotland as a global leader in precision medicine.

The partnership of academic, NHS and industry collaboration within SMS-IC is very strong and real – this has been a true culture change, and is now very much embedded. The strength of the collaboration resulted in the 2015 Life Sciences Award for Innovative Collaboration by Scottish Enterprise.

The SMS-IC has developed a business model enabling academic/NHS/industry collaborations to be formed around specific opportunities within the precision medicine marketplace. These collaborations are creating precision medicine products, services and technologies aligned to global market demand. Precision

medicine is an early stage, but transformational market opportunity in terms of scientific research, clinical services development and the opportunity for significant wealth creation within Scotland. Our strategy is to build those individual program consortia locally and expand them internationally attracting investment and building Scotland's brand as a premier location for the development of precision medicine products and services. We have a number of programs underway led by SMS that are delivering economic growth, opportunity and market confirmation of our strategy and business model. A few highlights below –

The SMS-IC informatics platform is hosting a pan European adaptive clinical trial program for Alzheimer's drug development. This program involves 13 European countries and 35 collaborative partners including the majority of the biopharma industry. The initial program is 5 years and Euro 64M with an expectation that significant additional funding will be available from industry partners. SMS has an opportunity to play a cornerstone role in the informatics discovery and delivery over the next decade attracting funding and opportunity to Scotland.

The SMS-IC informatics platform is enabling collaboration between the University of Glasgow, NHS Scotland, Philips Healthcare and Aridhia to adapt a predictive physiological algorithm for the management of traumatic brain injured patients in ICU to a precision medicine software product that can embedded within Philips ICU products and marketed globally. Funding drawn in from Innovate UK to deliver phase 1 product with an expectation of further industry funding during 2017.

A national and international precision medicine program to improve clinical services and undertake ground-breaking clinical research for MS patients involving NHS Scotland, Universities of Edinburgh and Glasgow, Biogen, and academic partner in US and London. In common with all our programs, this attracts significant external funding and the opportunity to build a leading position for Scotland.

In addition to existing programs SMS-IC is actively developing its future pipeline of national and international collaborative programs, enabling external investment to come to Scotland and building our reputation as one of the World's leading precision medicine countries.

The location of the SMS-IC at the new Queen Elizabeth University Hospital (QEUH, now the largest hospital in Western Europe) has been the catalyst for significant development with industry, creating a new and vibrant life sciences cluster at the hospital campus. The presence of SMS-IC on the University of Glasgow's Innovation Floor at the QEUH, has led the Precision Medicine Catapult (PMC) to locate the PMC Scottish Centre of Excellence adjacent to SMS-IC, and this is already attracting interest from companies (including overseas companies) who wish to collaborate with the SMS-IC.

The SMS-IC is actively collaborating with stakeholders across Scotland, the UK and overseas. In the first instance, these stakeholders are NHS Scotland, academic leaders, global thought leaders in precision medicine, large Pharma, Innovate UK, and government. The initial focus has been to position Scotland with the credibility, technical capability and capacity to deliver precision medicine in a global market, using a limited number of chosen exemplar projects to evidence this. It is anticipated that benefits for local SMEs will arise further downstream, particularly as part of the supply chain for clinical trials and diagnostics.

The SMS-IC was set up as an industry-focussed and industry-led innovation centre, and it has maintained this ethos throughout. SMS-IC is helping to address the very significant economic problem of rising healthcare costs, which are rapidly becoming unaffordable for the NHS, and the economic challenges for the pharmaceutical industry of identifying and bringing new medicines to market. The SMS-IC is using the triple-helix partnership of academia, industry and NHS to address these challenges using innovation to benefit the NHS and Pharma, including the repositioning of existing medicines for new diseases, and create significant opportunities for Scottish SMEs, and ultimately benefit for patients.

The SMS-IC is now positioned as the focal point of the Scottish Ecosystem for Precision Medicine, and will act as a one-stop-shop for marketing Scotland's strengths in Precision Medicine and delivering services and products to the market.

Q3 :- As described above, the Stratified Medicine Scotland Innovation Centre was set up as an industry-focussed and industry-led innovation centre, and it has maintained this ethos throughout. Its business model reflects the demands of the precision medicine marketplace and our strategy regarding innovation and commercialisation within this market is very clear and shared completely by our Board and partners.

Although a growing number of SMEs are already benefiting, the SMS-IC aims to engage more actively and broadly with life sciences SMEs as it enters the next phase of its activity.

The SMS-IC is now positioned as the focal point of the Scottish Ecosystem for Precision Medicine, and is acting as a one-stop-shop for delivering Precision Medicine services and products to the market. This is designed to meet the needs of industry, notably big Pharma, wishing to do business with Scotland – and ensure Scotland is easy to engage with, and is agile and effective.

The SMS-IC is actively responding to the skills needs of this new industry (precision medicine), and has set up a unique MSc degree programme in Stratified Medicine & Pharmacological Innovation, which has involved five Universities and was designed with industry. All students are offered a placement opportunity with industry, and

this is already benefitting Scottish SMEs. The third cohort of students will graduate this year, with close to 100 students having completed the programme over its three years. It is planned that the programme will be reviewed at this stage to ensure that graduates continue to meet the needs of industry, and to take feedback on what might be improved. The success of this programme was recognised by the 2015 Herald Higher Education Award for Employer Engagement.

The nature of the market and thus our programs is highly collaborative. In practice this means clinical academics, industry and the NHS working extremely closely with shared access to data, tools, analysis and insight. These are tight rather than loose collaborations and will run for significant lengths of time. Already we're seeing the benefit of network effects where one program spins off opportunity to an adjacent program attracting additional funding and new collaborative opportunities. We would highlight this evidence as a good example of best practice, namely how do you start something relatively small, deliver value through the collaboration and scale internationally.

Q4 :- The relationship between the academic and industry partners of the Stratified Medicine Scotland Innovation Centre was the initial catalyst for the creation of the Innovation Centre, and this relationship has grown in depth and breadth since the IC was created.

The recognised academic leadership in Scotland has facilitated international interactions for SMS-IC, bringing key global players in precision medicine to Scotland, including key US policy makers and government advisors.

Challenges which remain, for both the academic and industry partners of SMS-IC, include: o Agility and the constraints of operating as a multi-partner consortium: SMS-IC is currently undertaking an options appraisal of different organisational structures. o Accessing funding from Scottish Enterprise. Although Scottish Enterprise has been an active participant and strong supporter of the SMS-IC, as a 'funder of last resort' it has had very limited impact on the IC's pressing need for infrastructure funding at a time when there is a recognised global race to implement precision medicine. This is also compounded by Scottish Enterprise's policy of only funding SMEs, which limits their ability to support SMS-IC at this crucial early stage.

Q5 :- SFC has been very supportive of the Stratified Medicine Scotland Innovation Centre, providing guidance and oversight which largely strikes an appropriate balance between freedom to operate and accountability.

SFC is an active participant, with Observer status, at SMS-IC Board meetings. SFC's funding of the MSc in Stratified Medicine & Pharmacological Innovation has been

hugely helpful in attracting students to this new programme designed with industry to meet the industry skills requirements of precision medicine.

The significant in-kind support of the University of Glasgow as administrative lead for the SMS-IC has been crucial in the overall governance and management of the IC – including human resources/recruitment, financial, procurement, contractual, general management and legal.

It is important that the evolution of the Innovation Centres' objectives and metrics are taken into account as part of the assessment, and that the assessment of performance is not simply a tick-box exercise.

The current organisational structure limits SMS-IC's agility with regards to contracting, largely due to the constraints of operating as a multi-partner consortium with unlimited liability for all parties: SMS-IC is currently undertaking an options appraisal of different organisational structures, and SFC's guidance and support in this regard will be important for future success.

Q6 :- Ultimately all Innovation Centres will require to be either wholly or partially self-sustaining. For SMS-IC, our future relevance rests on our ability to grow and adapt with the market and the demands that presents, understand our value proposition (both for SMS-IC and on behalf of the Precision Medicine community in Scotland) and ensure we can deliver value consistently into a very demanding environment. If we achieve this we should be able to move forward as a self-sustaining entity delivering significant economic, patient and research benefits to Scotland. Our structure has to reflect those demands and aspirations. It was envisaged from the outset that SMS-IC would become a company, and a milestone for a review was put in place. Such a company structure is also desirable to increase the agility of SMS-IC (e.g. speeding up contract negotiation) and to limit the liability of the consortium partners (currently unlimited). As described above, SMS-IC is currently undertaking an options appraisal of different organisational structures. However, the ability of any new structure to continue to benefit from SFC funding at this early stage is crucial, to ensure that SMS-IC is supported and continues to flourish until it is fully self-funding. This is likely to be a significant challenge for all Innovation Centres.

Independent Review of Innovation Centres Programme – Led by Prof Graeme Reid

Submission

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Who :- Individual
Confidentiality :- Yes
Confidentiality Reason :- May be sensitivities to the way the response is interpreted

Q1 :- [redacted]

Q2 :- [redacted]

Q3 :- [redacted]

[redacted]

Q4 :- [redacted]

Q5 :- [redacted]

Q6 :- [redacted]

Innovation Centres – Call for Evidence

Research Pool	Glasgow Research Partnership in Engineering
Respondent	Professor Steve Beaumont OBE
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Brief Introduction to GRPE

GRPE is a consortium of four University engineering schools in the Glasgow region (Glasgow, Strathclyde, Caledonian and West of Scotland) which oversaw the investment of SFC funding into these institutions to boost engineering research excellence. It established three interdisciplinary Joint Research Institutes (Environment, Infrastructure & Transport Engineering: Electronics, Communications and Power Systems: Materials, Structures and Bioengineering) and a joint Graduate School. GRPE, through its Director, set up the Scottish Sensor Systems Centre with strategic development grant funding from SFC which informed the strategy for CENSIS, the Sensor and Imaging Systems Innovation Centre. This submission is based on our experience of establishing CENSIS and our involvement in its operation.

By agreement between the Regional Engineering Pools, sustainability of engineering pooling is being carried out through the Scottish Research Partnership in Engineering. SRPE has made a separate submission to the review panel, consolidating our experience of engaging with multiple ICs and hosting a number of them through our member Universities.

1. Is the original vision for the Innovation Centres programme current and correct?

Emphatically yes. They provide expert focal points for innovation support that rarely exist in the HEI sector or the Enterprise Agencies. They work across supply chains and vertically within them whereas individual HEIs generally only represent and contribute their own research strength. They manage resources including expertise, funding and infrastructure, that are dedicated to innovation support and driven by industry need rather than the needs of academic research. Their role of accelerating technology across the 'valley of death' in the mid-TRL levels is unique. For these reasons they are also distinct from, and add value, to research pooling whose primary driver is research excellence.

From an economic perspective the justification for investing in new models of innovation support remains strong and is arguably stronger given the need to increase innovation in sectors other than oil and gas. Despite multiple interventions the intensity of research-led innovation in Scottish companies remains well below UK levels and significantly smaller than our major competitors yet Scotland's academic research base is very strong internationally. Evidently there is misalignment and weak communication channels. Innovation Centres have the capability to shape research outputs to better match the needs of industry, and in the long term provide an informed steer to the research community. Meanwhile they are in a position to support innovation in ways that do not match HEIs resourcing and mission for example by providing skills and infrastructure that are less academically focused. ICs can also better nurture new companies whether these originate in academia or not, given their industrial mind-set and leadership.

2. From your experience so far, are the Innovation Centres delivering against this vision?

Each of the Innovation Centres has its own approach to delivering the overall vision and their own missions. They are all at different levels of maturity and operate in industry sectors with very different structures. Even the most mature are only three years old and took almost one year to establish their governance, chief executives and teams. When formulating business plans to bid for ICs, all proposers were clear that delivery would take at least five and probably more than ten years. Therefore it would be invidious to judge delivery against ambition at such an early stage. Nevertheless in our experience the ICs are all offering new approaches and opportunities to address the innovation challenge in Scotland, have gained traction with their industry sectors, have established identities and achieved recognition beyond Scotland's borders.

From the perspective of GRPE's own engagement with CENSIS, it has funded projects with all four partner universities. It has helped to establish and fund (with Scottish Enterprise) a major industry-led consortium of SMEs linked to research in our ECPS JRI with the potential for significant economic impact. This is the first of its type, unusual in its SME focus and took substantial, patient support from the CENSIS team to deliver. We look forward to more examples of this scale of project perhaps focused around the infrastructure investments in connected devices and low power radio networks that CENSIS is helping to build.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

Strongly, and this can be problematic if there is no academic capacity (whether because of lack of expertise, resources or motivation) to meet the priority or the opportunity. Some members of the academic community believe that the innovation centres are an extension of University TTOs whose job is to promote their research to industry.

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

The ICs have brought about a step change in the capacity and mode of engagement of academia with industry, bearing in mind that all are embedded in host institutions. They provide expertise, resources and funding that have not hitherto been available. They are complementary to existing initiatives. For example, Interface is a generalist broker without the capacity to provide technical expertise in building or managing projects. KTPs major on one on one partnerships between a research group and a company. TTOs focus on the promotion of a technology from a research group into a licensee or startup. ICs are building collaboration infrastructure, work across institutions and aim to develop multipartner projects involving multiple companies and institutions. These foundations helped CENSIS to deliver its IoT Boost competition in partnership with DataLab and Informatics Ventures which supported a number of new companies including some from our own iinstitutions. If there is a comparison to draw it should be with the Catapult Centres. These have been criticised by their host institutions for lack of linkages back into academia. ICs are doing a better job.

The academic community has become more receptive to the innovation agenda thanks to the introduction of the assessment of research impact into REF. However the academic model of doing business through students or dedicated postdoctoral researchers remains mostly unreformed. It operates on timescales that are too frequently incompatible with industry's needs and prioritises publication above other measures of success. Academic promotion continues to recognise publication, student supervision and large-scale income generation above industry engagement although there is evidence of evolution. Of course all these limitations justify the existence of ICs but their influence on academic priorities still impede the development of relationships between innovation centres and individual academics. More culture change is needed but not, of course, at the expense of research excellence or the university's core business.

5. How effective and proportionate has the oversight of Innovation Centres been?

ICs have multiple sources of oversight: their governance boards, their host institutions and the Funding Council.

Our experience is that governance boards are suitably industry-led and strategic. There have been frustrations as a result of the need to operate in accordance with the policies and procedures of their host institutions which can be burdensome and misaligned with their mission. Recruitment and promotion procedures are good examples: governance boards find the level of detail and scrutiny needed to release appointments and the mismatch of academic institutional performance criteria with IC requirements to be problematic. Legal agreements, often drawn up to meet host institution needs, can also be confusing to industry partners and complex although this may be a result of the fact that ICs constitute a front-end to a complex network of autonomous academic institutions as much as the legal status of the ICs themselves; the position would be very different if the ICs were independent organisations with a full complement of staff ie following the Fraunhofer model, but this would undermine the objective of connecting to the research base.

SFCs engagement with the ICs has generally been positive, constructive and helpful although reporting requirements can be excessive.

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

It is a serious weakness of the IC system that only one government agency is funding it and their funding can be deployed only in academia. The inability of ICs to fund both sides of a collaborative project needs to be addressed as soon as possible. Innovate-UK provides a model in which there is a single assessment process for industry/academic partnership proposals that governs the application of I-UK funding to industry and EPSRC funding to academia. This avoids the double jeopardy characteristic of the IC model. Moreover the process is quick with a clear timetable for reaching a decision. In contrast the ICs cannot guarantee when enterprise agencies will reach decisions on co-funding for projects.

Market failure in research-led innovation is endemic. Research funders do not operate outside low TRL levels and companies generally will not invest in unproven technologies. SMEs make take greater risk but often do not have the resources to devote to speculative projects. ICs operate in this gap, which is unlikely to be closed by the private sector. ICs need much longer funding horizons than the five year commitments made by the Funding Council. The Scottish Government has given strong backing to the role that the ICs intend to play in promoting and supporting industrial innovation and therefore ICs should receive support for as long as they can demonstrate success. The academic community is frankly tired of short-term innovation support experiments with unachievable sustainability goals that do not reflect the realities of this market failure. ICs need the long-term support of multiple agencies and a funding model that supports success. The Fraunhofer approach has been in existence for long enough to adopt as a basis for the future.

Innovation Centres – Call for Evidence

Research Pool	Energy Technology Partnership
Respondent	Professor Sir Jim McDonald
Position	Director of the Energy Technology Partnership and Principal of the University of Strathclyde
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Brief Introduction to ETP

The ETP is a unique alliance of 12 Scottish universities providing world-class capability and resources in energy RD&D that supports the Scottish Government in achieving its goals in the energy sector. ETP coordinates the SRPe pools in leading energy research around key themes of international relevance, developing a research case that is internationally competitive. It creates value for the Scottish economy by acting as a shop window for external organisations and industry, promoting and disseminating ETP's mission to translate excellent research into economic impact. Through the Energy Industry Doctorate Programme, ETP supports the energy sector with the skills it needs to maximise industrial growth opportunities.

1. Is the original vision for the Innovation Centres programme current and correct?

General	
CENSIS (Sensors & Imaging)	
CSIC (Construction Scotland)	
IBioIC (Industrial Biotech)	
OGIC (Oil & Gas)	• Yes, the original vision is current and correct, though there are constraints caused by the current price of oil
SAIC (Aquaculture)	

2. From your experience so far, are the Innovation Centres delivering against this vision?

Areas you might like to consider: How well are the Innovation Centres working across the whole of Scotland? How appropriately are the Innovation Centres collaborating with relevant stakeholders? Are the Innovation Centres offering collaborative knowledge exchange and research activities to help solve industry defined problems and co-create innovation opportunities for growth? How are the Innovation Centres helping to create a culture change towards greater and more effective academia/business collaboration? Are there examples of good practice across the programme?

General	
CENSIS (Sensors & Imaging)	
CSIC (Construction Scotland)	
IBioIC (Industrial Biotech)	

OGIC (Oil & Gas)	• Up to a point – the reduction in the cost of oil has caused companies to become more cautious about investing in R&D, leading to smaller projects than anticipated.
SAIC (Aquaculture)	

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

Areas you might like to consider: Is industry appropriately engaged in the relevant Innovation Centres? How are (or should) Innovation Centres respond to the skills needs of the industry sectors represented? Are the industry-led projects 'stimulating and challenging' the Scottish research base in the most effective way? Are there examples of good practice across the programme?

General	
CENSIS (Sensors & Imaging)	
CSIC (Construction Scotland)	
IBioIC (Industrial Biotech)	
OGIC (Oil & Gas)	• Industry is represented in OGIC through the Board, and through the Project Review Panel. • All calls are industry-driven
SAIC (Aquaculture)	

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

Areas you might like to consider: Do the Innovation Centres complement and exploit existing initiatives (e.g. Interface, the Knowledge Transfer Partnership programme et al) in the academia/business collaboration space? Are there specific Innovation Centre activities, which have helped to simplify routes to innovation for business? Are there examples of good practice across the programme?

General	
CENSIS (Sensors & Imaging)	
CSIC (Construction Scotland)	
IBioIC (Industrial Biotech)	
OGIC (Oil & Gas)	• Too soon to determine any change in the relationship. • OGIC link up with existing initiatives to offer a portfolio of opportunities to clients.
SAIC (Aquaculture)	

5. How effective and proportionate has the oversight of Innovation Centres been?

Areas you might like to consider: Are governance arrangements suitable for the programme as a whole and/or each Innovation Centre? How much clarity exists around how the performance of Innovation Centres will be assessed against the objectives of the programme? Is there an appropriate balance between an Innovation Centre's freedom to operate and the accountability necessary for a public sector initiative? Are there examples of good practice across the programme?

General	
CENSIS (Sensors & Imaging)	

CSIC (Construction Scotland)	
IBioIC (Industrial Biotech)	• Oversight is provided through the Board, and through the Project Review Panel. This appears to be effective and proportionate. • I am not aware of the SFC/OGIC relationship
OGIC (Oil & Gas)	
SAIC (Aquaculture)	

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

General	• Could all the ICs collaborate more closely?
CENSIS (Sensors & Imaging)	• ETP involved in initiatives on sensing technology and offshore windfarm operations and maintenance
CSIC (Construction Scotland)	• ORI is working up a proposal with them involving construction of marine energy devices • ETP engaging with the CS-IC around the development of the Energy Utilisation in Buildings Theme. ETP Energy Systems TC (Joe Clarke) is also CSIC Energy ICT Theme Lead.
IBioIC (Industrial Biotech)	• ETP engaging with IBioIC around the development of the Bioenergy theme
OGIC (Oil & Gas)	• The future may see OGIC become part of the OGTC • It is too soon to determine the effects of the IC on the sector • Explore opportunities in diversification • Demonstrator sites • ETP engaging with the OGIC around the development of the Energy Utilisation in Buildings Theme. ETP ED sits on the OGIC Board, ETP O&C TC (Richard Neilson) sits on the OGIC Project Review Panel
SAIC (Aquaculture)	• interest in anchorage/mooring systems for fish farms far from shore which have analogues with marine energy devices • Collaboration with SAMS

SINAPSE

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19th June 2016.

Dear Professor Reid

Independent review of Innovation Centres

I am writing to you in response to the request from SFC for feedback from the pooling groups. I represent the Medical Imaging Network – SINAPSE. Interaction with ICs was discussed by our Executive at a meting in Stirling on 16th June and I'm afraid that the feedback was not very positive. With this in mind I started to fill in the on-line form, but it became clear that we can't contribute informed responses to most of the questions and so I thought it better to set out below some general feedback.

SINAPSE is an academic pooling group involving six Universities. Four of these have medical schools and so we are close to the NHS. About 20% of our members are medical practitioners. One of our remits is Knowledge Exchange, including public awareness activities and engaging with industry. It is the second of these that brings us close to the ICs.

In 2016 seven companies matched the SFC funds that were made available to us to explore our potential to attract external investment. Only three of these have a significant footprint in Scotland. The objectives of the research include:

- Improving the management of patients with stroke, or dementia
- Developing new measurement techniques to improve the study of arterial disease
- Developing new materials for PET scanning of brain tumours
- Exploring whether retinal examination can shed light on neurodegenerative disease

The potential societal and economic benefit is through better healthcare management. There could also be commercial benefit, but this will be long-term.

Looking more widely at participation in our events; of the seven companies taking part in our annual scientific meeting in Stirling this year only two have development activities in Scotland. When SINAPSE hosted the UK-PET Chemistry meeting in Edinburgh in May 2016, none of the eight participating companies had a footprint in Scotland other than for sales.

We have tried repeatedly to engage with ICs and have prompted individual researchers to do this but there has not been much communication in the other direction. I suspect that there is a good reason for this, and that the ICs are correctly focusing on their remits of delivering economic benefit within a tight timescale. We occupy quite distinct spaces. Scotland needs both Innovation Centres for economic benefit and academic pooling for long-term development of knowledge and skills. The challenge is to get the best balance within our current budgetary constraints.

We shall of course, continue to direct researchers to ICs when appropriate.

Sincerely

[redacted]

David Wyper: Director of SINAPSE

energy technology partnership

Innovation Centres – Call for Evidence

Research Pool	Scottish Research Partnership in Engineering (encompassing ERPEM, GRP, NRP)
Respondent	Professor Sir Jim McDonald – Chair
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Brief Introduction to SRPE

Until recently, SRPE has been the principal reporting and monitoring "top co" entity that has sought to coordinate engagement between and across the three Regional Engineering Research Pools (ERPEM, GRP, NRP). The Board of Directors of SRPE comprises the Chairman and the three Regional Pool Directors. SFC has now provided co-funding, with the partner universities, for the appointment of an SRPE Director and support staff. This will allow for greater collaboration and coordination within the Scottish engineering research communities and creates the capacity to build major research and innovation bids, collaborative research opportunities and strong engagement with private and public partners. The next phase of SRPE will focus on priority research themes in which there is proven excellence across the SRPE research community.

Across the Directors of SRPE there is direct experience of all of the Innovation Centres through roles including IC Hub coordinators, project participants and strategic partners. In addition, we have significant UK Catapult roles, involvement and experience. It is worth noting that the Fraunhofer Centre for Applied Photonics is connected to the SRPE partners and this gives a further model for other relevant academic / industry interaction.

The ICs with the highest degree of synergy with SPRE include CENSIS, IBioIC, OGIC, SAIC, and CSIC. The others ICs have relevance to SRPE but connect more obviously to other pooling entities including ETP and SICSA, though OGIC has a strong role to play in SRPE activities in Civil Engineering

1. Is the original vision for the Innovation Centres programme current and correct?

The establishment principles of the ICs are still relevant and mirror international recognition that there is significant value in the translation of strong research capability and outputs to greater impact in terms of industrial / business exploitation of research, the attraction of higher levels of BERD and the creation of strong collaborative clusters. The TRL4-6 "bridge" approach is important and should remain a strong reference feature for the ICs going forward c.f. UK Catapults and Fraunhofer Gesselschaft.

NB with reference to the Catapults and Fraunhofer entities' model, it is most important that ICs are given sufficient time to establish industry engagement and strategic value. This may be of the order of 2x5 year phases with detailed business model and performance assessment being part of the determination of effectiveness, value for money and continued relevance. The SRPE can play an important role in driving this process from the academic research perspective.

energy technology partnership

2. From your experience so far, are the Innovation Centres delivering against this vision?

To date there remains a "mixed bag" across the ICs with the most effective of them having established strengthening industry pull and matching to academic capability across the Scottish HEs. Good "project / theme call" approaches have been put in place by IBioIC, SAIC and OGIC that have resulted in facilitated project development and collaboration brokerage. CENSIS has also been proactive in the connection between business need and university group response / engagement and is also putting infrastructure in place (Connected Devices Centre, Lowpower Radio networking and sub-sea sensing) to provide collaboration and showcasing foci. Some of ICs appear still at a relatively underdeveloped stage in the TRL4-6 bridging.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

Where there is clear and active industrial leadership and engagement, this is evident e.g. the appointment of ex-industry leader Chairs and CEOs such as in IBioIC (Shott and Kilburn), OGIC (deLueew and Phillips), CENSIS (Downes and Reid) where there are other additional strong industry / business board members. This is true in other ICs, however, these three are noteworthy in terms of their focus. Having an appropriate balance between business, academia and public sector partners is essential. However, there is a need for a continued / renewed assessment of the "value add" from each IC calibrated against as well specified industry demand statements that can be determined.

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

See above in section 3. It should be clear to the IC Review Group that there are certain ICs that have embraced the collaboration building agenda between industry / academic partners from the outset and where engagement with universities has been proactive. Where this has not happened, a "testing" of the business plan, priorities and active portfolios would be appropriate.

With respect to good practice, the IBioIC strategic alignment with national and international research / innovation agendas has borne fruit by attracting involvement with larger scale programmes e.g. UK Catapult links, emerging Medicines Manufacturing Innovation Centre (Catapult bid too). Moreover, this approach has served to anchor key Tier 1 partners (Ineos, GSK) as the relevance and scale of ambition retains perceived value for the industry partners, not least leveraged funding and supply chain innovation participation. CENSIS has brought funding from the Digital Catapult to Scotland to support a successful regional IoT Boost competition and has made a bid with DataLab to set up a regional Digital Catapult node. It is active in H2020 bids and in manouvering with key UK players with regard to any future investment in a Sensor Systems Catapult. Key multinationals (IBM, Freescale) are sponsoring its infrastructure initiatives.

5. How effective and proportionate has the oversight of Innovation Centres been?

The Boards and agency participation therein (e.g. SFC and SE) are professionally constructed. The transparency, governance and reporting regime seem appropriate. The strategic plans have been developed and seen / approved by the Board and the public sector funding partners so this clearly has been judged as acceptable.

Ultimately, as is typical for such initiatives, the "make or break" of the individual ICs will be down to delivery, industrial relevance / participation and focused / effective leadership.

If ICs are to behave in a more entrepreneurial / commercial manner, there may be value in considering alternative models giving them, their Boards and executive teams greater degrees of autonomy in their strategy and positioning c.f. Catapults and corporate entities.

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

There may be value in managing "central costs" out of some ICs through higher levels of shared service.
A strong focus on the quality, experience and leadership skills of the exec team members is essential.
Examination of the collaborative opportunities within and across the IC family may offer greater value and new industrial participation streams.
Stronger links to the UK Catapult family is important to drive growth and cooperation to value of the industry / business partners (and higher funding level opportunities.
"De-cluttering" the innovation landscape would help. Links between and across ICs, Industry Leadership Groups and other agency activities could be reviewed for enhanced VfM and a pan-Scotland effort.
Constraints on the application of funding to academic collaboration partners only is a major limitation especially when the industrial partners are SMEs with limited financial capacity. Better alignment between funding council and Enterprise Agency funding is needed going forward for example using a single approvals mechanism from a shared 'pot'.

Independent Review of Innovation Centres Programme – Led by Prof Graeme Reid

Submission

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Who :- Organisation
Confidentiality :- No
Confidentiality Reason :-

Q1 :- The vision still represents an unmet opportunity so is still current and correct. Delivery of economic growth and wider benefits from research is a vital agenda for Scotland. Acceptance and willingness to engage in Knowledge Exchange in many forms has progressed substantially at all levels in university culture over the past decade and ICs offer one mechanism for delivery. We have yet to see ICs fully develop as "sustainable and internationally ambitious open communities of university staff, research institutes, businesses and others ".

Q2 :- The Innovation Centres (ICs) are moving towards meeting this vision, but there are challenges to overcome. The ICs were mainly established with a core of existing partnerships; effort is required to create truly open communities. There remains an opportunity to widen access across both university and industry. We have not met any closed doors, but methods of engagement with ICs could be made clearer.

Q3 :- The ICs cover a range of sectors with the potential for development by Scottish universities and business. The industry-led approach in the creation of ICs was successful in identifying critical areas for the Scottish economy. An Innovation Centre dedicated to 'photonics', widely recognised as a major strength and opportunity for Scotland, could bring benefit; the sensing aspect is perhaps met by CENSIS, and Fraunhoffer APC addresses some specific areas related to sensing and metrology, but there is an opportunity for a centre to cover the full scale and breadth of photonic applications not covered by other initiatives.

Q4 :- Many of the ICs advertise opportunities to universities using the same point of contacts as Interface, which is an efficient method for distribution to individual universities. The Research Pools, (which were identified at the outset as the evidence for a distinctive cooperative culture in Scotland) would offer another route for distribution where multi-university collaboration would bring benefit. As the ICs have their own funding, there is a risk of competition with existing schemes such as KTP,

but no one mechanism fits all situations so the various schemes should be able to co-exist.

Q5 :- The effectiveness of the governance arrangements for ICs are not transparent from the outside; it is difficult to comment on how each IC assesses its own performance.

Q6 :- There are opportunities for ICs to work more closely with Research Pools and other organisations to address Scottish, UK and global challenges. The major investment in Scotland's Pools is seen as a distinctive success for Scotland which has increased international competitiveness not only in Scottish research, but in the impact of that research. The shared senior level governance of pools has ensued sharing of experience and good practice across the university sector and increased cross-disciplinary collaboration (and a core strategy for the continuation of Research Pooling), offering an ideal route into Scottish universities where a strategic approach is required. The international reach of research within pools could be exploited such that Pools and ICs working in unison could deliver the internationally ambitious communities called for in the vision.

Innovation Centres

Supported by The Scottish Funding Council, Highlands and Islands Enterprise and Scottish Enterprise.

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The Scottish Funding Council
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20 June 2016

Dear Graeme

REVIEW OF THE INNOVATION CENTRE PROGRAMME

The Innovation Centre CEO Forum met last week and agreed to offer you our collective view on aspects of the review questions you set out.

1. **Is the original vision for the Innovation Centres programme current and correct?**

The vision to "support transformational collaboration between universities and businesses" is as important now as ever. This is made clear in the recent NCUB report "The Step Change: Business – University Collaboration Powering Scottish Innovation". It is therefore important to sustain the commitment to the ICs programme, to allow Scotland's economy to reap the fruits of its investment.

The original vision for the Innovation Centres reflected the very different innovation styles in Scotland's key economic sectors, and this vision was correct at the time. The experience of all the ICs over their 2-3 years since launch has confirmed the importance of this flexibility of approach. However, in light of the experience we have gained to date, there is a clear demand from our businesses for simpler access to all forms of public support. We would like to explore how the ICs further leverage and mobilise the resources available through the Enterprise Agencies to deliver a sector-specific, customer-facing, service.

2. **From your experience so far, are the ICs delivering against this vision?**

Each innovation centre follows a business plan agreed with the SFC at the outset of their respective funding periods. These are sector-specific, and a key strength and integral feature of the IC concept from the outset.

In implementing their business plans, the ICs have proved responsive to the dynamic nature of their sectors and the wider economy; for example, adapting models in response to change in their sector, or iterating project processes to match stakeholders' requirements.

Each IC has strong industry leadership and input, which aids their standing and engagement. As the "Step Change" report makes clear, respecting the industry leadership of the individual ICs, and providing solutions that meet those industry needs, must be preserved, allowing the ICs to evolve responsively to market and industry requirements.

3. **To what extent do the priorities of ICs reflect those determined by industry?**

There is considerable variation here, depending on the genesis of the demand which resulted in individual Innovation Centres being created.

Three are in established industrial sectors which have a clear vision (aquaculture, oil and gas, and construction) and where the demand side 'pull' from industry is very clear.

Three are in emerging industrial sectors (SMS, DHI and IBioIC) which operate in an environment where the demand side requirements are evolving, and the ICs themselves are helping to create and focus that demand.

Two (CENSIS and The Data Lab) are avowedly cross-sectoral, catering to a multiplicity of potential customers, applications and business communities, and where these ICs are catalysts for commercially collaborative projects built across sectors.

By both design and practice, the SFC set up the eight ICs to respond to the individual needs of diverse sectors and emerging sectors. This bold vision to deliver 'stratified innovation' allows distinctive needs to be met in a customised way, most appropriately directed to each sector. We strongly commend the SFC for their own innovation in creating genuinely novel, business-responsive, organisations, which are able to grow in the direction of their clear industrial leadership.

This is already delivering benefits to the Scottish economy and to the Scottish research base. The appetite from industry to respond to the opportunities being facilitated and stimulated by all the ICs is amply demonstrated by the increased levels of business expenditure on R&D now flowing in to Scottish universities.

4. How has the relationship between business and academia evolved since the creation of ICs programme?

The process of effecting culture change in the relationship between business and academic was never going to be a quick fix. However, the activities of the ICs are already resulting in a greater understanding among businesses, including SMEs, of the capacity of universities to work on commercially-relevant research, including on short-term projects. The ICs have a role in stimulating these initial short-term collaborations to develop into longer-term strategic partnerships between researchers and companies.

Another area where the IC programme is already delivering results is in the creation of a cohort of business-literate graduates, PhD students, post-docs and senior researchers. Each addition to this cohort helps to create step-change in the innovation culture in Scotland – through

specific projects, through greater visibility for applied research, and through communicating the advantages of collaborative innovation to the wider academic and business communities. The ICs are contributing to important generational change on this, and it is important that this progress can be maintained.

5. How effective and proportionate has the oversight of the ICs been?

There is a now well established mechanism for reporting, monitoring and review of IC activities. All ICs report quarterly to the SFC, having been signed off by their respective IC boards. Each IC is also subject to an annual review meeting with the SFC Research Committee. These arrangements are fully functional.

The host universities for each IC provide administrative support and, where there is a host university representative on the board, ensure that activities align with public sector requirements, such that probity and propriety around public funding is fully respected.

All Innovation Centres have a 'Board' structure, yet legally this is merely a committee of people who meet. When difficult or challenging issues have arisen, the university is the legal entity, has legal responsibility, and holds all the power.

Furthermore, the ambiguity in the lack of legal status of ICs apart from their administrative hub university raises uncertainty about the independence of each IC from its host institution. It has also at times created confusion with business partners when contracting. In addition, the scope for ICs to pursue European or other funding opportunities is limited or negated by the lack of a separate legal status.

We believe that these fundamental issues of governance must be explored.

Lastly, the requirement to operate within the universities' administrative procedures means that the ability of ICs to deliver at the pace industry expects is sometimes compromised, and the universities' operational speed acts as a drag on IC performance.

6. Do you have any other views such as suggestions for the evolution or future direction of the IC programme?

1 Role of ICs in the wider innovation landscape

ICs are creating deep links with industry sectors. They are able to engage in ways that generalist services cannot, and have been able to clarify the complex Scottish and UK innovation landscape to businesses. An appropriate evolution of the current IC offering might be to leverage this greater sectoral penetration by enabling ICs to broker simpler access to the products and services of others. A simplified approach to industry would encourage greater uptake from our respective sectors by presenting a less confusing, more industry-friendly interface. SMEs in particular might be more willing to invest in R&D if they were better able to understand, and access, the different mechanisms for de-risking this activity through sector-specific access points through the ICs.

2 The roles of SFC / SE / HIE

At present, funding for the Innovation Centres flows under a letter of grant from the SFC to the host university, and generally calls on the host university to implement the original business plan.

However, to operate effectively in a fast-changing commercial and economic landscape, the ICs and their staff, CEOs and boards must adapt to and anticipate these changes, which often requires the original business plans and approaches to evolve in real time. At present, it is unclear to the ICs what view SFC takes of such industry-led evolution of business plans, and whether changes could be seen as a breach of the original grant award letters binding the university hosts.

A second area worth further exploration is the role of Scottish Enterprise and Highlands and Islands Enterprise as co-funders of the Innovation Centre programme. There is variable experience across the IC network of the level of concrete and specific financial engagement SE and HIE have offered to individual ICs in ways which add value and deliver benefit to companies.

We invite the Review Panel to consider whether a deeper financial partnership between the Enterprise Agencies, SFC and other relevant public sector partners –
in terms of explicit commitments to core and/or project funding with

each IC and with the IC programme as a whole – might serve to strengthen the achievement of the Scottish Government's ambition that innovation will drive economic growth and deliver social benefit.

Yours sincerely,

[redacted]

Gillian Docherty
CEO, The Data Lab

[redacted]

Justene Ewing
CEO, Digital Health and Care Institute

[redacted]

Stephen Good
CEO, Construction Scotland Innovation Centre

[redacted]

Heather Jones
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Roger Kilburn
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Ian Phillips, CEO Oil and Gas Innovation Centre

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c/o The Scottish Funding Council
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17th June 2016

Innovation Centres Review - Call for Evidence

Dear Graeme,

Thank you for the opportunity to respond to your Call for Evidence request of 20th May 2016. Please note that this response refers to the experiences and views of the Industrial Biotechnology Innovation Centre (IBioIC) not those of other Innovation Centres.

1. **Is the original vision for the Innovation Centres programme current and correct?**

   The original vision for Innovation Centres was to create economic activity for Scotland by utilizing the academic resources of Scotland. For IBioIC, this vision is still valid however as progress is made towards it there is an opportunity to broaden the vision and create greater economic activity by supporting the industrial networks that have been created by IBioIC towards higher TRLs.

2. **From your experience so far, are the Innovation Centres delivering against this vision?**

   IBioIC is on track with or exceeding its implementation plan published in its Vision 2030 document which was published for its launch in February 2014. After just 30 months, all the actions in Phase 1 (1-18 months) and Phase 2 (18-48 months) of this plan have been delivered with Phase 3 (24-60 months) actions in progress. The activities and achievements of the centre are detailed in the quarterly MEF reports to the SFC. It is recognized that these actions are largely activities that demonstrate leading measures. The ultimate economic impact of these activities is a lagging measure and will still take a number of years to realise.

3. **To what extent do the priorities of Innovation Centres reflect those determined by industry?**

   IBioIC operates an industrial membership model in which members pay to belong. Once a member has joined, retention becomes a critical success factor for IBioIC to ensure that its members are satisfied with its activities and priorities. To date 58 companies have signed up as members to IBioIC and all but one has been retained, the one loss was due to bankruptcy. It is unrealistic to expect this statistic to remain at this high level but a target of >90% retention has been set. In the original business plan for IBioIC a target of 75 “partnership” companies by year 5 was set and over 200 SMEs “engaged” with the IBioIC. On top of its current membership IBioIC has ongoing discussions (engagements) with 160 further companies.

Despite these statistics, there is still much work to be done. Industrial Biotechnology is not a well-developed industrial sector. A significant part of the role of IBioIC is evangelizing to companies about the benefits of biotechnology, many of whom have not heard of or thought of its application to their activities. There are still many more companies that could get involved from both within and outside Scotland.

4. **How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?**

   IBioIC started with a list of eleven Scottish Universities and two Research Institutes that expressed interest in collaborating with the Centre. They became the original signatories to IBioIC's Collaboration Agreement. Since then a further two Scottish Universities and two Research Institutes have joined the Centre indicating the value they see in having a relationship with IBioIC. Of these seventeen, thirteen are currently involved with IBioIC driven programmes whether that be projects, company problem solving sessions, PhD studentships or providing teaching to the collaborative MSc. Numerous industrial members have commented that as a result of the Centre's activities there is a greater awareness and interaction between industry and academia.

   In addition, IBioIC works with Interface and the SFC Research Pools: SULSA, ScotChem, EPT and MASTS.

   In developing, gaining approval for and establishing its HND programme, IBioIC also works closely with SDS, SQA and 2 FEIs as well as its HEI partners for articulation into higher degree programmes. IBioIC is in discussion with a further three FEIs interested in running this course.

5. **How effective and proportionate has the oversight of Innovation Centres been?**

   IBioIC rapidly developed governance processes in line with its Business Plan promises and observed by the Innovation Centre stakeholders, whose role is considered essential to achieving strong governance. IBioIC maintains an excellent relationship with its host university (Strathclyde), with both the CEO and Chair having regular meetings with Senior University staff including the Principal. IBioIC takes its Governance responsibilities very seriously and has established an Audit Committee to oversee the accounting for the external contributions to the Centre and manage the Risk Register which is based on the host university risk register. IBioIC adheres to all University policies around recruitment, contracts, procurement, equal opportunities, staff safety, staff duty of care and accounting standards. IBioIC holds quarterly Governing Board meetings and operates two advisory boards (Scientific and Commercial) made up from its industrial members and academic partners who among other activities, provide independent assessment and approval of the project funding decisions.

   IBioIC values the relatively "light touch" in oversight from its funders and stakeholders and the operational responsiveness it allows in the financial support of academic activities for its industrial members. It recognizes the importance of demonstrating its responsible use of this operating model and urges the Review Committee to consider expanding this to allow funding to go beyond the support of academics and include companies and the centre.

6. **Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?**

As the Industrial Biotechnology sector in Scotland develops and matures the needs of the leading companies in this sector will change. They are moving up the TRLs and will move beyond the capacity for the Universities to provide support for them. New companies will form that will require the current offerings of IBioIC but to meet the greater needs of the sector and develop the National Plan for IB, IBioIC needs to develop new capabilities. These capabilities could include developing three physical development hubs following the concept of the successful Catapult model introduced by InnovateUK. These three hubs being:

a. Marine Biotechnology Centre probably in Oban
b. Large Scale Biorefinery Technology centre probably in Grangemouth
c. Demonstration Scale Specialty Process Development and Refining Centre probably in Irvine.

IBioIC has developed a cohort of companies that make up the supply chain for IB in Scotland and beyond, to solely meet the early TRL needs of sector would be to miss an opportunity.

I hope these responses are both clear and succinct. Should you require any clarification or more detail, please contact either of us. Otherwise, we look forward to meeting you at the review meeting on 27th July.

Yours sincerely

Ian Shott, CBE, FREng
IBioIC Chair

Roger Kilburn
IBioIC CEO

Professor Graeme Reid
Chair of Independent Review of Innovation Centres Programme
The Scottish Funding Council
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17 June 2016

Dear Graeme

REVIEW OF THE INNOVATION CENTRE PROGRAMME

This letter provides the SAIC executive team's experience of and perspective on working as part of the cohort of staff delivering the SFC and industry-led vision for the Innovation Centres programme.

1. Is the original vision for the Innovation Centres programme current and correct?

The SFC vision is echoed entirely in the SAIC business plan on which our funding was awarded. That was to foster innovative, industry-relevant collaboration to impact positively on the Scottish economy. All our work is focused on connecting businesses with academics to provide innovative solutions to industry-defined problems in Scottish aquaculture. Whilst the outcome of our work will be direct and indirect economic benefits to the Scottish economy, the process involves facilitating dialogue and stimulating research collaborations between companies and Scotland's universities – a key element of the original SFC vision requiring long-term engagement and commitment to culture change.

2. From your experience so far, are the Innovation Centres delivering against this vision?

Speaking only for SAIC, we are pleased at the impact of our activities in the less than 2 years we have been fully functional. Our engagement with over 100 companies, and 60+ academics, through 600+ meetings and 50+ events, has already resulted in 9 high-profile and industry-relevant projects. We have secured higher than expected levels of industrial co-investment, with £1 of SAIC support leveraging £2.90 of non-SAIC funding. Our 4 cleaner fish projects - which address our first Priority Innovation Area (PIA) - are now part of a programme to introduce novel biological technologies to Scottish aquaculture. One of our commercial partners is already planning a major self-standing investment of £6m into a cleaner fish hatchery to build on the emerging results of the open-access IP research we have co-funded in Machrihanish. Seven of our projects have secured two or more commercial partners; and three involve two or more university partners. We are seeing a step change in the appetite and activity of aquaculture companies

across the supply chain to explore R&D-led innovation and to commit more business expenditure than ever before on applied R&D in collaboration with Scottish universities. This is a direct result of SAIC's activities.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

Our business plan was co-created at an industry-wide workshop facilitated by the SFC. The priorities within the 2014 business plan were crafted after deep consultation with industry members. Since then, our industry-dominated board (5 of our 9 board positions are filled by industrialists) has reviewed and confirmed the tight focus on our 4 Priority Innovation Areas in our 2-year operational plan.

SAIC has very strong industry leadership which builds our credibility with our key target markets, and enhances our ability to engage with companies in our sector. We have a narrow, deep focus on a small number of well-defined priorities for innovative research.

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

We see the process of supporting cross-cultural engagement between the very different worlds of academia and business as a long-term component of the SAIC mission. There is strong evidence of commercially-aware applied researchers orienting their research teams to meet the demands of industry. However as in any collaboration, new relationships take time to bed down, and mutual understanding deepens with experience. SAIC has been instrumental in shaping the expectations of collaborating parties, and in extending to a wider audience the invitation to work with aquaculture companies.

SAIC has been able to stimulate the emergence of a new supply-chain-wide dialogue in the Scottish aquaculture sector that has not happened before. It is resulting in peer-to-peer discussion and the development of an industry sector vision for 2030. SAIC is identifying the medium-term research, development and innovation requirements for Scotland to drive sector growth, drawing on university capability. We fully expect that to translate into a greater demand for academic input to business innovation from now till 2030.

5. How effective and proportionate has the oversight of Innovation Centres been?

The quarterly reporting and annual review mechanisms operate smoothly, with plenty of opportunity for the funding partners to query, challenge and support the delivery of SAIC activity in line with our board strategy. Having representatives of the funding partners as observers on our board enables full transparency. The board member from the University of Stirling is able to review all board papers and contribute at all board meetings to ensure that the requirements and interests of the administrative host institution are fully respected.

SAIC has secured its host institution's agreement to all aspects of governance, including the terms of reference of our board, our independent scientific panel, our remuneration committee, our IP policy, our health and safety policy and our equality and diversity policy, all of which are available for download on our website.

Whilst SAIC, as part of the second tranche of ICs, was able to benefit from the earlier experience and learning of the first tranche, some of the issues they faced in establishing their Innovation

Centres were repeated with the second cohort. From an IC and industry perspective, the speed with which university systems and processes are able to move – at the pace which industry expects and on which innovation in the commercial world often succeeds or fails – remains an intermittent issue even nearly 2 years in.

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

In supporting five student internships directly within the organisation, SAIC is demonstrating to the aquaculture sector the value of internships, and is also developing a graduate employability scheme. This began in 2015 with the Institute of Aquaculture at the University of Stirling and is now expanding to the whole of Scotland.

The further development of these initiatives chimes closely with the recommendations of the NCUB "Step Change" report published in May 2016. This, and the SAIC Scholars programmme, which sets out to create the 'leaders of the future' for the aquaculture industry in Scotland, is directly contributing to the creation of business-literate, entrepreneurially-minded graduates. We would like to build on these early initiatives as part of implementing the "Step Change" recommendations.

Yours sincerely,

Heather Jones

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Scottish Aquaculture Innovation Centre

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17 June 2016

Dear Graeme

INDEPENDENT REVIEW OF THE INNOVATION CENTRES PROGRAMME

In my capacity as Chairman of the Scottish Aquaculture Innovation Centre (SAIC) I am pleased to provide evidence for your review.

By way of introduction, I worked closely with the SAIC shadow Board in preparing our initial business plan and application for Innovation Centre (IC) status. I have chaired SAIC since its launch in June 2014. I also chair two London Stock Exchange listed companies – European Assets Trust NV and ICG-Longbow Senior Debt Investments Limited. I am chairman of Hospice Developments Limited, a special purpose vehicle created to design and build the new £21 million Prince and Princess of Wales Hospice in Glasgow.

As the former Chief Executive of Scottish Enterprise, Scotland's economic development agency, I was instrumental in the creation of Scotland Food and Drink. Prior to that, I was the managing partner in Glasgow and industry leader for Scotland and Northern Ireland for consumer products for Ernst & Young LLP. I am a former Chairman of the CBI Scotland.

I am a Deputy Convener of Court and Treasurer of the University of Strathclyde.

1. Is the original vision for the Innovation Centres programme current and correct?

The purpose of the IC programme was to support transformational collaboration between universities and businesses. The aim was to enhance innovation and entrepreneurship across Scotland's key economic sectors, create jobs and grow the economy. This original vision is still relevant and indeed of even greater economic importance now given the slowdown in the Scottish economy.

Scotland's track record on business expenditure on R&D (BERD) is poor, lying eighth out of all UK regions at 0.74% of GDP and placing Scotland in the third quartile of all OECD economies. By comparison BERD in South Korea and Israel runs at 3% of GDP.

Our universities by contrast are world leading. With 8.5% of the UK population, Scotland secures 13.5% of UK research funding. So in terms of total expenditure on R&D, Scotland is first out of the UK regions and fourth in the entire OECD.

This disconnect starkly demonstrates that Scotland's world class research capabilities are simply not being translated into wealth creation. This is the fundamental problem the ICs were created to address – and reflects the opportunity on which the ICs can capitalise.

I see the role of SAIC as being a partner with business to share the risk of investment in value creating research. We want to stimulate business demand for research into the most pressing technological issues facing the aquaculture industry - encouraging investment by aquaculture companies which would not otherwise have taken place without the Scottish Funding Council's investment in SAIC.

A key measure of our success is the level of leverage from industry and other funders which SAIC secures for every £1 of public money. In the past 22 months, SAIC has achieved "best in class" levels of industry co-investment. On the nine projects we have funded to date, £2.3m of SAIC grant has attracted £6.8 million industry and academic investment. More information on SAIC's leverage rates is given in the response to question 2.

SAIC has also been instrumental in attracting other public funding into relevant projects, eg £1 million of Highlands and Islands Enterprise (HIE) and European Maritime and Fisheries Fund (EMFF) money has been secured for a project to launch a pilot commercial mussel hatchery in Shetland. We are also seeking £1.8 million from EMFF in order to catalyse £13 million of industry investment in physical sea lice removal measures. If successful, Scotland will be the only country in the world undertaking pan-industry experimentation on this scale.

2. From your experience so far, are the Innovation Centres delivering against this vision?

At the time of this submission, SAIC has been operational for just 22 months, with our first projects approved in March 2015. Despite being at a very early-stage of our development, we have made good progress on our vision of industry success through research partnerships.

SAIC already supports a number of transformational applied research collaborations, connecting businesses and academia on innovative projects that are generating investment and jobs. For example, progress on a SAIC sponsored project on the commercial deployment of cleaner fish (to control sea lice) in the salmon industry has led a major salmon producer to propose a £6 million capital investment in a stand-alone commercial wrasse hatchery in Machrihanish (close to the SAIC supported experimental

test hatchery where the research is ongoing). This proposal has come only 18 months into a 42-month SAIC project.

Other communities in the Highlands and Islands area are also benefiting from SAIC's activities. For example, our support for a project to launch a pilot commercial mussel hatchery has been a magnet for £2 million of expenditure in Shetland from a 20% SAIC contribution.

Another aspect of the IC programme vision was to draw on Scotland's research expertise to work on problems and opportunities identified by industry, adding value through secondments, industrial studentships, spaces for collaborative work and shared access to equipment. We have created 7 PhD and 7 post-doctoral applied research positions in our funded projects, and 20 industrial MSc projects through the SAIC Scholars programme. These programmes represent an investment in the future of the industry, and will help to effect cultural change in the relationships between industry and academia. SAIC adds further value by exposing students to the innovation needs of the industry, and helping to create a cohort of graduates and researchers who are comfortable working in industry. Their outlook and experience will support the long-term commercial success and sustainability of the Scottish aquaculture sector.

In question 1, I referred to SAIC's work to lever further investment from industry and other sources of public funding. Based on current project investment by companies, results so far are exceeding our business plan objective to achieve 1:1 funding. The average SAIC contribution rate across our 9 projects to date is 26%, with 59% coming from the private sector, 6% from universities and 9% from other public sector sources. A good example of leverage and multi-partner contributions is the EMFF bid, where SAIC is the catalyst to hopefully securing £1.8 million of EMFF funding, mobilising £8.5 million of capital investment. This will translate into £13 million of economic activity on applied commercial R&D.

Leverage rates vary from SAIC contributing 7% on one project to 66% on another – this reflects the wide range of companies SAIC works with, from multinationals to SMEs. While always aiming to lever the maximum industry investment, SAIC is committed to an approach that can flex to the needs to small businesses in the aquaculture sector.

In terms of delivering the long-term vision for the Innovation Centres network, it is too early to draw conclusions. The first SAIC projects were approved in March 2015, and the first project due to complete will be a rapid-response project ending in September 2016. SAIC's larger-scale projects, such as the £4 million wrasse project involving Marine Harvest Scotland, Scottish Sea Farms, BioMar, and the University of Stirling, are longer-term undertakings and are scheduled to conclude towards the end of 2018. It is too soon in the project lifespan to measure outcomes and impacts. Though the proposal for a £6 million investment in a commercial wrasse hatchery in Machrihanish – with potential to create skilled, local jobs – would clearly be a successful outcome.

Other early indicators of success are SAIC's achievements in exceeding all the Key Performance Indicators (KPIs) set for our first two years. SAIC's KPIs were developed at the SFC's request, were defined in conjunction with independent consultants (EKOS), and are incorporated into our Monitoring and Evaluation Framework agreed with the SFC. We have also worked hard to grow the number of our industry consortium members. SAIC started with 26 companies expressing an interest in joining, and 42 businesses are now formal signatories to the consortium agreement.

In terms of cultural change, the relationships between our business and academic consortium partners who are working on projects is very good but much needs to be done to effect long term change. This is fundamental to our plans for our "Connect+Collaborate" programme.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

The SAIC business plan has been developed and led by industry. Constitutionally, the Board must have a majority of its members from industry. Our industry Board members are generally chief executives of leading aquaculture businesses. On our board are the CEOs of the largest salmon producers in Scotland, Marine Harvest Scotland and Scottish Sea Farms. We also have industry Board members representing SMEs and the shellfish sector. When a recent vacancy arose for an industry board member, four Managing Directors of Scottish aquaculture businesses applied for this unpaid voluntary role - a sign that SAIC is already regarded as an organisation that can add value to the industry and to which it is worth devoting time.

We regularly organise workshop events on our Priority Innovation Areas (PIAs), where we bring businesses and academics together to identify key challenges where they could collaborate. These Connect+Collaborate workshops have led to a pipeline of Expressions of Interest and full project applications on our PIAs. This has translated into our current set of 9 approved projects, and a near-term pipeline of 20 diverse and complex projects, all commercially focused.

Of our 42 industry members of the consortium, we currently have 10 companies investing in collaborative R&D projects with us. There are a further 19 companies ready to co-invest with projects in the near-term pipeline

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

Our experience in the first 22 months of activity is that Connect+Collaborate workshops and associated networking have been particularly beneficial. SAIC staff with industry knowledge have been able to reach in to companies, and identify opportunities for innovation. This has helped us to match companies with academic expertise (on which SAIC leads) or through business development (where HIE leads). In doing so, we have opened up more routes for HIE to access aquaculture companies in the wider supply chain,

developing a ‘no wrong door’ approach. This approach simplifies businesses’ route to innovation.

Alongside our work to reach in to companies, SAIC has reached out to the academic sector. An important aspect here is to make researchers in related academic disciplines aware of the opportunities for innovation in the aquaculture sector, and of its size, scale and importance to the Scottish economy. We have engaged the interest of a number of researchers in other disciplines – from physics to agri-tech to sensors – in collaborating with the aquaculture sector.

5. How effective and proportionate has the oversight of Innovation Centres been?

Based on my experience of chairing or serving on a wide range of boards – including FTSE 250 companies, venture capital funded start-ups, and public-sector bodies, I believe that the governance practices we have adopted at SAIC are of the highest standard and represent best practice drawn from both the private and public sectors.

The Board focuses on strategy, monitoring results, progress against KPIs, and in holding the executive to account for delivery of the business plan. The industry majority on the board ensures that all SAIC activities are directed towards supporting sustainable wealth creation for the aquaculture sector and the wider economy.

Our Board and Board committee’s terms of reference, together with our Board self-evaluation templates, have been used as models by other ICs.

A serious challenge faced by SAIC is that university timescales do not always match the demands of industry. Occasionally differences in the speed of response have been detrimental to the delivery of Board approved projects. For example, the painfully slow procurement procedures at the University of the Highlands and Islands have caused delays of several months and cost increases compared to a straight commercial tender process. This has jeopardised progress on seasonally dependent biological research in the £2 million SAIC-supported shellfish hatchery project in Shetland. In addition to delaying specific projects, such problems with university procurement or administration cause frustration with our industry partners about the collaborative process with academics, and impedes our work to effect culture change in academic-industry relationships.

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

One challenge faced by the IC programme is the nature of the model, whereby the host university is accountable for the finances of its Innovation Centre, but does not control the decisions on expenditure.

Our Board takes its responsibilities for the stewardship of public monies very seriously indeed. Confusion between accountability and control generally leads at best to duplication and delay and at worst to a lack of accountability when things go wrong. Direct

funding of the ICs with strictly defined accountability on the part of the ICs would be desirable in future.

Having launched later than some other ICs, it is too early to tell if SAIC has delivered the impacts projected in our detailed and robust KPIs because we are only 22 months into a 5 year programme. At this stage, I would consider it essential to wait for further planned progress on SAIC's programme of activities and engagement before results are assessed conclusively. Given the long-term nature of some of SAIC's flagship projects (the £4 million wrasse project, for instance, has a 42-month term, owing to the industry's biological and seasonal cycles), we would suggest this takes place at year 7 from operational launch. This stability will also support businesses' improved understanding of what SAIC can deliver for them.

The SAIC Board do not foresee a time when SAIC could be a fully self-funding organisation. There will always be a need to receive some core level of public funding and investment. But if we deliver economic benefit to our company base and higher levels of business expenditure on R&D in Scotland, then SAIC should be able to continue to achieve high levels of private sector leverage for every £1 of public investment.

I am quite clear in my own mind that if SAIC does not deliver the expected benefits for the industry and the economy then the organisation should be wound down.

However, we remain convinced that the IC project can deliver disproportionate beneficial impact for the economy and deliver exceptionally good value for the taxpayer. Our Board and executive team will continue to direct all of our energies towards this goal.

Please do not hesitate to contact me if you would like to discuss any of these points further.

Yours sincerely,

Jack Perry

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Independent Review of Innovation Centres Programme – Led by Prof Graeme Reid

Submission

Name :- Dr David Sibbald
Job Title :- Interim Chair, Stratified Medicine Scotland Innovation Centre
Org :- Stratified Medicine Scotland Innovation Centre (SMS-IC)
Tel :- [redacted]
Email :- David.Sibbald@glasgow.ac.uk
Who :- Organisation
Confidentiality :- No
Confidentiality Reason :-

Q1 :- SMS-IC believes that the original vision that "Using the Scottish university infrastructure, human resources and research excellence as a platform for collaborations across the whole of Scotland, Innovation Centres will create sustainable and internationally ambitious open communities of university staff, research institutes, businesses and others to deliver economic growth and wider benefits for Scotland" is still very current and correct.

Q2 :- The Stratified Medicine Scotland Innovation Centre (SMS-IC) is already delivering significant value in line with the original vision for the Innovation Centres Programme. The first phase has been completed (infrastructure and successful operations) and clear plans are in place for the second phase, which will deliver sustainability and wider economic growth through the creation of the Scottish Precision Medicine Ecosystem. Specifically:

The SMS-IC is already harnessing the research excellence, infrastructure and human resources of four Scottish Universities (Glasgow, Edinburgh, Aberdeen and Dundee) in a strong and productive collaboration with NHS Scotland, large and small industry (in particular Aridhia and Thermo Fisher, but also more broadly), the Chief Scientist Office and Scottish Enterprise, to create the Scottish Precision Medicine Ecosystem and position Scotland as a global leader in precision medicine.

The partnership of academic, NHS and industry collaboration within SMS-IC is very strong and real – this has been a true culture change, and is now very much embedded. The strength of the collaboration resulted in the 2015 Life Sciences Award for Innovative Collaboration by Scottish Enterprise.

The SMS-IC has developed a business model enabling academic/NHS/industry collaborations to be formed around specific opportunities within the precision medicine marketplace. These collaborations are creating precision medicine products, services and technologies aligned to global market demand. Precision

medicine is an early stage, but transformational market opportunity in terms of scientific research, clinical services development and the opportunity for significant wealth creation within Scotland. Our strategy is to build those individual program consortia locally and expand them internationally attracting investment and building Scotland's brand as a premier location for the development of precision medicine products and services. We have a number of programs underway led by SMS that are delivering economic growth, opportunity and market confirmation of our strategy and business model. A few highlights below –

The SMS-IC informatics platform is hosting a pan European adaptive clinical trial program for Alzheimer's drug development. This program involves 13 European countries and 35 collaborative partners including the majority of the biopharma industry. The initial program is 5 years and Euro 64M with an expectation that significant additional funding will be available from industry partners. SMS has an opportunity to play a cornerstone role in the informatics discovery and delivery over the next decade attracting funding and opportunity to Scotland http://ep-ad.org/

The SMS-IC informatics platform is enabling Collaboration between NHS, University of Glasgow, Philips Healthcare and Aridhia to adapt a predictive physiological algorithm for the management of traumatic brain injured patients in ICU to a precision medicine software product that can embedded within Philips ICU products and marketed globally. Funding drawn in from Innovate UK to deliver phase 1 product with an expectation of further industry funding during 2017.

A national and international precision medicine program to improve clinical services and undertake ground-breaking clinical research for MS patients involving NHS Scotland, Universities of Edinburgh and Glasgow, Biogen, and academic partner in US and London. In common with all our programs, this attracts significant external funding and the opportunity to build a leading position for Scotland.

In addition to existing programs we're actively developing our future pipeline of national and international collaborative programs, enabling external investment to come to Scotland and building our reputation as one of the World's leading precision medicine countries.

The location of the SMS-IC at the new Queen Elizabeth University Hospital (QEUH, now the largest hospital in Western Europe) has been the catalyst for significant development with industry, creating a new and vibrant life sciences cluster at the hospital campus. The presence of SMS-IC on the University of Glasgow's Innovation Floor at the QEUH, has led the Precision Medicine Catapult (PMC) to locate the PMC Scottish Centre of Excellence adjacent to SMS-IC, and this is already attracting interest from companies (including overseas companies) who wish to collaborate with the SMS-IC.

The SMS-IC is actively collaborating with stakeholders across Scotland, the UK and overseas. In the first instance, these stakeholders are NHS Scotland, academic leaders, global thought leaders in precision medicine, large Pharma, Innovate UK, and government. The initial focus has been to position Scotland with the credibility, technical capability and capacity to deliver precision medicine in a global market, using a limited number of chosen exemplar projects to evidence this. It is anticipated that benefits for local SMEs will arise further downstream, particularly as part of the supply chain for clinical trials and diagnostics.

The SMS-IC was set up as an industry-focussed and industry-led innovation centre, and it has maintained this ethos throughout. SMS-IC is helping to address the very significant economic problem of rising healthcare costs, which are rapidly becoming unaffordable for the NHS, and the economic challenges for the pharmaceutical industry of identifying and bringing new medicines to market. The SMS-IC is using the triple-helix partnership of academia, industry and NHS to address these challenges using innovation to benefit the NHS and Pharma, including the repositioning of existing medicines for new diseases, and create significant opportunities for Scottish SMEs, and ultimately benefit for patients.

The SMS-IC is now positioned as the focal point of the Scottish Ecosystem for Precision Medicine, and will act as a one-stop-shop for marketing Scotland's strengths in Precision Medicine and delivering services and products to the market.

Q3 :- As described above, the SMS-IC was set up as an industry-focussed and industry-led innovation centre, and it has maintained this ethos throughout. Our business model reflects the demands of the precision medicine marketplace and our strategy regarding innovation and commercialisation within this market is very clear and shared completely by our Board and partners.

Although a growing number of SMEs are already benefiting, the SMS-IC aims to engage more actively and broadly with life sciences SMEs as it enters the next phase of its activity.
The SMS-IC is now positioned as the focal point of the Scottish Ecosystem for Precision Medicine, and is acting as a one-stop-shop for delivering Precision Medicine services and products to the market. This is designed to meet the needs of industry, notably big Pharma, wishing to do business with Scotland – and ensure Scotland is easy to engage with, and is agile and effective.

The SMS-IC is actively responding to the skills needs of this new industry (precision medicine), and has set up a unique MSc degree programme in Stratified Medicine & Pharmacological Innovation, which has involved five Universities and was designed with industry. All students are offered a placement

opportunity with industry, and this is already benefitting Scottish SMEs. The third cohort of students will graduate this year, with close to 100 students having completed the programme over its three years. It is planned that the programme will be reviewed at this stage to ensure that graduates continue to meet the needs of industry, and to take feedback on what might be improved. The success of this programme was recognised by the 2015 Herald Higher Education Award for Employer Engagement.
The nature of the market and thus our programs is highly collaborative. In practice this means clinical academics, industry and the NHS working extremely closely with shared access to data, tools, analysis and insight. These are tight rather than loose collaborations and will run for significant lengths of time. Already we're seeing the benefit of network effects where one program spins off opportunity to an adjacent program attracting additional funding and new collaborative opportunities. We would highlight this evidence as a good example of best practice, namely how do you start something relatively small, deliver value through the collaboration and scale internationally.

Q4 :- The close working relationship required within our domain builds relationships across the collaboration and develops a better appreciation of the constraints and styles each partner has. Inevitably better understanding leads to better co-operation and more depth within the collaboration. Our programs are designed to co-create, there's very little that could be classified as a transactional relationship between the partners and so ultimately all partners learn and adopt from each other.
The relationship between the academic and industry partners of the SMS-IC was the initial catalyst for the creation of the Innovation Centre, and this relationship has grown in depth and breadth since the IC was created.
The recognised academic leadership in Scotland has facilitated international interactions for SMS-IC, bringing key global players in precision medicine to Scotland, including key US policy makers and government advisors.

Challenges which remain, for both the academic and industry partners of SMS-IC, include: o Agility and the constraints of operating as a multi-partner consortium: SMS-IC is currently undertaking an options appraisal of different organisational structures. o Accessing funding from Scottish Enterprise. Although Scottish Enterprise has been an active participant and strong supporter of the SMS-IC, as a 'funder of last resort' it has had very limited impact on the IC's pressing need for infrastructure funding at a time when there is a recognised global race to implement precision medicine. This is also compounded by Scottish Enterprise's policy of only funding SMEs, which limits their ability to support SMS-IC at this crucial early stage.

Q5 :- SFC has been very supportive of the SMS-IC, providing guidance and

oversight which largely strikes an appropriate balance between freedom to operate and accountability.

SFC is an active participant, with Observer status, at SMS-IC Board meetings. SFC's funding of the MSc in Stratified Medicine & Pharmacological Innovation has been hugely helpful in attracting students to this new programme designed with industry to meet the industry skills requirements of precision medicine.

The significant in-kind support of the University of Glasgow as administrative lead for the SMS-IC has been crucial in the overall governance and management of the IC – including human resources/recruitment, financial, procurement, contractual, general management and legal.

It is important that the evolution of the Innovation Centres' objectives and metrics are taken into account as part of the assessment, and that the assessment of performance is not simply a tick-box exercise.

The current organisational structure limits SMS-IC's agility with regards to contracting, largely due to the constraints of operating as a multi-partner consortium with unlimited liability for all parties: SMS-IC is currently undertaking an options appraisal of different organisational structures, and SFC's guidance and support in this regard will be important for future success.

Q6 :- Ultimately all Innovation Centres will require to be either wholly or partially self-sustaining. For SMS-IC, our future relevance rests on our ability to grow and adapt with the market and the demands that presents, understand our value proposition (both for SMS and on behalf of the Precision Medicine community in Scotland) and ensure we can deliver value consistently into a very demanding environment. If we achieve this we should be able to move forward as a self-sustaining entity delivering significant economic, patient and research benefits to Scotland. Our structure has to reflect those demands and aspirations. It was envisaged from the outset that SMS-IC would become a company, and a milestone for a review was put in place. Such a company structure is also desirable to increase the agility of SMS-IC (e.g. speeding up contract negotiation) and to limit the liability of the consortium partners (currently unlimited). As described above, SMS-IC is currently undertaking an options appraisal of different organisational structures. However, the ability of any new structure to continue to benefit from SFC funding at this early stage is crucial, to ensure that SMS-IC is supported and continues to flourish until it is fully self-funding. This is likely to be a significant challenge for all Innovation Centres.

Oil & Gas Innovation Centre

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20th June 2016

Ref: Independent Review of Innovation Centers Programme

Dear Professor Reid,

Further to your letter of 20th May 2016, please find attached the response on behalf of the Oil and Gas Innovation Centre.

The Oil and Gas Innovation Centre (OGIC) has been operational since 2014 and we believe it is timely to review progress against the original objectives of the Innovation Centre programme. We are therefore very pleased to support this important initiative.

By way of background, the oil and gas industry is facing a very challenging time at the moment, both nationally and internationally. Oil prices have more than halved since 2014 (down from c.$110 per barrel in 2014 to c.$50 per barrel this month). This has resulted in a major reduction in investment and industry activity, evidenced by the estimated 120,000 job losses across the industry announced only last week (down from c. 450,000 jobs in 2014 to c. 330,000 now). The impact of this is felt across the industry and OGIC activities have been impacted accordingly.

Against this challenging backdrop, it is recognised that innovation and technology has a critical role to play to sustain the oil and gas industry in the UK for the long term. Despite the challenging environment and working very closely with the industry and our academic partners, OGIC continues to make good progress and we look forward to sharing some more detail at the Advisory Committee meeting on July 27th.

If you have any questions or need further information, please do not hesitate to contact us.

Yours sincerely,

[redacted]

Professor Paul de Leeuw
Chairman, OGIC

[redacted]

Ian Phillips
Chief Executive, OGIC

Innovation Centres

Supported by The Scottish Funding Council, Highlands and Islands Enterprise and Scottish Enterprise.

1. Is the original vision for the Innovation Centres programme current and correct?

The original vision of the Innovation Centre was to "support transformational collaboration between universities and businesses". Our view is that this remains an appropriate vision, recognising that this vision will take time to be realised and that there will be only a gradual evolution in how industry and academia work together.

From an OGIC perspective, significant progress has been made towards delivering this vision. Since OGIC was established in 2014, it has engaged with over 1300 businesses and is collaborating with 14 universities in Scotland. OGIC is currently developing over 50 projects, which have the potential to benefit the oil and gas industry. Based on our experience to date, the untapped potential in the Scottish universities has been a positive addition to the innovation landscape, and the 16 projects already contracted have benefitted those companies in progressing solutions that address industry problems.

It will be critical to ensure that the Innovation Centre model continues to be flexible and adaptable. The original business plan for OGIC was created in 2013 during a period of high commodity prices. With commodity prices currently at a ten year low, the oil and gas industry has experienced a sustained period of contraction. As such, the OGIC model had to be adapted accordingly. As an example and in response to the oil and gas industry downturn, the OGIC Board has now agreed that smaller projects with micro-businesses or small size enterprises can now be supported at a level of up to 70%, up from the originally agreed 50% level.

2. From your experience so far, are the Innovation Centres delivering against this vision?

As set out in the original Business Plan, OGIC works in close collaboration with the 14 universities across Scotland. In addition, OGIC works in partnership with Scottish Enterprise and Highlands and Islands Enterprise to avoid duplication, increase reach and to leverage organisational capabilities.

To ensure broader alignment and cross industry co-operation, the OGIC provides office accommodation in Aberdeen for (and works collaboratively with) representatives from CENSIS (1 person), the High Value Manufacturing Catapult (up to 2 people) and the National Subsea Research Initiative (up to 3 people).

In addition to delivering specific projects, the OGIC team spends a considerable amount of time providing context and insight to ensure that both industry and academic communities are aware of requirements and emerging opportunities. OGIC also plays a leading role in organising and contributing to industry conferences and workshops such as Intelligent Energy 2016, Decom Offshore 2016, the Industry Technology Facilitator's Showcase event and Energy Industry Council events.

OGIC's operating model is predominantly focussed on solving industry problems – the OGIC process typically starts with an approach from a company seeking to solve a problem after which OGIC will embark on matching industry demand with university capability. The overall OGIC process has been streamlined to ensure that submissions are 'fit for purpose' and that funding decisions can be made within a three-month timeframe.

Table 1 provides a summary of progress as of April 2016 versus the original Business Plan KPIs.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

By design, and as set out in the OGIC Business Plan, OGIC's activities are driven by industry demand and guided by the wider industry technology and innovation agenda.

All OGIC project proposals are reviewed for innovation and industry relevance by our independent Project Review Panel, comprising over 30 industry and academic experts who have volunteered to review OGIC projects.

The OGIC Board provides overall governance in line with the Business Plan objectives. The Board comprises senior industry leaders as well as senior representatives from academia, the SFC and SE.

In addition, most of the OGIC Board members and senior executives have wider industry responsibilities, as part of the industry's Technology Leadership Board, the industry's trade association (Oil and Gas UK) and other industry bodies/organisations (e.g. Society of Petroleum Engineers, Decom North Sea, Subsea UK etc.).

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

As part of its business development process OGIC "sells" the capability of Scottish Universities to industry. One of the misconceptions amongst many companies is that universities can only deliver traditional research projects. OGIC's shortest project was just 2 months, and our longest project is 18 months. As this reality is communicated, more and more companies are willing to consider using university capability to undertake work.

We see some evidence of universities re-structuring to enable them to respond to these shorter industrial requirements. As examples, the University of Strathclyde and St Andrews University have created internal business units which have an allocation of academic time available to deploy on short-term projects.

All OGIC project opportunities are presented to all 14 Scottish Universities, which are operating in the 'oil and gas space'. The OGIC enquiry is typically sent to business development and senior research academics (at Vice Principal or Director level). This gives the universities increased awareness of the innovation requirements of industry.

The oil and gas sector has little history of utilising government funding to support innovation. As a result the OGIC business plan included the provision of advice to companies on funding any aspect of innovation (whether in a university or not). In support of this, OGIC has mapped out the wide range of funding options available to companies across the UK. The funding options identified range from the relatively small £5,000 Innovation Voucher available through Interface to bespoke multi-million pound support programmes available through Scottish Enterprise.

OGIC aims to advise companies on project funding during their initial meeting. Where OGIC is not the appropriate route for a company to progress, OGIC signposts companies to the most appropriate agency and product. To date OGIC has referred c.20 companies to other funding organisations, including 5 to other Innovation Centres, 3 to Business Gateway, 2 to Interface and 2 to the Knowledge Transfer Partnership (KTP) programme and single referrals to Scottish Enterprise, Innovate UK and to the Industry Technology Facilitator.

5. How effective and proportionate has the oversight of Innovation Centres been?

OGIC reports progress on its activities four times a year in the form of quarterly reports to the SFC. The reports to the SFC are formally approved by the OGIC Board prior to submission. In addition, OGIC is subject to an annual review meeting with the SFC Research Committee.

The OGIC Board has evolved from an operationally focused Board (in 2014) to the current strategic Board. The Business Plan defined the initial delegated authorities and these have been developed further.

Each OGIC project is assessed independently by a Project Review Panel and the OGIC CEO has delegated financial authority to approve projects up to £20,000 (OGIC share). Larger projects require formal Board approval.

Heriot Watt University provides the administration support for OGIC and ensures that all support activities are in accordance with public sector requirements.

The Innovation Centre CEOs meet on a regular basis to share good practices and to ensure close co-operation between the various Innovation Centres. The Innovation Centre Chairs typically meet once or twice a year to address wider governance and sustainability issues.

In our view, the current SFC approach is appropriate and effective. The OGIC Board has clear defined accountabilities and delegated authorities, giving the OGIC team the time and space to deliver the ambitious OGIC agenda.

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

Industrial credibility

We believe that the Innovation Centre model plays a pivotal role in delivering enhanced innovation support to the Scottish economy. The Innovation Centres are unique in the innovation landscape in having senior industry practitioners leading them. This creates credibility and confidence that engages industry often much more effectively than more conventional models.

This industry credibility means that Innovation Centre staff are often well positioned to learn about and propose a wide range of support to companies, including market research, near-to-market / non-university innovation support, and larger funding for projects that are more substantial.

Long-term sustainability

The long-term sustainability of the Innovation Centre programme will need to be addressed in 2016. SFC funding for OGIC is scheduled to terminate in 2019, which will limit activity and investment in new projects from mid-2017 onwards.

Materiality & wider involvement in innovation

OGIC projects range from a short £20,000 study to a multi-phase project currently totalling £350,000+. These are modest projects for the large research-led universities and as a consequence, some of the

larger, research intensive universities have only limited engagement with OGIC. There may be merit in increasing the Innovation Centre involvement in larger projects.

In addition, there could be merit in using the Innovation Centre model to manage larger scale business-oriented initiatives e.g. funding of company-based activity.

Cross Innovation Centre Collaboration

OGIC sees significant value in increased collaboration with the other ICs. Cross cutting technologies, especially in the areas of big data, sensing and bio technology could have significant applications in the Oil and Gas Industry. OGIC is already working closely with a number of other ICs and will seek to increase this collaboration further.

TABLE 1 – OGIC KPI's	Total to end 2015 Target	Stretch	Actuals to April 2016	Commentary OGIC launched in November 2014, so the original "End 2015" projections are comparable with mid-2016 actuals
Jobs Created				
Within industry	9	12	15-30	OGIC projects have been smaller than the original business plan anticipated, due to the challenging business environment. The 16 projects in execution or completed have contributed to sustaining an estimated 15-30 positions in industry and an estimated 30-40 positions in universities.
Within universities	55	68	30-40	
Industry Engagement				
Partner Companies	9	12	14	OGIC does not have formal "partners" or "members" so this total is the number of companies that OGIC has contracted a project with.
SME engagement	150	188	31	OGIC has had some form of contact with ~1300 companies, the vast majority of whom as SME's. We have meaningful engagement with 31 SMEs (defined as at least a signed NDA.)
Academic spin-outs (with >£5M revenue or >£10M investment potential)	0	0	0	OGIC projects have been modest, and have not led to such spin-outs at this time
Industry spin-outs (with >£5M revenue or >£10M investment potential)	0	0	0	OGIC projects have been modest, and have not led to such spinouts at this time
International Engagement (trade opportunities and inward (FYI) opportunities)	4	5	4	OGIC responds to approaches from International Companies, and works with Scottish Development International to seek out such opportunities.
Intellectual Property				
IP Secured	0	0	0	To date no OGIC project has resulted in a company applying for a patent.
IP Exploited with centre/partner companies	1	1	1	All 16 OGIC projects involve the university developing IP, which becomes the property of the company. All are anticipated to result in tangible products. To date one project has resulted in a product that has been sold to a client.
IP Licensing	1	1	0	To date no OGIC project has resulted in a company needing to licence university IP, although this would be necessary in at least 3 projects

TABLE 1 – OGIC KPI's	Total to end 2015 Target	Stretch	Actuals to April 2016	Commentary OGIC launched in November 2014, so the original "End 2015" projections are comparable with mid-2016 actuals
New Products/ processes / services delivered to market.				
Numbers (forecast/actual)	1	1	1	To date one project has resulted in a product that has been sold to a client.
Revenue to Company (forecast/actual) £k - *to be confirmed*				No data available.
Financial				
Income Public sector	£3,625k	0	£2,740k received £1,280k spent	Measured as SFC grant received – some of which has funded overhead, and some of which is held as a cash balance
Income Industry partners	£2,935k	0	£0.449k	The OGIC business Plan anticipated 8-12 large projects each year (average £200k gross value each) Recognising the challenging business environment in the oil and gas industry and the fact that OGIC did not start awarding contract until 2015, actual projects to date average £41k gross value per project. As a consequence the industrial contribution to date is smaller than anticipated
Impact on industry performance				
Increased turnover of businesses engaging with IC - £k	0	0	TBA	Because of the larger number of smaller projects, these figures are extremely difficult to separate out from the remainder of a company's activity. Based on our current 16 projects we estimate • Completed projects - actual turnover created at £250,000, • All projects – potentially £8-10 million per annum
Increased profitability of businesses engaging with IC - £k	0	0	TBA	
Project activity				
Number of active projects with industry	9	12	16	Defined as projects contracted

TABLE 1 – OGIC KPI's	Total to end 2015 Target	Stretch	Actuals to April 2016	Commentary OGIC launched in November 2014, so the original "End 2015" projections are comparable with mid-2016 actuals
Number of active early stage innovation schemes	20	26	0	OGIC provides its own funds to support projects, or refers companies on to others. As a result we do not participate directly in any early stage innovation schemes
Number of projects involving SME's	22	27	10	OGIC has had some form of contact with ~1300 companies, the vast majority of whom as SME's. We have meaningful engagement with 31 SMEs (defined as at least a signed NDA.) 10 of our portfolio of 16 signed contracts are with SME's.
International projects	0	0	4	Largely through engagement with Scottish Development International.

CONSTRUCTION SCOTLAND INNOVATION CENTRE

Professor Graeme Reid
Chair of Independent Review of Innovation Centers Programme
c/o Scottish Funding Council
Apex 2
97 Haymarket Terrace
Edinburgh
EH12 5HD

15th June 2016

Dear Professor Reid

INDEPENDENT REVIEW OF INNOVATION CENTRE PROGRAMME

Thank you for your letter of 20th May 2016.

The independent review of the Innovation Centre programme is welcomed and timely. It provides the opportunity to explore the set-up and establishment phase successes and challenges of this bold, visionary initiative and the Construction Scotland Innovation Centre (CSIC) has pleasure in enclosing our responses to the specific questions posed.

If you require any further information or have any questions, please do not hesitate to contact us.

Yours sincerely

[redacted]

Stephen Good
Chief Executive Officer
Construction Scotland Innovation Centre

Innovation Centres
Supported by the Scottish Funding Council, Highlands & Islands Enterprise and Scottish Enterprise

1. Is the original vision for the Innovation Centres programme current and correct?

Conceived ultimately as a culture change experiment, with the long term ambition to fundamentally transform Scottish business innovation activity through greater collaboration between industry, academia and other key partners, the Innovation Centre programme is at the forefront of a paradigm shift, particularly relevant in construction, which has the potential to achieve far greater impact than other initiatives to date and this is rooted in one clear, simple idea placed at the heart of the IC programme - strong industry leadership.

The programme's explicit industry demand driven focus and clear expectation that all involved parties are committed to this culture change mission will we believe, underpin an innovation support ecosystem in the future that, once fully established, can bring about long term sustainable economic benefits. The evolving landscape will better meet the needs of Scotland's new, and those radically evolved existing, innovative, open and internationally ambitious businesses.

This new breed of businesses will challenge and demand excellence from Scotland's HEI sector and ultimately, grow Scotland's economic, social and environmental value globally.

By endorsing strong, sector specific leadership at board level, underpinned by teams of passionate industry expertise speaking businesses language, SFC have through their original vision, set demanding expectations that are flexibly tailored to meet a variety of industry needs that have the potential, in time, to deliver a sizeable return on their investment.

The vision is current and correct, but a vision as ambitious as this will not be achieved overnight and requires patience, flexibility, commitment and space to grow if it's to deliver transformational change.

2. From your experience so far, are the ICs delivering against this vision?

Each IC has been established to respond to the dynamic nature of its sector by meeting industry demand head on.

CSIC is delivering against the vision articulated in our original business plan and as evolved and expanded through our operating plans in response to industry need.

Given strong industry leadership underpinned the original plan, there has always existed a clarity of purpose around the CSIC value proposition, despite the scale and fragmentation of the industry. The ambition to deliver relevant, effective and appropriate innovation support focused on meeting industry's varied, complex and challenging needs is ultimately well aligned with SFC's vision.

CSIC launched in October 2014 and has, over the initial 20 months, forged new collaboration opportunities between industry and academia that did not previously exist, deepened existing engagement into strong long term partnerships, simplified access to a broad range of support mechanisms, enabled industry to undertake planned, scalable innovation programmes and embedded a culture of change at the heart of construction's Industry Leadership Groups.

All are significant early achievements for an industry not often predisposed to overt innovation activity, but demonstrates the huge potential to deliver positive change in an industry ripe for an innovation revolution.

Innovation Centres
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3. To what extent do the priorities of ICs reflect those determined by industry?

CSIC's activities across the 5 key theme areas (Design & Performance, Infrastructure, Advanced Construction, Environment and Energy & ICT) and our 5 innovation support channels (Business, Product, Process, Service and People innovation support) are industry conceived, industry demand led and industry driven.

Our strong industry led governance board ensures strategic direction matches industry need. Our deep linkages with the Construction Scotland Industry Leadership Group ensures wider alignment with priorities and our industry chaired Project Advisory Group and co-chaired (along with academic partners) Thematic Groups bring together a fertile ecosystem of industry, academic, government and public sector experts all focused on tackling industry priorities.

We engage regularly with industry via a large number of the 120 trade and professional organisations and have a network of partners that include all key sub-sectors, although we would concede that, given the scale (over 170,000 people across 31,000 businesses in addition to 48,000 self employed people) and the complex and fragmented nature of the construction industry (88% are micro businesses), ensuring all industry voices are heard and priorities addressed is a constant challenge.

4. How has the relationship between business and academia evolved since the creation of ICs programme?

As noted in point 1 above, the IC programme has an ambition to deliver lasting culture change within and between industry and academia and whilst relevant and necessary, that change is not likely to be achieved overnight. However, there have been significant achievements to date that would support the notion that these often different cultures are capable of change.

For example;

- the focused HEI support delivered to Scotland's offsite manufacturing sector when it articulated a clear set of requirements around skills deficiencies and Scottish Governments 50,000 homes target,
- broad multi-HEI involvement in Scotland's first construction Hackathon (#Hack_Construct) which brought together industry, academics and programmers/coders to tackle 5 industry challenges over an intense 48 hour period,
- CSIC's new prototyping and training hub which, having mapped the current availability of equipment, facilities and expertise in Scotland across the digitisation/robotics/automation themes, has been delivered with strong industry, academic and public sector collaboration.

The open ecosystem approach to CSIC's 5 thematic groups which meet regularly, is allowing industry, academic and public sector partners to understand better each others drivers and motivations. Facilitated by CSIC's Business Relationship Team, these forums encourage interaction and sharing of knowledge which underpins a better understanding of capacity and exposes industry to commercially relevant academic partners and academic partners to innovation active businesses.

Given one of CSIC's key objectives, alongside driving industry/academic collaboration potential, is to simplify access to the range of innovation support offerings, our strong working relationships with SE and HIE have exposed these organisations to new academic expertise, whilst bi-referrals between Interface and the other innovation centres ensures the landscape is a little simpler for industry to navigate.

Innovation Centres

Supported by The Scottish Funding Council, Highlands and Islands Enterprise and Scottish Enterprise.

5. How effective and proportionate has the oversight of the ICs been?

CSIC has implemented sound governance procedures in line with its business plan and operates a Governance Board, a Project Advisory Board and 5 topic specific Thematic Groups to set and monitor project approvals, with delegated authority devolved to the CEO within prescribed limits.

Each tier provides CSIC executive team with industry validation/approval and meets on a bi-monthly basis.

CSIC has a first class working relationship with it's administrative host, Edinburgh Napier University (ENU). ENU's Director of Finance is a voting board member and fully engaged in the activities of CSIC. CSIC's board chair and ENU's Principal meet regularly to discuss CSIC and any inevitable challenges have been addressed professionally and, in the spirit of IC's being industry focused and paced, regular improvements and evolutions to support CSIC's operational effectiveness are implemented within the various procurement, finance, HR and estates teams. Often these improvements subsequently align with wider changes being implemented across the university which is hugely encouraging and ENU should be commended for the significant progress made in evolving their own internal culture change mission over recent months.

Reporting mechanisms are well established with SFC, and our remaining challenge is the alignment of bi-monthly board reporting, with quarterly MEF reporting, which currently results in reporting commitments during 8 months of the year.

Scottish Enterprise (SE), like SFC have observers on CSIC's board, and we would also note the excellent relationships we have developed with SE and Highlands & Islands Enterprise (HIE) which ensures good alignment with opportunities. Our dedicated presence in Inverness ensures close engagement with HIE, and regular meetings with SE ensure effective coordination of activity with businesses.

CSIC has recently secured over £110,000 of commercial income from public sector organisations including Scottish Government, Forestry Commission Scotland and Scottish Futures Trust, alongside £476,000 of funding support from Scottish Enterprise linked to the delivery of our industry's new prototyping and training hub. These commercial undertakings are vital to ensure a sustainable future for CSIC and our Board provides appropriate, balanced governance in relation to this activity.

6. Do you have any other views such as suggestions for the evolution or future direction of the IC programme?

The complex innovation support landscape in Scotland, whilst not unique, is challenging for businesses, particular SME's to navigate and nowhere is this more acute than in construction where accessing innovation or even simple business support is often viewed as overly complex, therefore often ignored.

The IC programme's core offering is academic in nature, and whilst this aligns with SFC's vision, there is a bigger opportunity that could be captured here. CSIC has, as noted previously, evolved an arrangement with SE that will ensure construction businesses can access a variety of re-packaged innovation products and services via CSIC, with the partners then "hiding the wires" back to all the complicated bits. However, the complicated bits still exist, with multiple points of contact, application forms and procedures, when essentially industry is seeking support from what it views as Team Scotland.

Bold decisions should be taken to address the issue of simplified, de-cluttered innovation support, with the IC programme's industry led and demand driven nature central to an approach that's eminently capable of being scaled.

We would also identify the opportunity to develop the IC programme with the colleges sector in Scotland as being crucial for construction, a key industry for colleges and another landscape ripe for greater innovation activity.

CENSIS

Professor Graeme Reid
Chair of Independent Review of Innovation Centres Programme
SFC
Apex 2, 97 Clifton Terrace
Edinburgh
EH12 5HD

16 June 2016

Dear Professor Reid,

In response to your recent letter, please find enclosed evidence submitted by Ian Reid, CEO of CENSIS, to the Independent Review of the Innovation Centre Programme.

Background information as requested:

CENSIS
CENSIS, one of 8 SFC funded Innovation Centres, is the industry challenge-led centre of excellence for sensor and imaging systems (SIS). Our goal is to catalyse closer industry-academic working to create sustainable economic growth in Scotland in the economically important and highly diverse domain of SIS and its applications. Based on our experiences with industry engagement, our model going forward utilises key infrastructure developed to identify and mature relevant SIS technologies, supporting key industry sectors innovate for economic impact based on the effective and efficient uptake of such technologies.

Ian Reid – CEO CENSIS
Physicist and MBA with an industrial career spanning over 30 years in R&D, engineering, operations, business development, open innovation and corporate venturing. Worked internationally for quoted blue chips and hi-tech PE/VC backed SMEs, across many sectors: Group CEO of Dutch quoted Rood Technology, QinetiQ Aerospace Divisional Director at IPO and subsequently group CTO, involved in overhauling its university partnerships, and advisor to IXE UK, open innovation consultancy. Statutory directorships in UK & Europe, incl. Chair of Verhaert Space (Belgium). CEng, CPhys, FInstP, FRAS & FCIM.

Responses made largely from the perspective of CENSIS, with more general observations about the wider Innovation Centres programme where possible.

Inputs have been taken from CENSIS Board members and this letter is countersigned by Bob Downes, our Chair.

CENSIS

Bob Downes	*Chairman* Bob Downes has held executive leadership roles in a number of business sectors including telecommunications, energy, and health care. His experience includes large-scale change management, strategy development and deep operational leadership. Up till the end of 2011 Bob was a Director in BT Group in London leading the design and build of the UK local telecommunications network. He is current Chair of the Scottish Environment Protection Agency (SEPA).
Professor Steve Beaumont OBE	*VP for Research and Enterprise, University of Glasgow*
Professor Ivan Andonovic,	*Professor of Broadband Networks, University of Strathclyde*
Professor Lesley Yellowlees MBE	*VP and Head of College of Science and Engineering, University of Edinburgh*
John Innes	*VP Business Innovation, SELEX ES*
Calum MacGregor	*Operations & Engineering Director, Gas Sensing Solutions Ltd*
Tim Summers	*Retired – Ex - Freescale*
Dr Frank Turnbull	*Retired – Ex - Honeywell*
Myrddin Jones	*Lead Technologist, Electronics, Photonics, Electrical Systems, Technology Strategy Board*
Ian Reid	*Chief Executive Officer, CENSIS*
Neil Francis	*International Operations Director, Scottish Enterprise/ Scottish Development International*
Keith MacDonald (Observer)	*Policy Officer, Scottish Funding Council*
Sharon Moore	*IBM*
Craig Samuel	*Turnstone Capital LLC/ Dalradia LLC*

I very much welcomed the opportunity to make this input and look forward to meeting the Committee on the 27th July.

Yours sincerely,

[redacted]

Ian Reid
CEO CENSIS

[redacted]

Bob Downes
Chair CENSIS

CENSIS

1. Is the original vision for the Innovation Centres (ICs) programme current and correct?

The original vision remains broadly relevant and correct. Unsurprisingly evolution in thinking is to be expected as the context has developed rapidly over the life of the ICs programme.

The vision to enhance innovation and entrepreneurship across Scotland's key economic sectors, creating jobs and sustainable economic growth, is recognised as a huge challenge: budgets and extended timetables for similar initiatives across the globe – US DARPA-like activities, European Fraunhofers, or developing academic-industry links driving Chinese bio-tech clusters – reinforces this. Promoting this vision, SFC identified the key mechanism as drawing on Scottish research expertise in the relevant sector to work on potential problems and opportunities identified by industry.

Innovation has assumed a higher, more explicit profile for the future health of the economy during the life of the programme, with the Scottish Government making it a central theme. International competitiveness remains the key driver, as pressures continue to intensify, and some markets have changed radically in the last few years: most notably, but not exclusively, energy. Innovation may be an increasingly necessary condition in mature economies, but is not sufficient for economic development. Additional and different interventions are required, often sector specific, reinforcing the need for very close coordination, over both tactical and strategic timeframes, across a complex innovation landscape. This has implications for what success for the programme looks like.

Driven by our original SFC funding model, allowable project structures for IC grant funding must always include university partners. CENSIS has seen many instances where SMEs in particular have innovation, as distinct from research problems, that could and should be solved in other ways and are not always being otherwise addressed through signposting. This is not about abandoning the original mission but developing and augmenting it for maximum impact: revisited elsewhere in this document.

In general terms, the aspirations of the original vision remain both current and extremely relevant. As the economic landscape inevitably changes at the sector level and we learn from our experiences as ICs, the model should evolve while preserving the continuity of the initiative. Industry has in the past bemoaned the failure to learn from past experiences, the recycling of standard analysis and thinking, and lack of continuity in innovation initiatives: we have an opportunity to break this cycle.

2. From your experience so far, are the Innovation Centres delivering against this vision?

As far as it is possible to judge at this point, yes, and often in new ways as thinking has evolved. Economic impact is central to the programme, but at <<5years it is clearly very early days for clear GVA benefits to have materialised. All ICs are focused on the key proxy measure of project activity, although project definition may differ.

CENSIS has allocated 39% of its agreed project grant funds (~£0.9m) and have a total portfolio of 34 projects, ranging from 1 month to >3 years duration with CENSIS funding HEIs in the range of £7k to

£250k. The typical project is ~6 months with ~£50k of CENSIS funding. Total project activity is >£12.3m, including £6.5m of third party grant funding with the balance from industry, including £720k of cash going into HEIs. The original planning synthetic gives an indicative GVA projection of £23m-£80m.

We have the first example of partnering with Scottish Enterprise (SE) to co-invest in a major platform technology project: Mirage. The novel model attracted positive interest at Innovate UK. A consortium of four SMEs provide requirements into a core III-V technology research programme at University of Glasgow, exploiting results through new mid-IR sensor based products to be introduced across a range of international end markets. This £6m project will generate future sales of £130m, re-shoring skilled jobs, and has a 10-year GVA projection (SE) of £56m. SFC CAPEX allocated to CENSIS at its inception was key: installed in the HEI base (Edinburgh and Glasgow) for just such projects involving broad industrial communities and experience has been gained about maximizing the impact of such assets. SE's £2.5m grant was vital, but industry has expressed concern over timescales for approving SE funding and there is now an on-going dialogue.

All ICs have skills and outreach activities in hand and are now delivering those aspects of the original SFC vision of industrial studentships, spaces for collaborative work and shared access to equipment. CENSIS SIS MSc, offered jointly by Edinburgh and Glasgow, has had a slow ramp. While this is gaining acceptance, we believe there is scope for rethinking SIS skills provision. We have supported development of SIS EngD provision, across Universities of Edinburgh, Glasgow, Heriot-Watt and Strathclyde.

CENSIS has received many requests from SMEs, and even some large corporates, for information and practical support around new IoT technologies and their application to accelerate the development of scalable end-to-end sensor systems proof of concept demonstrators. In response, CENSIS created the Connected Devices Development Centre (CDDC), partnering with major IoT providers such as IBM, in which our engineering team can work with researchers and companies to fast track system prototyping and provide technical mentoring. This model works well and we are looking to develop other similar physical infrastructure.

Outreach is a strictly means to an end for CENSIS, ultimately driving project engagement. We deploy social media and PR activity (on-line, trade and mainstream press) to engage with our wider communities, but we do appreciate we could do more for some stakeholders. We have delivered >80 separate outreach events, ranging from themed invited workshops through to open conferences: we are supporting the organisation of 2016 SPIE and 2017 IEEE Sensors Conferences in Edinburgh and Glasgow respectively. We have also been involved with a number of trade and academic/industry innovation visits, some supported by RSE, from China, Taiwan and Malaysia. While our own showcase event, the annual Technical Summit, attracted over 200 delegates in only its second year: 40% academic, >50% industry (including international) and the balance from the public sector.

Leveraging CDDC, we jointly bid and won, with The Data Lab and Informatics Ventures, a Scottish IoT Boost event funded by Digital Catapult: general outreach, followed by a two-day intensive mentoring programme and competitive down-select for subsequent 1 month of incubation. Two of these were university spin-outs and several are now positioned for follow-on funding. Subsequently CENSIS and The Data Lab have led a one-Scotland bid for a Digital Catapult Centre.

There are many highlights across the IC programme, with examples of all Centres working together to deliver a joint presence at Venturefest Scotland and TEDx Glasgow.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

Nature and extent of industry engagement varies across ICs: it is a product particularly of the relevant industry sector structure in Scotland and the specific IC model. Where the mission is tied strongly to a specific industry vertical, problem owner, or implementing an existing agreed national programme, the major players in the landscape, which are not necessarily industrial, all need to be actively involved and driving the agenda. This has largely been achieved.

For those ICs working in enabling, cross-cutting technologies, there is additional challenge, especially when the relevant industrial base is SME dominated, where the difficulties of outreach are well documented. For CENSIS, the Scottish SIS cluster of ~180 companies was originally identified as the target industrial constituency. It soon became apparent that this was the tip of the iceberg, with highly geared economic impacts being generated in those end applications sectors that utilise SIS technologies, account for significant economic activity, with elements of their supply chains anchored in Scotland and which have major export opportunities. Our founding industry partners and many of our Board members come from this wider community.

The acid test of industrial relevance, especially in an SME dominated landscape where there are constraints to absorptive capacity, is project engagement in key industry sectors. Of the current CENSIS portfolio of 34 projects: 16 are in Industrial & Manufacturing; 8 in Natural & Built Environment; 6 in Health, Wellbeing and Life Sciences; 3 in Subsea, Offshore & Marine; and 1 in Defence, CBNRE & Security. An analysis of the portfolio evidences TRL maturation over project lifecycles from 2/3 to 6/7, where industry can realistically pick up such innovations.

Engaging these sectors, CENSIS now has ~800 companies in our CRM and established relationships with 25 trade bodies. Our outreach ensures we engage and build real dialogue with industry to inform our priorities. There are a wide range of views expressed, but the most common top level themes identified are around the difficulties, perceived or real, with working with universities; the distinction between research and innovation more generally; articulating business cases where such activities span supply chains; and how to get financial, business and technical support to capture the value of these activities. Priorities are around practical actions to tackle these themes: brokerage (supported by our extensive dB of SIS expertise within the Scottish academic base); validating and maturing technologies; building assets and developing the ecosystem; and "shaping" projects that tackle real industrial problems, manage risk and build trust with academia.

Several SMEs have worked on projects utilising CDDC, including those who first engaged via IoT Boost, see question (2). Dane Ralston, Director of Renfrewshire based Losstek, commenting on the event said "Genuinely the last two days were the most useful I have had in the last six months, I was very happy I had gone. The quality of people there was exceptional.....".

4. How has the relationship between business and academia evolved since the creation of the Innovation Centres programme?

From the very small to the very large companies, we are now seeing real engagement from the industrial base. Douglas McGarrie, CTO IBM Scotland, was happy to provide a quote capturing this sentiment: "It is fantastic to see how CENSIS is succeeding in gaining mindshare in Scotland. Your ventures into IoT are an exciting area of collaboration and I look forward to this continuing and building on the relationships that we've developed with the CENSIS team to date.....".

In many of the sectors we work in, the traditional model has been for large companies to seek technologies from universities and look to disseminate this through their supply chains, but now many of companies are looking for innovation to come from their suppliers. So, particularly in the Scottish context, getting SMEs engaged with academia as a route to inject innovation into the industrial base, is an exciting prospect. ICs have already made a significant impact in changing the landscape, articulating needs, brokering new relationships, sharing best practice and encouraging culture change.

CENSIS project portfolio now includes a number of companies that had been reluctant to work with universities, several because of previous poor experiences. Our internal engineering, project management, and supply chain development resource are key to improving on prior experiences.

From the HEI perspective, the experiences with ICs may be patchier. Scotland has some of the very best examples of HEIs developing long-term relationships with large corporates and given the ICs' resources there is little beyond new introductions that we can do to assist here, although the move of large players to rely on their ecosystems for innovation may change the rules of the game. CENSIS is looking to build more large projects like Mirage, but these take significant time. Where we are seeing real day-to-day advances through smaller, regular interactions that build understanding and trust. Across our portfolio we have 7 HEIs represented in multiple projects, with more due to come on stream, and touch 5 Research Pools. It is, however, in their nature and structure that successful engagement with one group is not necessarily disseminated across the HEI.

There are regrettably still many anecdotes of very poor practice at the HEI/industry interface, but there are now a growing number of counter examples to celebrate, such as:

- Project with Score Group, who had reservations about working with an HEI, where Strathclyde picked up the costs of a 3-week extension to obtain more days to maximise project output.
- Capnography project with GSS and WideBlue, where the industrial partners and UWS accommodated the disruption of flexing resources to manage a necessary project overrun.

Beyond project interactions, ICs' outreach activities are also proving successful in breaking down barriers and building understanding. The ICs understand that culture change at the HEI/industry interface is complex, difficult to measure and will take considerable time.

5. How effective and proportionate has the oversight of Innovation Centres been?

ICs have subtly different models but all conform to governance processes and reporting requirements down at least the SFC axis (including state aid reporting), host HEI axis, and for their Boards. Not legal entities, some are off-campus and so have had to put in place and operate local policies, including HSE, HR and IT related. The varying degree to which these are in place is a product of the unique circumstances of the different ICs, as is the way in which each ensures academic and industrial stakeholders can exert influence. While the ICs recognise the high level of oversight required where public money is involved, unfavourable comparisons with reporting overheads in the private sector are unavoidable in our industrial constituencies, where agility is much valued.

An added complication is that ICs do not have legal status, being in effect simply projects embedded within the host HEI. This was not fully understood by industry and initially caused confusion in that quarter. There have been some unintended consequences working across other HEIs, linked to the treatment of research income for REF purposes when an HEI is looking to partner with an IC.

For ICs in the vanguard, there have been minor but frustrating examples of making the administrative overhead more than was strictly necessary: it took over a year to get agreement on a common quarter and year-end timetable. Reporting requirements have increased over the life of the programme, along with requirements to support a number of additional effort-intensive activities, such as the Optimat economic benchmarking and the ROSI reporting mechanism, subsequently aborted after entry of all the baseline data. Much of the duplication down the various axes is now largely rationalised, although there is still divergence between various quarterly reporting requirements.

Where GVA is an objective, there are the usual challenges of developing intermediary KPIs that are effective over short timescales for the operational management of the organisation. There remain question marks over the clarity of mapping of the full set of KPIs in the SFC MEF, particularly as they relate to capturing the impact of softer factors, for what are quite different IC models operating in very different industrial contexts and the utility of KPIs will change over the programme lifetime. It is vital that SFC, SE/HIE and Scottish Government have the necessary information to properly capture and record the wider impacts of the programme as our models evolve.

There are always trade-offs in striking the right balance for oversight, but there should be confidence that the programme is erring on the conservative side. From a CENSIS perspective, now 3 years into the programme, with the strong support of our Board and a degree of flexibility from the host HEI, we have achieved a balance close to where we need to be, given the constraints ICs operate under. There are always improvements to be sought, however, we are conscious of different viewpoints across a wide and varied stakeholder base.

CENSIS

6. Do you have any other views such as suggestions for evolution or future direction of the Innovation Centres programme?

There are a range of IC models reflecting very different industrial contexts and Centre trajectories. These will diverge further in future, resulting in different organisational entities and structures. The nature of the market failure or industry structural issues being addressed mean different levels of public sector support will be required going forward. There are also more practical implications of industry structure: where SMEs dominate, such as in the enabling technologies space, the scope for membership elements in future models is very limited and fee per service proposals need to be carefully tested against the criterion of industry displacement.

CENSIS has gained valuable insights into the changing agendas of our stakeholders and the challenges they face. We have a growing body of evidence and hard won practical experience of what is and is not wanted; what works and what does not; and where activities are complementary or duplicated across a complex innovation landscape. Key factors affecting the impact of the SIS research base on Scottish industrial performance are SME significance in the industry structure; small size of domestic market; technology "preparedness"; and the nature of the interface to academia in this context.

Breaking these down into specific challenges and responses, we have refined our value proposition and plan to:

- Ensuring right technology options available at the right time
- ...and at the right TRL
- ...with planned maturation supported by physical assets & engineering team
- Building engagement over SME life cycle
- Supply chain development
- Provide & operate infrastructure to trial & prove products for international markets

Underpinning offerings are clustered around informing strategic R&D through structured industry-academic dialogue; planned technology maturation; "path to value" support for companies; and "routes to internationalisation" through standards development and infrastructure for product/service trials and approvals.

This offering profile suggests a hybrid-funding model, with SE/HIE alongside reduced SFC funding and opportunities for growing third party funded collaborative projects and industrial revenue streams. The legal status question needs resolution. Examples are available to explore and the Fraunhofer model has been mooted. The innovation process is uncertain, creating potential liabilities mitigating against the limited company approach. Reduced Innovate UK funding and increasing H2020 oversubscription also need consideration. CENSIS has fixed a meeting with Rob Bryan, architect of all the differing Catapult models to date, to explore further.

There has been some speculation about broadening the IC family in time and lessons learned to date, a set of common processes and potentially some common core infrastructure could bring efficiencies.

CENSIS

Professor Graeme Reid
Chair of Independent Review of Innovation Centres Programme
SFC
Apex 2, 97 Clifton Terrace
Edinburgh
EH12 5HD

16 June 2016

Dear Professor Reid,

In response to your recent letter, please find enclosed evidence submitted by Ian Reid, CEO of CENSIS, to the Independent Review of the Innovation Centre Programme.

Background information as requested:

CENSIS
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Physicist and MBA with an industrial career spanning over 30 years in R&D, engineering, operations, business development, open innovation and corporate venturing. Worked internationally for quoted blue chips and hi-tech PE/VC backed SMEs, across many sectors: Group CEO of Dutch quoted Rood Technology, QinetiQ Aerospace Divisional Director at IPO and subsequently group CTO, involved in overhauling its university partnerships, and advisor to IXE UK, open innovation consultancy. Statutory directorships in UK & Europe, incl. Chair of Verhaert Space (Belgium). CEng, CPhys, FInstP, FRAS & FCIM.

Responses made largely from the perspective of CENSIS, with more general observations about the wider Innovation Centres programme where possible.

Inputs have been taken from CENSIS Board members and this letter is countersigned by Bob Downes, our Chair.

Bob Downes	*Chairman* Bob Downes has held executive leadership roles in a number of business sectors including telecommunications, energy, and health care. His experience includes large-scale change management, strategy development and deep operational leadership. Up till the end of 2011 Bob was a Director in BT Group in London leading the design and build of the UK local telecommunications network. He is current Chair of the Scottish Environment Protection Agency (SEPA).
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John Innes	*VP Business Innovation, SELEX ES*
Calum MacGregor	*Operations & Engineering Director, Gas Sensing Solutions Ltd*
Tim Summers	*Retired – Ex - Freescale*
Dr Frank Turnbull	*Retired – Ex - Honeywell*
Myrddin Jones	*Lead Technologist, Electronics, Photonics, Electrical Systems, Technology Strategy Board*
Ian Reid	*Chief Executive Officer, CENSIS*
Neil Francis	*International Operations Director, Scottish Enterprise/ Scottish Development International*
Keith MacDonald (Observer)	*Policy Officer, Scottish Funding Council*
Sharon Moore	*IBM*
Craig Samuel	*Turnstone Capital LLC/ Dalradia LLC*

I very much welcomed the opportunity to make this input and look forward to meeting the Committee on the 27th July.

Yours sincerely,

[redacted]

Ian Reid
CEO CENSIS

[redacted]

Bob Downes
Chair CENSIS

CENSIS

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The original vision remains broadly relevant and correct. Unsurprisingly evolution in thinking is to be expected as the context has developed rapidly over the life of the ICs programme.

The vision to enhance innovation and entrepreneurship across Scotland's key economic sectors, creating jobs and sustainable economic growth, is recognised as a huge challenge: budgets and extended timetables for similar initiatives across the globe – US DARPA-like activities, European Fraunhofers, or developing academic-industry links driving Chinese bio-tech clusters – reinforces this. Promoting this vision, SFC identified the key mechanism as drawing on Scottish research expertise in the relevant sector to work on potential problems and opportunities identified by industry.

Innovation has assumed a higher, more explicit profile for the future health of the economy during the life of the programme, with the Scottish Government making it a central theme. International competitiveness remains the key driver, as pressures continue to intensify, and some markets have changed radically in the last few years: most notably, but not exclusively, energy. Innovation may be an increasingly necessary condition in mature economies, but is not sufficient for economic development. Additional and different interventions are required, often sector specific, reinforcing the need for very close coordination, over both tactical and strategic timeframes, across a complex innovation landscape. This has implications for what success for the programme looks like.

Driven by our original SFC funding model, allowable project structures for IC grant funding must always include university partners. CENSIS has seen many instances where SMEs in particular have innovation, as distinct from research problems, that could and should be solved in other ways and are not always being otherwise addressed through signposting. This is not about abandoning the original mission but developing and augmenting it for maximum impact: revisited elsewhere in this document.

In general terms, the aspirations of the original vision remain both current and extremely relevant. As the economic landscape inevitably changes at the sector level and we learn from our experiences as ICs, the model should evolve while preserving the continuity of the initiative. Industry has in the past bemoaned the failure to learn from past experiences, the recycling of standard analysis and thinking, and lack of continuity in innovation initiatives: we have an opportunity to break this cycle.

2. From your experience so far, are the Innovation Centres delivering against this vision?

As far as it is possible to judge at this point, yes, and often in new ways as thinking has evolved. Economic impact is central to the programme, but at <<5years it is clearly very early days for clear GVA benefits to have materialised. All ICs are focused on the key proxy measure of project activity, although project definition may differ.

CENSIS has allocated 39% of its agreed project grant funds (~£0.9m) and have a total portfolio of 34 projects, ranging from 1 month to >3 years duration with CENSIS funding HEIs in the range of £7k to

£250k. The typical project is ~6 months with ~£50k of CENSIS funding. Total project activity is >£12.3m, including £6.5m of third party grant funding with the balance from industry, including £720k of cash going into HEIs. The original planning synthetic gives an indicative GVA projection of £23m-£80m.

We have the first example of partnering with Scottish Enterprise (SE) to co-invest in a major platform technology project: Mirage. The novel model attracted positive interest at Innovate UK. A consortium of four SMEs provide requirements into a core III-V technology research programme at University of Glasgow, exploiting results through new mid-IR sensor based products to be introduced across a range of international end markets. This £6m project will generate future sales of £130m, re-shoring skilled jobs, and has a 10-year GVA projection (SE) of £56m. SFC CAPEX allocated to CENSIS at its inception was key: installed in the HEI base (Edinburgh and Glasgow) for just such projects involving broad industrial communities and experience has been gained about maximizing the impact of such assets. SE's £2.5m grant was vital, but industry has expressed concern over timescales for approving SE funding and there is now an on-going dialogue.

All ICs have skills and outreach activities in hand and are now delivering those aspects of the original SFC vision of industrial studentships, spaces for collaborative work and shared access to equipment. CENSIS SIS MSc, offered jointly by Edinburgh and Glasgow, has had a slow ramp. While this is gaining acceptance, we believe there is scope for rethinking SIS skills provision. We have supported development of SIS EngD provision, across Universities of Edinburgh, Glasgow, Heriot-Watt and Strathclyde.

CENSIS has received many requests from SMEs, and even some large corporates, for information and practical support around new IoT technologies and their application to accelerate the development of scalable end-to-end sensor systems proof of concept demonstrators. In response, CENSIS created the Connected Devices Development Centre (CDDC), partnering with major IoT providers such as IBM, in which our engineering team can work with researchers and companies to fast track system prototyping and provide technical mentoring. This model works well and we are looking to develop other similar physical infrastructure.

Outreach is a strictly means to an end for CENSIS, ultimately driving project engagement. We deploy social media and PR activity (on-line, trade and mainstream press) to engage with our wider communities, but we do appreciate we could do more for some stakeholders. We have delivered >80 separate outreach events, ranging from themed invited workshops through to open conferences: we are supporting the organisation of 2016 SPIE and 2017 IEEE Sensors Conferences in Edinburgh and Glasgow respectively. We have also been involved with a number of trade and academic/industry innovation visits, some supported by RSE, from China, Taiwan and Malaysia. While our own showcase event, the annual Technical Summit, attracted over 200 delegates in only its second year: 40% academic, >50% industry (including international) and the balance from the public sector.

Leveraging CDDC, we jointly bid and won, with The Data Lab and Informatics Ventures, a Scottish IoT Boost event funded by Digital Catapult: general outreach, followed by a two-day intensive mentoring programme and competitive down-select for subsequent 1 month of incubation. Two of these were university spin-outs and several are now positioned for follow-on funding. Subsequently CENSIS and The Data Lab have led a one-Scotland bid for a Digital Catapult Centre.

There are many highlights across the IC programme, with examples of all Centres working together to deliver a joint presence at Venturefest Scotland and TEDx Glasgow.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

Nature and extent of industry engagement varies across ICs: it is a product particularly of the relevant industry sector structure in Scotland and the specific IC model. Where the mission is tied strongly to a specific industry vertical, problem owner, or implementing an existing agreed national programme, the major players in the landscape, which are not necessarily industrial, all need to be actively involved and driving the agenda. This has largely been achieved.

For those ICs working in enabling, cross-cutting technologies, there is additional challenge, especially when the relevant industrial base is SME dominated, where the difficulties of outreach are well documented. For CENSIS, the Scottish SIS cluster of ~180 companies was originally identified as the target industrial constituency. It soon became apparent that this was the tip of the iceberg, with highly geared economic impacts being generated in those end applications sectors that utilise SIS technologies, account for significant economic activity, with elements of their supply chains anchored in Scotland and which have major export opportunities. Our founding industry partners and many of our Board members come from this wider community.

The acid test of industrial relevance, especially in an SME dominated landscape where there are constraints to absorptive capacity, is project engagement in key industry sectors. Of the current CENSIS portfolio of 34 projects: 16 are in Industrial & Manufacturing; 8 in Natural & Built Environment; 6 in Health, Wellbeing and Life Sciences; 3 in Subsea, Offshore & Marine; and 1 in Defence, CBNRE & Security. An analysis of the portfolio evidences TRL maturation over project lifecycles from 2/3 to 6/7, where industry can realistically pick up such innovations.

Engaging these sectors, CENSIS now has ~800 companies in our CRM and established relationships with 25 trade bodies. Our outreach ensures we engage and build real dialogue with industry to inform our priorities. There are a wide range of views expressed, but the most common top level themes identified are around the difficulties, perceived or real, with working with universities; the distinction between research and innovation more generally; articulating business cases where such activities span supply chains; and how to get financial, business and technical support to capture the value of these activities. Priorities are around practical actions to tackle these themes: brokerage (supported by our extensive dB of SIS expertise within the Scottish academic base); validating and maturing technologies; building assets and developing the ecosystem; and "shaping" projects that tackle real industrial problems, manage risk and build trust with academia.

Several SMEs have worked on projects utilising CDDC, including those who first engaged via IoT Boost, see question (2). Dane Ralston, Director of Renfrewshire based Losstek, commenting on the event said "Genuinely the last two days were the most useful I have had in the last six months, I was very happy I had gone. The quality of people there was exceptional.....".

4. How has the relationship between business and academia evolved since the creation of the Innovation Centres programme?

From the very small to the very large companies, we are now seeing real engagement from the industrial base. Douglas McGarrie, CTO IBM Scotland, was happy to provide a quote capturing this sentiment: "It is fantastic to see how CENSIS is succeeding in gaining mindshare in Scotland. Your ventures into IoT are an exciting area of collaboration and I look forward to this continuing and building on the relationships that we've developed with the CENSIS team to date.....".

In many of the sectors we work in, the traditional model has been for large companies to seek technologies from universities and look to disseminate this through their supply chains, but now many of companies are looking for innovation to come from their suppliers. So, particularly in the Scottish context, getting SMEs engaged with academia as a route to inject innovation into the industrial base, is an exciting prospect. ICs have already made a significant impact in changing the landscape, articulating needs, brokering new relationships, sharing best practice and encouraging culture change.

CENSIS project portfolio now includes a number of companies that had been reluctant to work with universities, several because of previous poor experiences. Our internal engineering, project management, and supply chain development resource are key to improving on prior experiences.

From the HEI perspective, the experiences with ICs may be patchier. Scotland has some of the very best examples of HEIs developing long-term relationships with large corporates and given the ICs' resources there is little beyond new introductions that we can do to assist here, although the move of large players to rely on their ecosystems for innovation may change the rules of the game. CENSIS is looking to build more large projects like Mirage, but these take significant time. Where we are seeing real day-to-day advances through smaller, regular interactions that build understanding and trust. Across our portfolio we have 7 HEIs represented in multiple projects, with more due to come on stream, and touch 5 Research Pools. It is, however, in their nature and structure that successful engagement with one group is not necessarily disseminated across the HEI.

There are regrettably still many anecdotes of very poor practice at the HEI/industry interface, but there are now a growing number of counter examples to celebrate, such as:

- Project with Score Group, who had reservations about working with an HEI, where Strathclyde picked up the costs of a 3-week extension to obtain more days to maximise project output.
- Capnography project with GSS and WideBlue, where the industrial partners and UWS accommodated the disruption of flexing resources to manage a necessary project overrun.

Beyond project interactions, ICs' outreach activities are also proving successful in breaking down barriers and building understanding. The ICs understand that culture change at the HEI/industry interface is complex, difficult to measure and will take considerable time.

5. How effective and proportionate has the oversight of Innovation Centres been?

ICs have subtly different models but all conform to governance processes and reporting requirements down at least the SFC axis (including state aid reporting), host HEI axis, and for their Boards. Not legal entities, some are off-campus and so have had to put in place and operate local policies, including HSE, HR and IT related. The varying degree to which these are in place is a product of the unique circumstances of the different ICs, as is the way in which each ensures academic and industrial stakeholders can exert influence. While the ICs recognise the high level of oversight required where public money is involved, unfavourable comparisons with reporting overheads in the private sector are unavoidable in our industrial constituencies, where agility is much valued.

An added complication is that ICs do not have legal status, being in effect simply projects embedded within the host HEI. This was not fully understood by industry and initially caused confusion in that quarter. There have been some unintended consequences working across other HEIs, linked to the treatment of research income for REF purposes when an HEI is looking to partner with an IC.

For ICs in the vanguard, there have been minor but frustrating examples of making the administrative overhead more than was strictly necessary: it took over a year to get agreement on a common quarter and year-end timetable. Reporting requirements have increased over the life of the programme, along with requirements to support a number of additional effort-intensive activities, such as the Optimat economic benchmarking and the ROSI reporting mechanism, subsequently aborted after entry of all the baseline data. Much of the duplication down the various axes is now largely rationalised, although there is still divergence between various quarterly reporting requirements.

Where GVA is an objective, there are the usual challenges of developing intermediary KPIs that are effective over short timescales for the operational management of the organisation. There remain question marks over the clarity of mapping of the full set of KPIs in the SFC MEF, particularly as they relate to capturing the impact of softer factors, for what are quite different IC models operating in very different industrial contexts and the utility of KPIs will change over the programme lifetime. It is vital that SFC, SE/HIE and Scottish Government have the necessary information to properly capture and record the wider impacts of the programme as our models evolve.

There are always trade-offs in striking the right balance for oversight, but there should be confidence that the programme is erring on the conservative side. From a CENSIS perspective, now 3 years into the programme, with the strong support of our Board and a degree of flexibility from the host HEI, we have achieved a balance close to where we need to be, given the constraints ICs operate under. There are always improvements to be sought, however, we are conscious of different viewpoints across a wide and varied stakeholder base.

CENSIS

6. Do you have any other views such as suggestions for evolution or future direction of the Innovation Centres programme?

There are a range of IC models reflecting very different industrial contexts and Centre trajectories. These will diverge further in future, resulting in different organisational entities and structures. The nature of the market failure or industry structural issues being addressed mean different levels of public sector support will be required going forward. There are also more practical implications of industry structure: where SMEs dominate, such as in the enabling technologies space, the scope for membership elements in future models is very limited and fee per service proposals need to be carefully tested against the criterion of industry displacement.

CENSIS has gained valuable insights into the changing agendas of our stakeholders and the challenges they face. We have a growing body of evidence and hard won practical experience of what is and is not wanted; what works and what does not; and where activities are complementary or duplicated across a complex innovation landscape. Key factors affecting the impact of the SIS research base on Scottish industrial performance are SME significance in the industry structure; small size of domestic market; technology "preparedness"; and the nature of the interface to academia in this context.

Breaking these down into specific challenges and responses, we have refined our value proposition and plan to:

- Ensuring right technology options available at the right time
- ...and at the right TRL
- ...with planned maturation supported by physical assets & engineering team
- Building engagement over SME life cycle
- Supply chain development
- Provide & operate infrastructure to trial & prove products for international markets

Underpinning offerings are clustered around informing strategic R&D through structured industry-academic dialogue; planned technology maturation; "path to value" support for companies; and "routes to internationalisation" through standards development and infrastructure for product/service trials and approvals.

This offering profile suggests a hybrid-funding model, with SE/HIE alongside reduced SFC funding and opportunities for growing third party funded collaborative projects and industrial revenue streams. The legal status question needs resolution. Examples are available to explore and the Fraunhofer model has been mooted. The innovation process is uncertain, creating potential liabilities mitigating against the limited company approach. Reduced Innovate UK funding and increasing H2020 oversubscription also need consideration. CENSIS has fixed a meeting with Rob Bryan, architect of all the differing Catapult models to date, to explore further.

There has been some speculation about broadening the IC family in time and lessons learned to date, a set of common processes and potentially some common core infrastructure could bring efficiencies.

Independent Review of Innovation Centres Programme – led by Professor Graeme Reid

Call For Evidence

Response - Bill McBride, Chair Construction Scotland Innovation Centre

1. Having worked in industry at Director level for some 25 years, I have agreed to act as Chair of the Construction Scotland Innovation Centre because I passionately believe that this vehicle offers the greatest opportunity in a generation to fundamentally make our industry and consequently our country more competitive, more forward thinking and more capable of understanding and dealing with the global challenges of the 21st century. As a country we have, on the one hand, a great deal of ambitious businesses that require different levels of assistance to help them achieve their goals, on the other hand we have Universities, who by virtue of their inherent knowledge base, are quite literally world class in their fields. Creating, nurturing and leveraging a synergy between these two sides of the same economic equation is absolutely and in my view unquestionably one of the most important routes to enhanced economic prosperity. I believe that the vision for the Innovations Centres programme is more compelling now than ever. I also believe that as we move further into executing our strategies to move towards such a vision (and to produce tangible results along the way) we must not allow our collective desires and ambitions expressed in the vision to be in any way diluted simply because the execution stage faces natural challenges to success. It is my belief that in this country we are often too quick to adjust our vision of success to accommodate our weaknesses in execution. If the vision is correct (and in my mind it undoubtedly is here) then we must be resolute, determined and not allow our energies to be diverted or indeed obfuscated from the tasks at hand.

   I believe with 100% conviction that the Innovation Centres programme is both current and correct.

2. In my opinion the Innovation Centres programme is already defining how innovation is viewed across the Scottish landscape. I cannot remember a period of time when the momentum on innovation was built into the landscape to such a degree (if indeed at all). The strategic cooperation and coordination that is evolving between the University Principals and the Innovation Centre Chairmen has tremendous opportunity and is reflective of the forward dynamic that is then cascading down through Universities and Innovation Centres. There will always be impediments to such meeting of cultures, however managing this from the top down working well with the IC's acting in the manner of a Rosetta Stone ensuring that common purpose is clearly understood and acted upon constructively. As Innovation Centre CEO's develop their relationships with their University colleagues, logistical issues for example HR matters, will become less relevant and the relationship there will become ever more productive.

3. The IC's are all industry driven with Boards chaired by industry leaders. There have been some issues in communicating to industry that IC's are not simply another government initiative, which will start strong and then fade away. My own industry – construction – can be particularly cynical in this regard and a great deal of time has been spent in communication the IC's as win-win scenarios under the tagline of "Innovation equals invoices". Businesses are driven by improvements in productivity and bottom line profits – IC's are a vehicle through interplay with our Universities in making that happen. In the construction IC this message is getting through as can be seen by the fact that industry is committing significantly – not only time but also money. One other important facet is that IC's are an excellent vehicle to ensure that no business falls between cracks in the innovation landscape. Not every industry project is right for an innovation centre, but they can be directed to other vehicles such as Interface, SE and other KTE bodies. This helps industry see innovation as inclusive and for the crucial small and micro businesses more inclusive.

4. I think this is one of the biggest game changers that has happened. IC Chairs and University Principals are coordinating, in my opinion, at a level I have not seen before. One example of this would be an evening dinner 15 June 2016 hosted by IC Chairs where University Principals and IC Chairs met again to discuss best practise, problem resolution and advancement of the IC and Universities commitment. This followed a previous dinner hosted by the University Principals in November 2015. The more that industry understand how Universities function and vice versa the more productive this relationship will become.

   I was invited to present the Innovation Centres programme to the Canadian Construction Council in Edmonton, Canada in 2015 – watching those industries and Universities in attendance understand what we are doing in Scotland and applauding us for our vision and foresight was inspiring.

   I also sit on the Board of Interface and I am involved in the Innovation Scotland Forum and as such I am continually looking at ways to link up the various innovation vehicles for a common aim. The IC's have been an excellent point of focus for this in seeking to de-clutter the innovation landscape.

5. This has been a point that has been considered from the start. In essence it is very important that IC's are properly governed, that they are transparent in their operations and that they deliver tangible and sustainable results. In my opinion SFC (as have SE) in particular have dealt with this balance of governance and freedom with considerable skill. One thing that is constantly in mind is that being industry driven, the IC's can be risk aversive whilst at the same time the IC's frequently need to take risks in the pursuit of innovation. SFC closely monitor KPI's but they do so with this in mind.

   The IC's are rightly ambitious, business people are heading them for no other agenda that they believe passionately in the opportunity they present.

6. I stated at the outset that I believed that Innovation Centres were one of the most important catalysts for economic growth, Scotland has seen in a long time. They required a degree of risk taking by Scottish Government and by SFC in particular.

The introduction of SFC has been in my opinion inspired – I do not think that the programme would have worked as well in any other way.

I would like to see the IC's influence continue to grow as they continually define the Innovation landscape with our University partners. The IC's are making other knowledge exchange providers better at what they do through leadership and clarity of vision and this has great opportunity for the future.

In summation, Scotland is a small country, but it is that geographic density and familiarity that can be one of the most significant benefits to achieving our innovation and subsequent economic growth.

Bill McBride
FIoD, FRICS, MBA
Chair
Construction Scotland Innovation Centre

THE DATA LAB
value from data

Edinburgh, 20th June 2016

Professor Graeme Reid
Chair of Independent Review of Innovation Centres Programme
The Scottish Funding Council
Donaldson House
97 Haymarket Terrace
Edinburgh
EH12 5HD

Dear Graeme

REVIEW OF THE INNOVATION CENTRE PROGRAMME

Thank you for the opportunity to respond to the review of the Innovation Centre Programme. I have responded to the questions below as CEO of The Data Lab.

Is the original vision for the Innovation Centres programme current and correct?

The vision for the Innovation Centres programme is to support transformational collaboration between universities and businesses. The Centres aim to enhance innovation and entrepreneurship across Scotland's key economic sectors, create jobs and grow the economy. This vision is still current and correct, The Data Lab is already achieving some impact both in terms of job creation and economic benefit and we have forged many new business and academic relationships and collaborations. The mission remains as per our original business plan, however we have adapted and added to our operational plan in order to maximise our impact based on further industry engagement and requirement.

From your experience so far, are the Innovation Centres delivering against this vision?

The Data Lab is delivering against the original vision set out in our Business Plan: *To create a world class data science innovation centre, generating economic, social and scientific value*.

We are engaged across the whole of Scotland, have hubs established in Edinburgh, Glasgow and Aberdeen and see a balance of opportunity across that hub network. We have enabled and fostered new business and academic collaborations which is already generating economic value. We have created skills and talent programmes

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where demand is outstripping our supply and have build and fostered an extensive industry, public sector and academic community of data and business expertise.

We are enabling increased academic and business collaboration with many organisations who have not benefited from this type of engagement in the past. Our academic partners have also shown willingness and capability to collaborate in new ways with industry on projects, skills and training. An excellent example of this is the customised pilot of Industry EngD with St Andrews University.

To what extent do the priorities of Innovation Centres reflect those determined by industry?

The Data Lab and our activities across our three core capabilities (Collaborative Innovative Projects, Skills and Talent and Community Building) are all driven by industry requirement. We have 12 industry representative across three governance boards who help us shape our activities and offerings. We consult industry partners regularly and seek input from our broad network including over 1000 individuals on Data Science Tech Meetup group.

We engage with broad business and technology communities including the Institute of Directors, City Chambers and Scotland IS.

How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

The Data Lab has enabled new relationships between industry and academia across all three capabilities. We have engaged with all universities in Scotland and collaborated directly with 12 Universities across projects, workshops or skills and training programmes.

We have also engaged in creating new capabilities in order to meet industry demand including the creation of the Industry EngD programme with St Andrews University.

We ran the inaugural Data Talent Scotland event, a collider event for Industry, Academia and Students with over 500 attendees in March 2016. This event was rated as extremely successful by all parties engaged and has resulted in the creation of new high value jobs and new connections for Industry and Academia.

We are also engaged more broadly in the innovation landscape and have both received and referred industry partners to and from the other innovation centres, Interface, SE and HIE.

How effective and proportionate has the oversight of Innovation Centres been?

The Data Lab has developed governance processes in line with its business plans and agreed by our stakeholders including three boards: Governance Board, Industry Advisory Board and Education Advisory Board. These boards provide independent assessment and approval of our project funding decisions and our education plans and investments and each meet on a quarterly basis.

The Data Lab maintains an excellent relationship with our host university (Edinburgh) and our two hub hosts (Glasgow and RGU). The Data Lab adheres to all University of Edinburgh policies including recruitment, contracts, procurement, equal opportunities, staff appraisal and training and accounting principles. We do anticipate requiring some salary and grading flexibility in staff retention and further recruitment especially as the skills we require are in significant demand in Industry and demand substantial salaries.

We comply with all governance arrangements agreed with our stakeholders including our Quarterly and Annual submissions to SFC. We also meet quarterly with a team from Scottish Enterprise directly to discuss ongoing and continued engagement.

We believe there is an appropriate balance of freedom to operate and accountability necessary and we continue to maintain that balance by working with our stakeholders, industry partners, public sector and our academic host.

Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

The engagement across industry and the demand for Data Driven Innovation is significant, probably more so than originally envisaged. The challenge and opportunity is that Data Driven Innovation can impact every organisation from SME's to large multinationals in every industry including pubic sector. There is also significant demand from industry for data expertise from strategy, through engineering, data science and applicable research. We focus only on innovative data science and applicable research.

Considering our significant engagement over the last year, it is evident that demand for our support will outstrip our financial ability to support. In order to increase our impact (beyond our initial targets) we will need to secure increased public investment or raise commercial income. Demand will exceed our planned spend on projects and skills and talent. It would also be useful to explore extensions of our ability to support companies beyond academic and our own data scientists support, time and funding.

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Kind regards,

Gillian Docherty
CEO
The Data Lab

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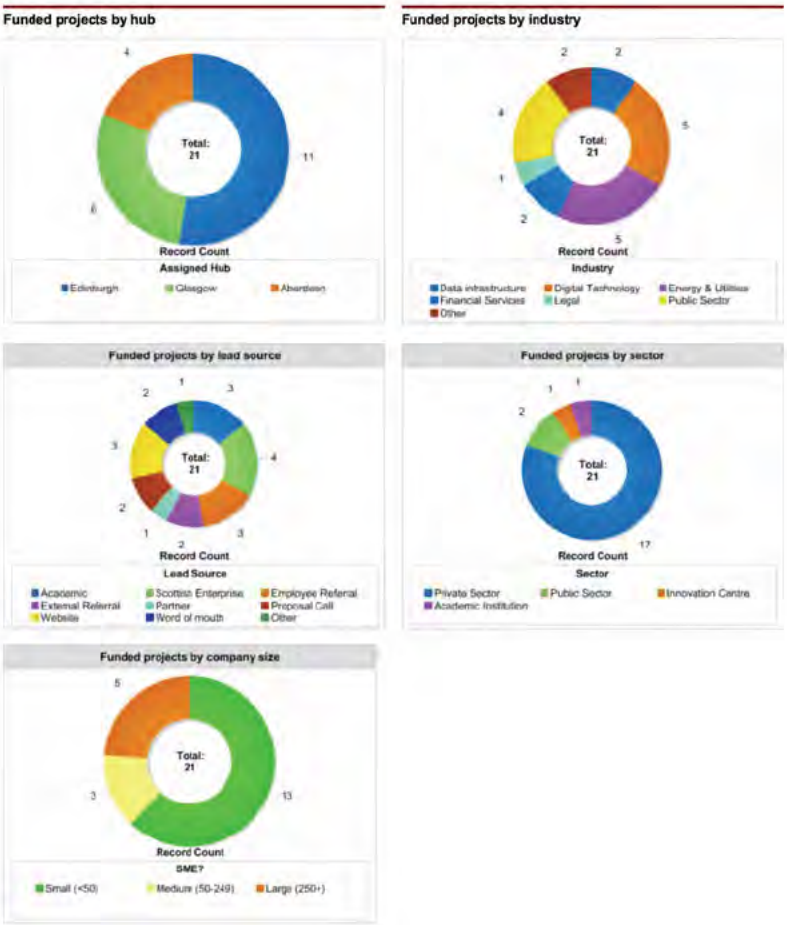
Appendix A

Projects: Approved Dashboard



Projects: Pipeline Dashboard

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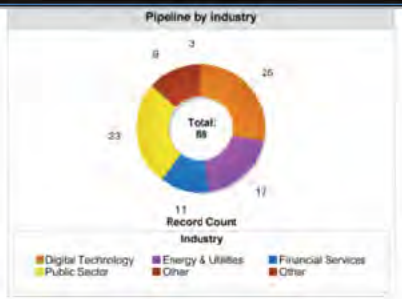
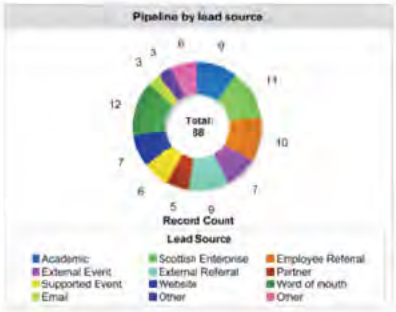
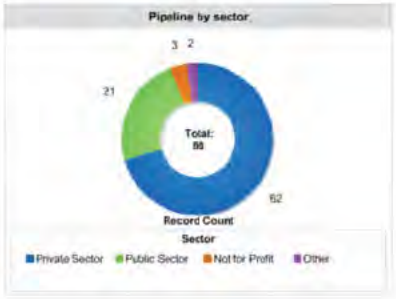
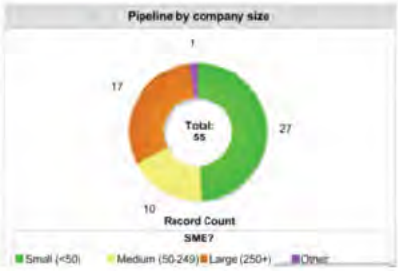
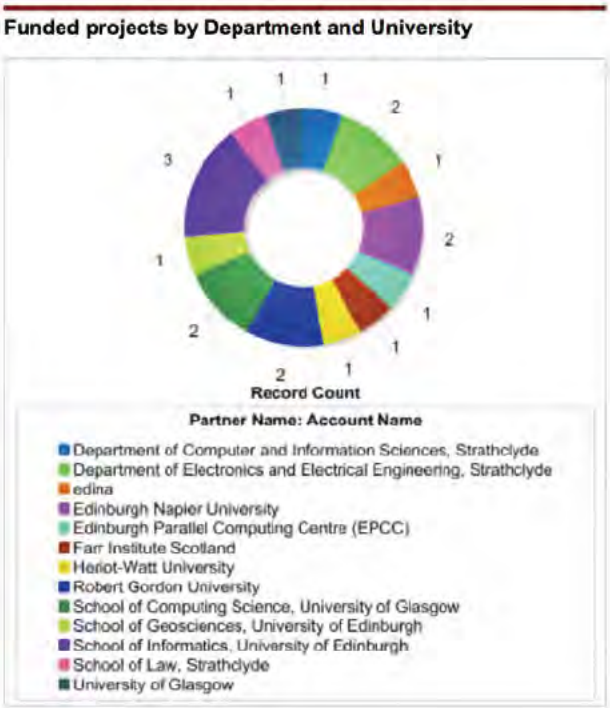








Academic Partner Engagement – Funded Projects



Independent Review of Innovation Centres Programme – Led by Prof Graeme Reid

Submission

Name :- Neil Logan
Job Title :- Chairman
Org :- The Data Lab
Tel :- [redacted]
Email :- neil.logan@thedatalab.com
Who :- Individual
Confidentiality :- No
Confidentiality Reason :-

Q1 :- The Innovation Centres (ICs) were created to address the fact that despite Scotland punching well above its weight in academic capability traditionally R&D investment by businesses here in Scotland lagged behind the rest of the UK and was significantly below the highest performing economies. I believed then, and still believe now that this is something that Scotland must address. Whilst the IC programme has improved things much work remains. As such, the original vision remains as current and correct as it did when the programme was originally envisaged.

Q2 :- The Data Lab had a slow start due to challenges in recruiting the right person to fulfil the Chief Executive role. This role has now been filled and progress since that point has been good. The Data Lab is currently projecting to exceed all of it KPIs and I am delighted by the progress it has made. Most importantly I am pleased with the innovative projects we are delivering as I believe they do demonstrate a significant change in the way businesses in Scotland engage with academics.

Q3 :- The Data Lab's organisational structure has been designed to ensure that industry's views are represented and that business priorities are strongly influenced as a result. The Data Lab's Management Board (MB) will always be chaired by an individual working in Industry and the board composition ensures that a majority of members come from industry. Two additional boards support the operation of The Data Lab. The Industry Advisory Board (IAB) exists to review and approve the collaborative projects undertaken by The Data Lab. The IAB is chaired by an industry member of the MB and the board composition ensures that a majority of members come from industry. The Education Advisory Board (EAB) exists to advise The Data Lab on all education and academic matters. The EAB is chaired by an academic member of the MB and the board composition ensures that a majority of members come from academia. Both the EAB and IAB are represented by both academic and industry members but their composition is designed to ensure that appropriate weight is given in each case. In addition to the organisational structure, The Data Lab

is, in spirit, a sales driven organisation. A sales team exists to find industry projects that can be submitted to the IAB for review and potential approval. The IAB is completely independent of the sales team but by being focused in this way The Data Lab ensures that it is actively listening and working with industry (i.e., the customers) to ensure it is delivering the right services. The Data Lab has undertaken a number of important initiatives to further engage industry such as CTO away days and training programmes. Overall I believe that The Data Lab is engaging and listening to industry.

Q4 :- Fundamentally I am not sure I believe that relationship has changed. In the past, there were isolated areas of success and in these cases industry and academia worked well together. The Innovation Centres are starting to broaden out these relationships. More companies and more academics are working together and I believe we are now well on our way to see these isolated success stories become more of the norm thanks to the ICs.

Q5 :- The Data Lab quickly established its MB and thereafter established both the IAB and EAB with all three elements providing effective oversight. Initially the MB took direct responsibility for the day-to-day activity of The Data Lab until a Chief Executive was recruited. This required the Chair to direct control of the organisation with the board meeting on a weekly basis to ensure launch and initial milestones were met. Since the Chief Executive has been in post, the MB has switched to a more strategic oversight role and here I believe the MB is working well. The oversight provided by the Scottish Funding Council (SFC) has been propitiate to the level of activity and funding The Data Lab has been given. The annual reviews are a useful mechanism although I do believe these could be improved. The SFC and Scottish Enterprise (SE) have observer members who attend every board meeting and these members have been very helpful in ensuring The Data Lab remains true to its core mission. The Data Lab's relationship with the University of Edinburgh has been terrific throughout and in particular the engagement from both Prof. Dave Robertson and Prof. Lesley Yellowlees has helped The Data Lab succeed.

Q6 :- My feeling from day one was the IC programme was an experiment. An experiment which I should stress that I believed would work but one which I did not KNOW would work. I feel that the original bid process spent too much time trying to predict hypothetically what would work rather than allowing IC's to work like start-up businesses whereby they would have to demonstrate success or die. I feel adopting a lean start-up model would have enabled the consideration of more ICs and limit some of the confirmation bias that exists within all similar programmes. One of the things I like about the IC programme in general is that there is so much difference between the IC's themselves. Some have membership schemes that companies pay to be part of; some do not. Some are focussed on an academic discipline; some are focused on an industry segment. I believe these differences make the overall programme stronger, but only if the programme management

holds each IC to account and isn't afraid to allow the IC to pivot and find something that will work. Right now I fear that ICs are held to their original visions too strongly and that adaption is not something valued by the programme. As Chair of The Data Lab I led the original bid but I feel that without others like me the programme would never have succeeded. I strongly believe that the IC programme relied on the charity of people such as myself who believed passionately about their particular IC in order for them to come into existence. The Data Lab required a tremendous amount of hard work from a wide range of industry members with this simply being expected to be given. If the programme is going to expand this reliance on "charity" need to be considered. In particular I should point out that I found aspects of the final review painful adding little value to overall process. Indeed it was a process that I felt called into question my professionalism and has left me with a very negative view of some of the organisations involved in that stage of the programme.

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Dear Professor Reid

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We both welcome this independent review of the Innovation Centre programme, our international and national experience is that this programme is a unique initiative and has significant potential to disrupt the way innovation is progressed in many sectors. International feedback from organisations such as Google, Apple, The Scripps Institute and Stanford University's Medicine-X have been significantly impressed by the unique approach we are taking in Scotland to economic development using all the key assets the country has to offer in an inclusive and open access environment and as such DHI has been fortunate to secure strategic partnerships with these and many other interesting organisations in Scotland, across the UK and as far as the Middle East and Asia.

The vision set out by the Scottish Funding Council (SFC) in 2012 of a unique opportunity to challenge the way industry and academia collaborate, creating new cultures and establishing significant opportunities for civic and economic benefit, we believe remains an excellent one, that can put Scotland in a unique position, as long as all partners and stakeholders align. There is still significant work to be done to ensure the long term success of the programme and initiative.

The DHI organisation's recent experiences in the programme have been exceptionally challenging for all involved, there are lessons to be learned from the series of events, decisions and outcomes that have resulted from the external management of DHI to ensure that there is no repeat situation in any other Innovation Centre and to ensure the long term success of the DHI now transitioning into a new host. Our experiences have shown that once again culture plays a significant part in determining the success or otherwise of ventures involving transformational change. Undoubtedly there will be a short to medium term impact to DHI, which we hope will not divert us from our key tasks. However, the experiences and learning accumulated will be exceptionally valuable.

DHI continues to deliver despite its challenges, with over eighty-five projects initiated, over one thousand members and a continually growing community, a project portfolio worth circa £3.4m, a significant pipeline of commercial funding opportunities and a soon to be announced high profile new International Sport and Wellness Ambassador for the Institute. Along with the strategic plans currently under development we continue with our industry, academic and civic partners to be committed and excited by the future prospects for the programme.

We look forward to the outcome of the review and its recommendations to take forward into our own institution and in working with our partner ICs in the coming months and years.

Yours sincerely

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Chairman
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Chief Executive Officer
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Enc.

Innovation Centres

SFC Independent Review of the IC Programme

Response to evidence request from Professor Graeme Reid, 20 June 2016.

Prepared by the Digital Health & Care Institute

1. Is the original vision for the ICs programme current and correct?

When Professor Paul Hagan launched the call for ICs (ICs) in 2012[1], he stated the main vision of the call was to use Scottish Universities and their research excellence to bring academia and business together to grow the Scottish Economy.

Professor Hagan couldn't emphasise enough how important it was that business and industry impose their stamp on the leadership and governance of the ICs to satisfy SFC of a step change in engagement with industry clarifying this he stated 'we cannot have academics running the show, it is critically important that these are heavily driven by the business end'. This need for a fertile protected environment for meaningful engagement to take place is fundamental to the success of ICs. This is borne out by the number of EU regions that are beginning to invest in similar models.

The vision set out by SFC is absolutely correct in the case of the emerging digital health and care economy. In fact it was not only necessary it is a strategic imperative. Innovation in health and social care is fundamentally important, recognising the increasingly unsustainable demands being placed on the current health and care systems in Scotland. The Scottish Parliament recognised this on 5th March 2014 following a cross parliamentary debate which resulted in a successfully passed motion stating:

"The Parliament recognises that innovation through technology is vital in delivering Scotland's 2020 Vision for health and social care, whereby everyone is able to live longer, healthier lives at home or in a homely setting; …. and recognises ***Scotland has a clear opportunity to be a leader in the growing global digital healthcare market****, following the establishment of organisations such as the Digital Health Institute."*

Going forward, consideration of entrepreneurial, commercialisation and internationalisation support is required within the IC programme, making it easier to engage for SMEs in a complex environment and in order to ensure the maximum impact to the translation of innovation into economic growth for Scotland.

2. From your experience so far, are the ICs delivering against this vision?

DHI believes the IC programme is beginning to realise the vision, however it is too early to determine how successful they will be. Establishing a wider cohesive community continues to be challenging when the landscape is so cluttered. There are a number of organisations attempting to occupy the same space and there is no clarity of roles and responsibilities in emerging sectors where there are multiple beneficiaries as there is here, from a civic and economic perspective.

The collaborative model of innovative development is fundamentally important for DHI in our sector. Innovations are unable to get to market in the same way as in consumer industries due to the strict regulatory requirements of the sector. The validation and expertise provided by our academics and seeding and testing in live health & social care environments with the NHS, social care and third sector partners is of real importance in the process of innovations being scaled within reasonable time-frames.

The challenges in the IC programme model lie in getting all partners to buy in to the long term timeframes required to see innovations through to a final conclusion; and how the outputs of the ICs come to commercial fruition: DHI is measured against wide economic and civic outcomes, but is scoped and resourced only to stimulate the creation of innovative products and services, not their subsequent commercial implementation. Much better alignment and co-ordination at this end of the innovation cycle is essential to deliver the wider outcomes and benefits to the Scottish economy.

The diagram in Appendix I shows the full DHI innovation lifecycle based on an extended TRL and our proposals being discussed at present for future working.

DHI is driven by recognised and stated challenges of the sector in Scotland and is industry-led, enabling co-development of the solutions to address those challenges.

DHI in its current state has made progress towards the vision. The care sector is an immensely broad and complex playing field and it has taken longer than originally envisaged to develop the necessary relationships across Scotland (twenty one health boards,

[1] Paul Hagan SFC Innovation Centre Launch https://youtu.be/5jVNE1ZJMNk

thirty two local authorities, thirty one integrated joint boards, nineteen higher educational institutions (HEIs) and large numbers of industry and third-sector organisations. However, DHI is already seen as a national asset with good relationships across the country and high levels of engagement with industry borne out by the membership that currently stands at over 1,000 members.

The knowledge exchange and research activities facilitate engagement across the relevant stakeholder base in Scotland as well as the development of increasingly productive international relationships to benefit the Scottish digital health and care sector.

DHI's evolution has been a learning process. It is now clear that there requires to be a greater focus on agreeing a set of strategic priorities and enabling industry partners to realise direct benefits as noted by Alex Stobart, of SME Mydex CIC:

"As a Member from the start, it has been a rich learning journey, and I wanted to thank [DHI]. Since this collaborative work started in 2014 with Toni, and with Chal developing and extending the programme over the last year, Mydex CIC has found that the NGDS process genuinely enables participants to learn and develop in a Team Scotland collaborative approach. There are some signs that person centred services, and the personal data ecosystem will become part of Scotland's way of citizens maintaining and improving their lives. A significant part of this ongoing shift towards empowering citizens in health, care and wellbeing is thanks to DHI and NGDS Demonstrators."

" Mydex CIC very much enjoys being part of a Scottish Cluster, with DHI facilitating and designing local, collaborative, innovation in health, care and wellbeing for this local Cluster and thereby creating opportunities beyond these shores. As a Scottish Community Interest Company, the DHI experience has empowered us in relationships with other organisations, SMEs, third sector, Academics and serving the citizens of Scotland. Mydex is looking forward to continuing to work with DHI to move person centred services, prevention and early intervention into the heart of our personal data ecosystem and improving outcomes for the citizens of Scotland."

The long term future of the IC programme will heavily depend on the ICs being able to innovate and continually improve themselves based upon learning and being open to change. Therefore the evolving DHI model is to place greater focus behind the areas of strategic importance as directed by the central themes of the Scottish Government (SG) Health and Social Care Directorate noted in appendix II.

DHI is in a unique position to be the "glue" that binds the parties together in collaboration. The fact that it is independent and not-for-profit is important in this role, as is its ability to be impartial. The value of the role DHI plays can be evidenced by the 'copy' model set up by Digital Health London-DHL, who approached DHI for help to set up. DHI is collaborating with DHL but we must continue to maintain and protect our competitive advantage internationally for the benefit of Scotland's economy.

Key to establishing an internationally ambitious community and moving the IC programme strategically forward is that the programme must be aligned with key sector players, particularly in the area of the circular economy and civic benefit realisation, otherwise the maximum impact will not be achieved. In the health and care sector it is imperative that there is alignment with key government priorities, to realise the full potential of economic impact from innovation, both in terms of benefit to the citizens in Scotland for health and wellbeing outcomes as well as for jobs and revenue growth for Scottish companies and the ability to attract significant amounts of inward investment activity and revenue.

DHI activities span five SG directorates, seven ministerial portfolios and numerous SG funded organisations or initiatives. There is no singular statement of ambition or vision for the economy in this new sector and no official governance model over the directorates and ministerial portfolios to assist coordinated economic development outside of the DHI. See appendix III.

We believe we are contributing to the vision of the programme along with the other ICs, and some key successes for DHI in the last three years are noted in appendix IV.

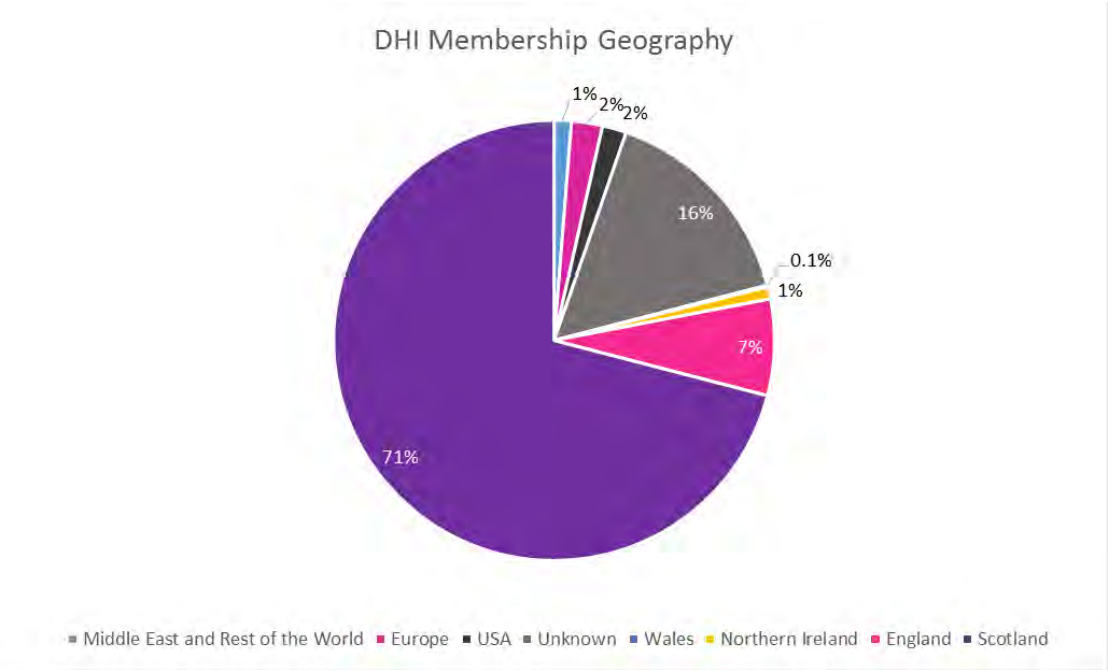
3. To what extent do the priorities of ICs reflect those determined by industry?

This vision and priorities for the ICs being driven by industry leadership remains essential, however the strategic industry led aspect of the programme is exceptionally challenging to realise given the critical need for agility, dynamism and the level of appetite for risk as is required for innovation generally. These requirements are not in the general nature of long established universities, and in DHI's case has not, so far, been able to be realised in our academic hosting arrangements. The recent hiatus in DHI operations (over six months) evidences this. DHI successes with industry drive and engagement have been in spite of the hosting arrangements. This cultural difference is an area that needs to be recognised and will vary in degree by host institution and needs to be taken into account as we move forward.

Digital health is an emerging sector and a new market which needs to respond to the priorities of providers in the first instance. Setting those challenges out in a way that industry can then respond to with innovative ideas that have commercial viability is the approach DHI takes to stimulate the market structure in Scotland and announce to industry that Scotland has several unique selling points (USPs) as a country with an ambition to be a significant global player in digital health and care.

DHI is highly engaged with industry and recognises the importance of this. Firstly, with a great number of SME's who are the innovators in the sector. Secondly, with an increasing number of larger corporates, including multinationals, who have an important part to play in the development of underlying infrastructure requirements and the ability to provide a platform to commercially scale-up innovations that evaluate well and deliver the anticipated benefits. This creates partnership/acquisition opportunities for the mutual benefit of both corporates and SMEs.

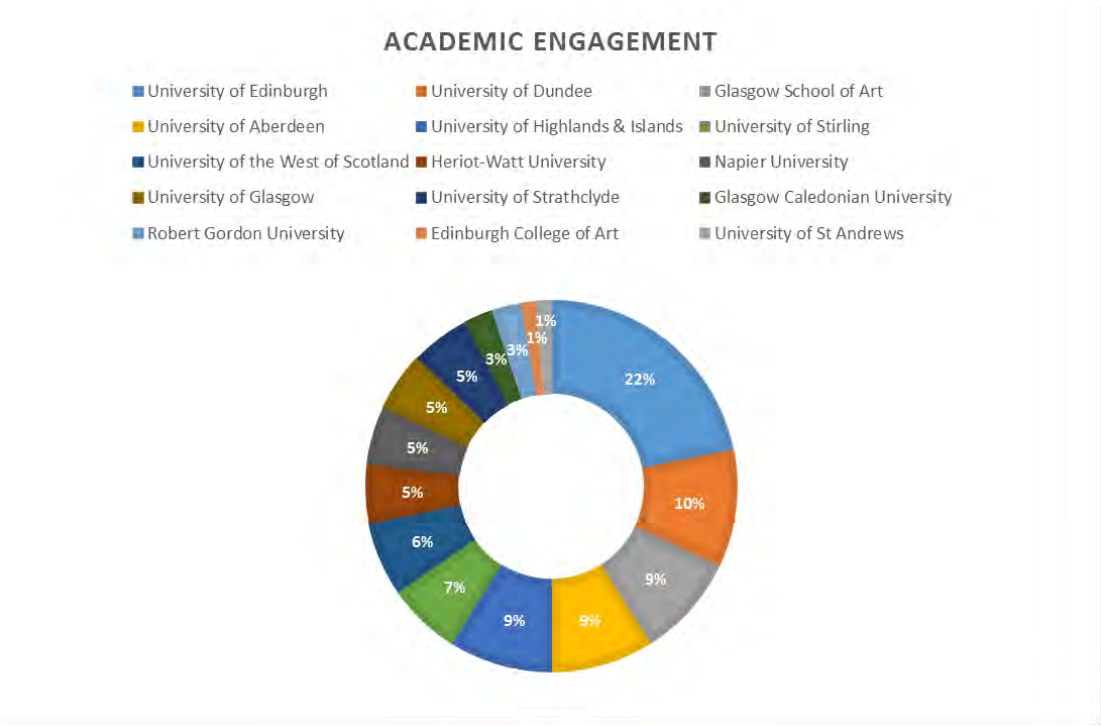
DHI has over one thousand members of which approximately four hundred and fifty are industry members and approximately two hundred and sixty are Scottish SME's. The geographical spread of our membership base is indicated below:



DHI recognises the challenges presented by the insufficient level of digital skills in the Scottish workforce. It is taking steps to address this by engaging with various organisations who deliver in this area such as Further Education Colleges, NHS National Education for Scotland (NES), Young Scot (My World of Work) and directly supporting their activity or working with them to develop appropriate digital content for their coursework. However, it must be recognised that this is not a quick fix and whilst DHI's own scholarship program is successful, a much broader and unified approach to solving this issue is required and steps are underway to create a national dialogue on the issue engaging all stakeholders.

4. How has the relationship between business and academia evolved since the creation of ICs Programme?

The creation of DHI has facilitated an open and accessible route for collaboration between industry and academia. DHI leverages organisations such as Interface and our universities, but increasingly as the breadth and depth of the DHI network grows, DHI is able to bring the right collaborations together independently. As you can see by the table below we have a good spread of engagement and there are fifteen of the nineteen HEIs in Scotland engaged in DHI project activity.



A large part of the engagement success is due to relevant, deep sector specific expertise being offered by DHI and its network such as:

- Access to the relevant health and social care partners for integration
- Access to test bed opportunities
- Access to co-design and prototyping expertise
- Access to networking events with key sector stakeholders present
- Accelerating innovation and using innovative pre-commercial and developmental procurement approaches

This is demonstrable through our project pipeline and increasingly as our membership grows we are building an inclusive community, involving all players in the digital health and care space. It is difficult to see how this would have been achieved without DHI.

DHI's future proposed "Simulation Lab" facilities further accelerate business innovation providing access to simulated facilities for the acceleration of product and service testing. This is predicted to save up to twelve months in the current innovation lifecycle.

The DHI model is proposing the creation of unique 'Demonstrator Environments' where SMEs and corporates can "learn and play" in a pre-commercial procurement space organised by specific prioritised themes.

DHI uses Interface and its own academic network to engage the "right academic for the right project" as required. This works well and the Interface Team supports DHI's evaluation and approval process.

The DHI CEO is a member of the SICSA Advisory Board and participates in quarterly meetings, in addition, members of the DHI team have engaged SICSA members.

DHI also has regular contact with Innovate UK and the KTPs.

5. How effective and proportionate has the oversight of ICs been?

The primary method of governance is a quarterly board meeting. This involves all stakeholders, including SFC, Scottish Enterprise, Highlands and Islands Enterprise and the board reports cover the strategic, operational activities and reporting of DHI in detail, including financial and KPI performance.

We believe that on an ongoing basis these reports should be sufficient to oversee and manage the performance of ICs in the same way as any commercial organisation would. As such, the quarterly MEF reports generally have a very high degree of duplication and effort in assimilating for what is in essence a small team.

We recognise the need for the separate SFC annual review and believe this is the correct forum to determine strategic organisational performance.

The DHI Board has provided good guidance during the set up and settlement phase however the composition of the DHI board latterly has presented some challenges due to the large number of stakeholders on the board. Steps were taken by the Chair to review and address this prior to the December "hiatus". Going forward a greater emphasis on industry and health, social care and third sector experience will add increasing value. DHI need our newly constituted Board to be very active, with members exploiting their own networks for DHI's benefit, growth and sustainability.

The recent example of the DHI hiatus imposed by the University of Edinburgh without reference to the DHI Board or SFC evidences the potential and in DHI's case severe challenge with the governance and hosting arrangements for the ICs. It brought into sharp focus that the Board of ICs have little or no authority and act under the patronage of their host institution who will take unilateral action if so minded to do so. This is an issue that requires clear national guidance going forward to prevent a recurrence of this situation.

The 6 month delay in moving the grant funding for the DHI from the University of Edinburgh to the University of Strathclyde has resulted in a significant detrimental impact to the progress of what was noted by SFC at one point last year to be the flagship IC by an operational delay of over six months, jeopardising three million pounds of investment from SG and Scottish Enterprise, impacting several significant commercial opportunities and has potentially damaged the international reputation of the Institute. The fact that all board appointments expired at the same time during the hiatus meant that the Institute effectively had no constituted Board and Chairman, and leaving the Leadership Team potentially exposed. However thanks to the commitment of several of the Board members, they continued to support DHI and the team in spite of the situation.

Given Professor Paul Hagan's clear statement about being industry led and the necessity to ensure that the innovation programme is not lead by academic partners, we wholeheartedly agree with Professor Hagan that the IC programme will not succeed if it continues to be driven by academic ambition rather than an independent and industry led and driven Board and Executive Team

Finally, ICs not having their own legal status has proved challenging and inefficient at times. Our clear view is that ICs need to be enabled to make decisions quickly and effectively and this can be effectively be achieved through a change in legal status. Our proposal would be for DHI to be a separate legal entity, possibly as a not-for-profit Community Interest Company ("CIC"). This would retain the required governance whilst allowing the flexibility and agility to move quickly when required and to develop its own potential to make commercial decisions, trade and generate income to inevitable become self-sustaining.

6. Do you have any other views such as suggestions for the evolution or future direction of the IC programme?

It would be helpful if SFC and SG invested in awareness raising and educational programmes for public sector and HEIs, their senior teams and heads of departments on the premise and strategic importance of the IC programme. It has to be clear that the focus is on economic development and that this initiative is not for simply a different type of incentivised 'research grant' and should not be treated as such.

The ICs need a means to support industry partners financially, the establishment of an IC industry fund should be considered in order to accelerate the innovation lifecycle. It is currently a fragmented approach to innovation funding, with the ICs providing academic funding and business, particularly small industry having to source financing from innovation funds in many different locations and between the many stakeholders, having to climb different hurdles and meet differing criteria to access funding.

Clarify the necessity of a 'civtech' programme being developed within the Digital Directorate within SG, this is a good initiative, however adds further clutter to what is already committed to by SG. Cohesion and alignment of government funded activities in

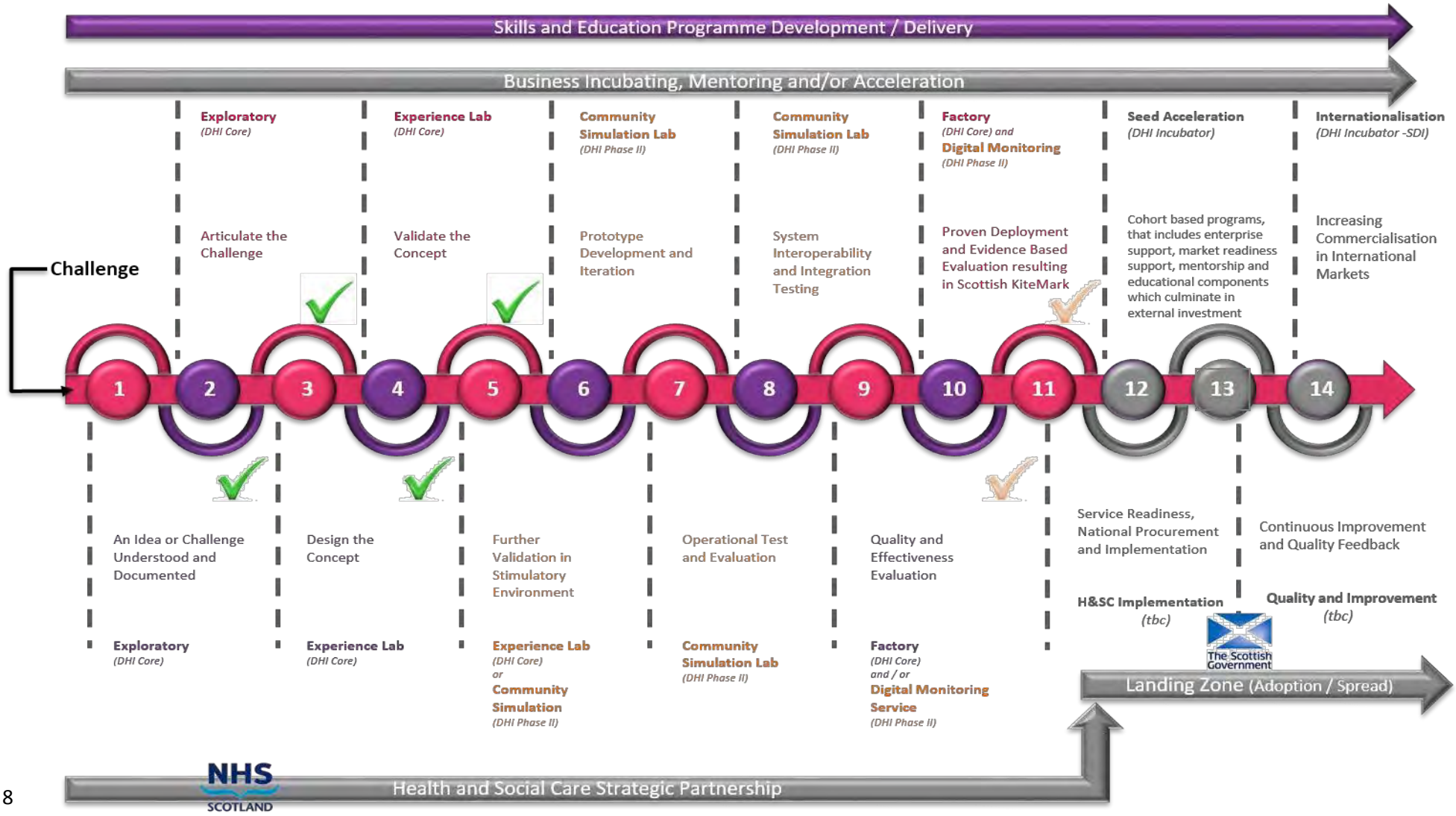
innovation is essential to avoid even further confusion and disengaging industry because “it’s too difficult to know where to go”, we must be very clear on how these and similar programmes will complement each other.

Finally, high level suggestions for the IC programme from DHI are noted as:

- Be ambitious, state internationally the vision, promote the programme and state the strategic intent in each of the sectors
- Truly enable the Chairmen and women, their Boards and Executive Teams, give them the support, backing and endorsement they require to get things done quickly and effectively and without unnecessary interference
- Define and coordinate the health and care sector innovation landscape (as noted above it is very cluttered and not cost effective) and clarify the roles and responsibilities with the different stakeholders and make them accountable
- Enable the ICs to influence the journey beyond the pure innovation cycle to include initial market seeding in their commercial exploitation and make then truly accountable for economic growth
- Ensure buy-in from all stakeholders in the medium to long term journey, avoid competitive actions within the IC programme and with further SG initiatives. (Don’t constrain them with short-term thinking, and give them time to evidence success).

Appendix I

The extension of the below traditional TRL model (1-8 and 11-14) is the additional proposal DHI is working on at present it highlights the current capabilities, but the gaps, particularly around TRLs 6-8 in simulation testing, and beyond TRL10 in technology commercialisation.



Appendix II

The evolving DHI model places greater focus behind the areas of strategic importance as directed by the central themes of the SG Health and Social Care Directorate noted as areas of need below:

1. Improve anticipatory care and preventative spend
2. Reduce avoidable admissions and improve patient pathways (admission to safe discharge)
3. Establish transformational Hospital/Care at Home capability ('no ward like home')
4. Enable connected Health and Care (devices/ services/ records/ platforms)
5. Improved patient/user engagement in their health and care

It is now clear that any product or service must be fully integrated within the relevant part of care pathway it serves, this is as important as the technology innovation itself. DHI can be seen to play an important role in providing the "connectivity layer" between the innovations themselves and the health and social care system.

Appendix III

The Scottish Government policies and strategies below all impact on the area of digital health and care either advocating for or promoting service change underpinned by innovation. However, these documents are often focussed on a single aspect of health and care provision. This level of complexity creates challenges and when taken alongside the cluttered innovation landscape can result in the progression of an idea into a tangible product can take up inordinate amounts of time and effort. DHI aligns itself and its own strategies with the strategies, policies and frameworks listed here as a way of providing cohesion and ease of access to innovation for industry through these and other strategies and initiatives.

List of strategies, policies and frameworks DHI must align itself to in order to support industry engagement with public sector partners:

- National Clinical Strategy for Scotland (Health and Social Care Directorate, SG)
- 2020 Vision (Health and Social Care Directorate, SG)
- Quality Strategy (Health and Social Care Directorate, SG)
- E-health strategy (Health and Social Care Directorate, SG)
- Technology Enabled Care Programme (Health and Social Care Directorate, SG)
- A National Telehealth and Telecare Plan for Scotland (SCTT, NHS 24)
- Economic Strategy (Enterprise, Environment & Innovation, SG)
- Global Scotland Trade and Investment Strategy 2016-2021 (Enterprise, Environment & Innovation, SG)
- Innovation Scotland Forum (Enterprise, Environment & Innovation, SG)
- Scotland Can Do Forum (Enterprise, Environment & Innovation, SG)
- Skills for Scotland Strategy (Learning and Justice, SG)
- Scotland's Digital Future – High Level Operating Framework (HLOF) (Communities, SG)
- Digital Participation: A National Framework for Local Action (Communities, SG)
- Scotland's International Framework (Strategy and External Affairs, SG)
- The Strategic Plan (Scottish Funding Council)
- A Framework for Action (Scottish Enterprise)
- 2020 Vision for Scottish Lifesciences Strategy (Lifesciences Scotland)
- Digital Health Care (Highlands and Islands Enterprise)
- Research Strategy (Healthcare Improvement Scotland, NHS Scotland)
- Delivering Innovation through Research, SG Health and Social Care Research Strategy (Chief Scientist Office, SG)
- Local Government ICT Strategy (Scottish Local Governments)
- Scottish Local Government Digital Transformation Strategy (Scottish Local Governments)
- Numerous Procurement Policies (SG and NHS)
- Scotland's Manufacturing Action Plan (Scottish Enterprise)
- Numerous Third Sector Policies

Appendix IV

DHI High level successes in the first three operational years

- Over eighty five projects have been initiated within first three operating years and approximately another twenty currently in the intake or early engagement process
- For every £1.00 DHI invests in a project, our partners invest £1.72, we now have a total project portfolio worth over £3.4m
- DHI was offered investment of £3m from SG and Scottish Enterprise to grow and expand DHI capability and capacity as a strategic infrastructure in Scotland, and a further £1m effective insurance underwrite
- Innovation of the Year 2015 Finalist at the Lloyds Bank National Business Awards after only 24 months of operation
- Successfully secured strategic relationship with Andy Murray, International Tennis Personality as DHI's International Ambassador
- Strategic Partnership signed between DHI and the SCRIPPS Institute in California
- Three further strategic partnerships with significant international organisations
- Established a significant International Business Development Pipeline
- Identified and built an international knowledge exchange network (>8 EU regions, USA and Canada)
- Our CEO and COO are members of the SG e-health Strategy and Programme Boards respectively and the Digital Health and Care Innovation Partnership Board providing advice and support to strategic developments
- The DHI CEO was nominated as International Director of the Year at Stanford University Annual International Medicine X Digital Health Conference and Awards by the Director General for Enterprise, Innovation and Environment (SG) and Finance Director of Health and Social Care (SG)
- The DHI CEO and Chairman were recognised by Holyrood Insider as one of the top Tech One Hundred Most Influential People in Scotland 2015

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Chairman
Digital Health and Care Institute

[redacted]

Justene Ewing
Chief Executive Officer
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When Professor Paul Hagan launched the call for ICs (ICs) in 2012[1], he stated the main vision of the call was to use Scottish Universities and their research excellence to bring academia and business together to grow the Scottish Economy.

Professor Hagan couldn't emphasise enough how important it was that business and industry impose their stamp on the leadership and governance of the ICs to satisfy SFC of a step change in engagement with industry clarifying this he stated 'we cannot have academics running the show, it is critically important that these are heavily driven by the business end'. This need for a fertile protected environment for meaningful engagement to take place is fundamental to the success of ICs. This is borne out by the number of EU regions that are beginning to invest in similar models.

The vision set out by SFC is absolutely correct in the case of the emerging digital health and care economy. In fact it was not only necessary it is a strategic imperative. Innovation in health and social care is fundamentally important, recognising the increasingly unsustainable demands being placed on the current health and care systems in Scotland. The Scottish Parliament recognised this on 5th March 2014 following a cross parliamentary debate which resulted in a successfully passed motion stating:

"The Parliament recognises that innovation through technology is vital in delivering Scotland's 2020 Vision for health and social care, whereby everyone is able to live longer, healthier lives at home or in a homely setting; …. and recognises ***Scotland has a clear opportunity to be a leader in the growing global digital healthcare market****, following the establishment of organisations such as the Digital Health Institute."*

Going forward, consideration of entrepreneurial, commercialisation and internationalisation support is required within the IC programme, making it easier to engage for SMEs in a complex environment and in order to ensure the maximum impact to the translation of innovation into economic growth for Scotland.

2. From your experience so far, are the ICs delivering against this vision?

DHI believes the IC programme is beginning to realise the vision, however it is too early to determine how successful they will be. Establishing a wider cohesive community continues to be challenging when the landscape is so cluttered. There are a number of organisations attempting to occupy the same space and there is no clarity of roles and responsibilities in emerging sectors where there are multiple beneficiaries as there is here, from a civic and economic perspective.

The collaborative model of innovative development is fundamentally important for DHI in our sector. Innovations are unable to get to market in the same way as in consumer industries due to the strict regulatory requirements of the sector. The validation and expertise provided by our academics and seeding and testing in live health & social care environments with the NHS, social care and third sector partners is of real importance in the process of innovations being scaled within reasonable time-frames.

The challenges in the IC programme model lie in getting all partners to buy in to the long term timeframes required to see innovations through to a final conclusion; and how the outputs of the ICs come to commercial fruition: DHI is measured against wide economic and civic outcomes, but is scoped and resourced only to stimulate the creation of innovative products and services, not their subsequent commercial implementation. Much better alignment and co-ordination at this end of the innovation cycle is essential to deliver the wider outcomes and benefits to the Scottish economy.

The diagram in Appendix I shows the full DHI innovation lifecycle based on an extended TRL and our proposals being discussed at present for future working.

DHI is driven by recognised and stated challenges of the sector in Scotland and is industry-led, enabling co-development of the solutions to address those challenges.

DHI in its current state has made progress towards the vision. The care sector is an immensely broad and complex playing field and it has taken longer than originally envisaged to develop the necessary relationships across Scotland (twenty one health boards,

[1] Paul Hagan SFC Innovation Centre Launch https://youtu.be/5jVNE1ZJMNk

thirty two local authorities, thirty one integrated joint boards, nineteen higher educational institutions (HEIs) and large numbers of industry and third-sector organisations. However, DHI is already seen as a national asset with good relationships across the country and high levels of engagement with industry borne out by the membership that currently stands at over 1,000 members.

The knowledge exchange and research activities facilitate engagement across the relevant stakeholder base in Scotland as well as the development of increasingly productive international relationships to benefit the Scottish digital health and care sector.

DHI's evolution has been a learning process. It is now clear that there requires to be a greater focus on agreeing a set of strategic priorities and enabling industry partners to realise direct benefits as noted by Alex Stobart, of SME Mydex CIC:

"As a Member from the start, it has been a rich learning journey, and I wanted to thank [DHI]. Since this collaborative work started in 2014 with Toni, and with Chal developing and extending the programme over the last year, Mydex CIC has found that the NGDS process genuinely enables participants to learn and develop in a Team Scotland collaborative approach. There are some signs that person centred services, and the personal data ecosystem will become part of Scotland's way of citizens maintaining and improving their lives. A significant part of this ongoing shift towards empowering citizens in health, care and wellbeing is thanks to DHI and NGDS Demonstrators."

" Mydex CIC very much enjoys being part of a Scottish Cluster, with DHI facilitating and designing local, collaborative, innovation in health, care and wellbeing for this local Cluster and thereby creating opportunities beyond these shores. As a Scottish Community Interest Company, the DHI experience has empowered us in relationships with other organisations, SMEs, third sector, Academics and serving the citizens of Scotland. Mydex is looking forward to continuing to work with DHI to move person centred services, prevention and early intervention into the heart of our personal data ecosystem and improving outcomes for the citizens of Scotland."

The long term future of the IC programme will heavily depend on the ICs being able to innovate and continually improve themselves based upon learning and being open to change. Therefore the evolving DHI model is to place greater focus behind the areas of strategic importance as directed by the central themes of the Scottish Government (SG) Health and Social Care Directorate noted in appendix II.

DHI is in a unique position to be the "glue" that binds the parties together in collaboration. The fact that it is independent and not-for-profit is important in this role, as is its ability to be impartial. The value of the role DHI plays can be evidenced by the 'copy' model set up by Digital Health London-DHL, who approached DHI for help to set up. DHI is collaborating with DHL but we must continue to maintain and protect our competitive advantage internationally for the benefit of Scotland's economy.

Key to establishing an internationally ambitious community and moving the IC programme strategically forward is that the programme must be aligned with key sector players, particularly in the area of the circular economy and civic benefit realisation, otherwise the maximum impact will not be achieved. In the health and care sector it is imperative that there is alignment with key government priorities, to realise the full potential of economic impact from innovation, both in terms of benefit to the citizens in Scotland for health and wellbeing outcomes as well as for jobs and revenue growth for Scottish companies and the ability to attract significant amounts of inward investment activity and revenue.

DHI activities span five SG directorates, seven ministerial portfolios and numerous SG funded organisations or initiatives. There is no singular statement of ambition or vision for the economy in this new sector and no official governance model over the directorates and ministerial portfolios to assist coordinated economic development outside of the DHI. See appendix III.

We believe we are contributing to the vision of the programme along with the other ICs, and some key successes for DHI in the last three years are noted in appendix IV.

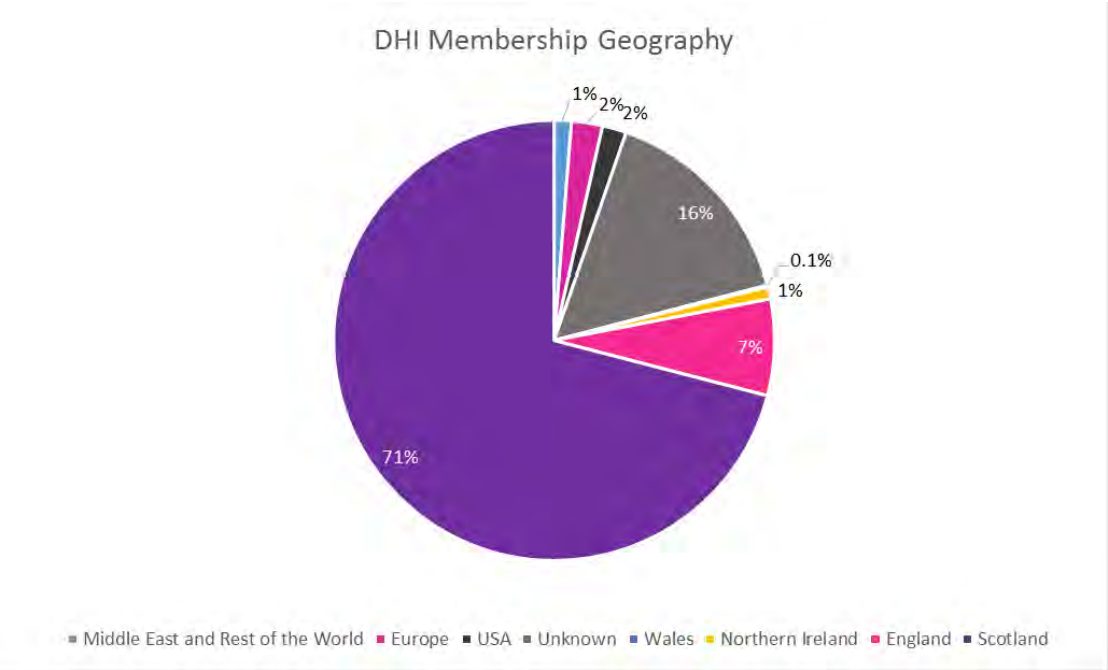
3. To what extent do the priorities of ICs reflect those determined by industry?

This vision and priorities for the ICs being driven by industry leadership remains essential, however the strategic industry led aspect of the programme is exceptionally challenging to realise given the critical need for agility, dynamism and the level of appetite for risk as is required for innovation generally. These requirements are not in the general nature of long established universities, and in DHI's case has not, so far, been able to be realised in our academic hosting arrangements. The recent hiatus in DHI operations (over six months) evidences this. DHI successes with industry drive and engagement have been in spite of the hosting arrangements. This cultural difference is an area that needs to be recognised and will vary in degree by host institution and needs to be taken into account as we move forward.

Digital health is an emerging sector and a new market which needs to respond to the priorities of providers in the first instance. Setting those challenges out in a way that industry can then respond to with innovative ideas that have commercial viability is the approach DHI takes to stimulate the market structure in Scotland and announce to industry that Scotland has several unique selling points (USPs) as a country with an ambition to be a significant global player in digital health and care.

DHI is highly engaged with industry and recognises the importance of this. Firstly, with a great number of SME's who are the innovators in the sector. Secondly, with an increasing number of larger corporates, including multinationals, who have an important part to play in the development of underlying infrastructure requirements and the ability to provide a platform to commercially scale-up innovations that evaluate well and deliver the anticipated benefits. This creates partnership/acquisition opportunities for the mutual benefit of both corporates and SMEs.

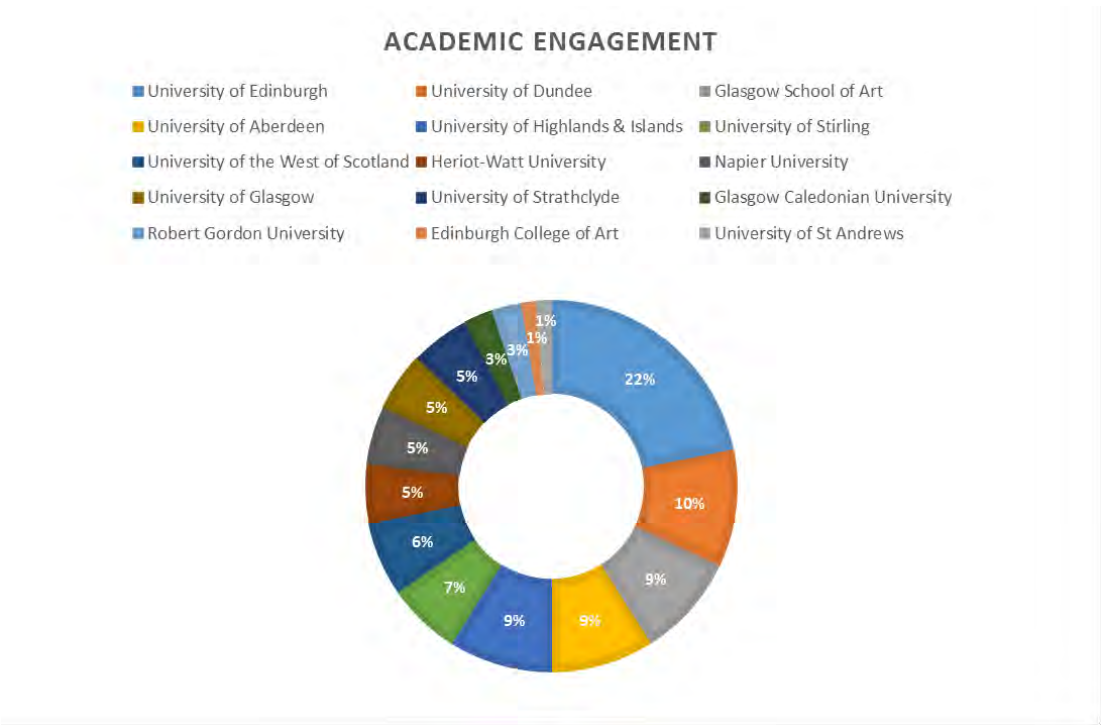
DHI has over one thousand members of which approximately four hundred and fifty are industry members and approximately two hundred and sixty are Scottish SME's. The geographical spread of our membership base is indicated below:



DHI recognises the challenges presented by the insufficient level of digital skills in the Scottish workforce. It is taking steps to address this by engaging with various organisations who deliver in this area such as Further Education Colleges, NHS National Education for Scotland (NES), Young Scot (My World of Work) and directly supporting their activity or working with them to develop appropriate digital content for their coursework. However, it must be recognised that this is not a quick fix and whilst DHI's own scholarship program is successful, a much broader and unified approach to solving this issue is required and steps are underway to create a national dialogue on the issue engaging all stakeholders.

4. How has the relationship between business and academia evolved since the creation of ICs Programme?

The creation of DHI has facilitated an open and accessible route for collaboration between industry and academia. DHI leverages organisations such as Interface and our universities, but increasingly as the breadth and depth of the DHI network grows, DHI is able to bring the right collaborations together independently. As you can see by the table below we have a good spread of engagement and there are fifteen of the nineteen HEIs in Scotland engaged in DHI project activity.



A large part of the engagement success is due to relevant, deep sector specific expertise being offered by DHI and its network such as:

- Access to the relevant health and social care partners for integration
- Access to test bed opportunities
- Access to co-design and prototyping expertise
- Access to networking events with key sector stakeholders present
- Accelerating innovation and using innovative pre-commercial and developmental procurement approaches

This is demonstrable through our project pipeline and increasingly as our membership grows we are building an inclusive community, involving all players in the digital health and care space. It is difficult to see how this would have been achieved without DHI.

DHI's future proposed "Simulation Lab" facilities further accelerate business innovation providing access to simulated facilities for the acceleration of product and service testing. This is predicted to save up to twelve months in the current innovation lifecycle.

The DHI model is proposing the creation of unique 'Demonstrator Environments' where SMEs and corporates can "learn and play" in a pre-commercial procurement space organised by specific prioritised themes.

DHI uses Interface and its own academic network to engage the "right academic for the right project" as required. This works well and the Interface Team supports DHI's evaluation and approval process.

The DHI CEO is a member of the SICSA Advisory Board and participates in quarterly meetings, in addition, members of the DHI team have engaged SICSA members.

DHI also has regular contact with Innovate UK and the KTPs.

5. How effective and proportionate has the oversight of ICs been?

The primary method of governance is a quarterly board meeting. This involves all stakeholders, including SFC, Scottish Enterprise, Highlands and Islands Enterprise and the board reports cover the strategic, operational activities and reporting of DHI in detail, including financial and KPI performance.

We believe that on an ongoing basis these reports should be sufficient to oversee and manage the performance of ICs in the same way as any commercial organisation would. As such, the quarterly MEF reports generally have a very high degree of duplication and effort in assimilating for what is in essence a small team.

We recognise the need for the separate SFC annual review and believe this is the correct forum to determine strategic organisational performance.

The DHI Board has provided good guidance during the set up and settlement phase however the composition of the DHI board latterly has presented some challenges due to the large number of stakeholders on the board. Steps were taken by the Chair to review and address this prior to the December "hiatus". Going forward a greater emphasis on industry and health, social care and third sector experience will add increasing value. DHI need our newly constituted Board to be very active, with members exploiting their own networks for DHI's benefit, growth and sustainability.

The recent example of the DHI hiatus imposed by the University of Edinburgh without reference to the DHI Board or SFC evidences the potential and in DHI's case severe challenge with the governance and hosting arrangements for the ICs. It brought into sharp focus that the Board of ICs have little or no authority and act under the patronage of their host institution who will take unilateral action if so minded to do so. This is an issue that requires clear national guidance going forward to prevent a recurrence of this situation.

The 6 month delay in moving the grant funding for the DHI from the University of Edinburgh to the University of Strathclyde has resulted in a significant detrimental impact to the progress of what was noted by SFC at one point last year to be the flagship IC by an operational delay of over six months, jeopardising three million pounds of investment from SG and Scottish Enterprise, impacting several significant commercial opportunities and has potentially damaged the international reputation of the Institute. The fact that all board appointments expired at the same time during the hiatus meant that the Institute effectively had no constituted Board and Chairman, and leaving the Leadership Team potentially exposed. However thanks to the commitment of several of the Board members, they continued to support DHI and the team in spite of the situation.

Given Professor Paul Hagan's clear statement about being industry led and the necessity to ensure that the innovation programme is not lead by academic partners, we wholeheartedly agree with Professor Hagan that the IC programme will not succeed if it continues to be driven by academic ambition rather than an independent and industry led and driven Board and Executive Team

Finally, ICs not having their own legal status has proved challenging and inefficient at times. Our clear view is that ICs need to be enabled to make decisions quickly and effectively and this can be effectively be achieved through a change in legal status. Our proposal would be for DHI to be a separate legal entity, possibly as a not-for-profit Community Interest Company ("CIC"). This would retain the required governance whilst allowing the flexibility and agility to move quickly when required and to develop its own potential to make commercial decisions, trade and generate income to inevitable become self-sustaining.

6. Do you have any other views such as suggestions for the evolution or future direction of the IC programme?

It would be helpful if SFC and SG invested in awareness raising and educational programmes for public sector and HEIs, their senior teams and heads of departments on the premise and strategic importance of the IC programme. It has to be clear that the focus is on economic development and that this initiative is not for simply a different type of incentivised 'research grant' and should not be treated as such.

The ICs need a means to support industry partners financially, the establishment of an IC industry fund should be considered in order to accelerate the innovation lifecycle. It is currently a fragmented approach to innovation funding, with the ICs providing academic funding and business, particularly small industry having to source financing from innovation funds in many different locations and between the many stakeholders, having to climb different hurdles and meet differing criteria to access funding.

Clarify the necessity of a 'civtech' programme being developed within the Digital Directorate within SG, this is a good initiative, however adds further clutter to what is already committed to by SG. Cohesion and alignment of government funded activities in

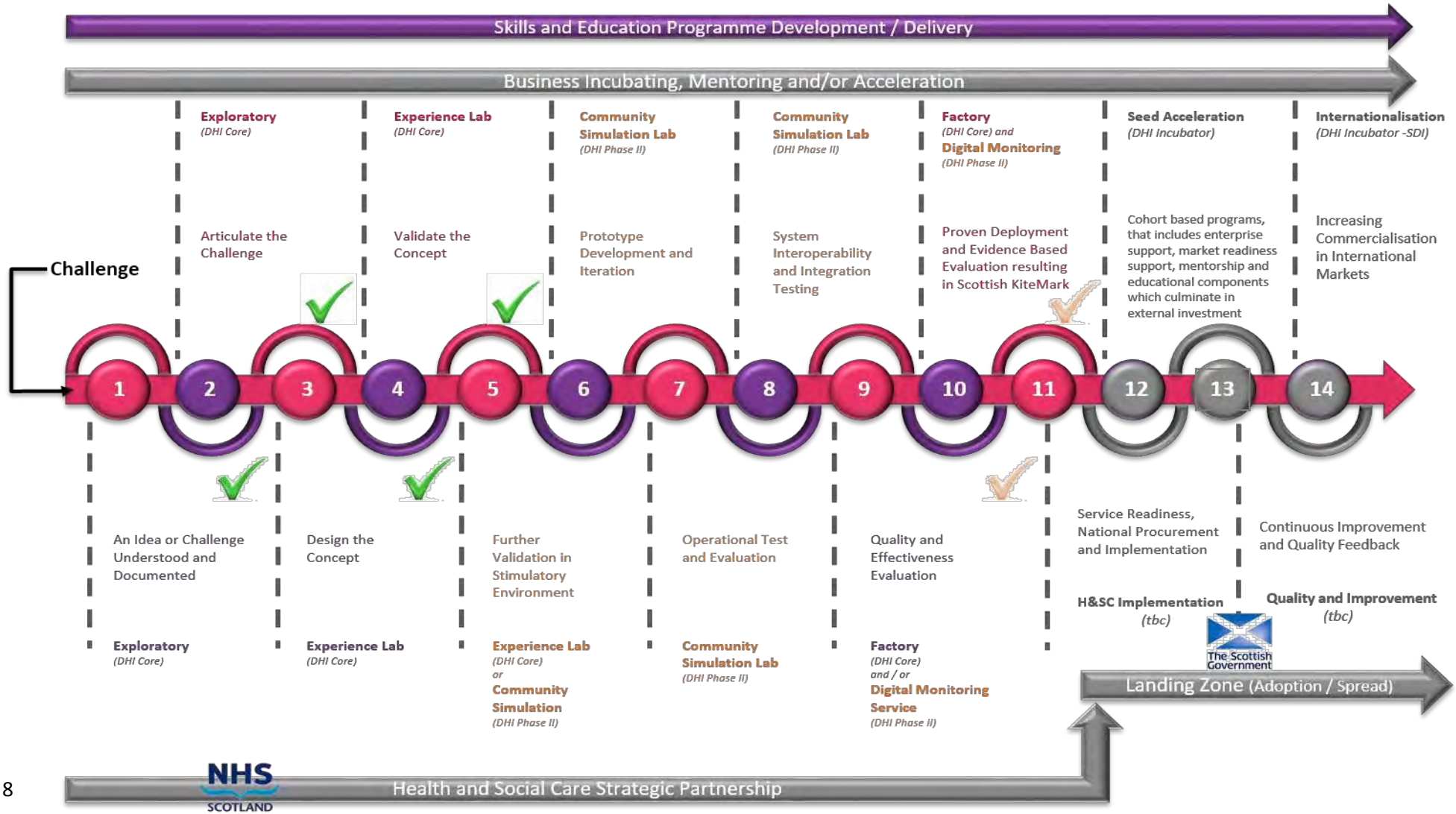
innovation is essential to avoid even further confusion and disengaging industry because “it’s too difficult to know where to go”, we must be very clear on how these and similar programmes will complement each other.

Finally, high level suggestions for the IC programme from DHI are noted as:

- Be ambitious, state internationally the vision, promote the programme and state the strategic intent in each of the sectors
- Truly enable the Chairmen and women, their Boards and Executive Teams, give them the support, backing and endorsement they require to get things done quickly and effectively and without unnecessary interference
- Define and coordinate the health and care sector innovation landscape (as noted above it is very cluttered and not cost effective) and clarify the roles and responsibilities with the different stakeholders and make them accountable
- Enable the ICs to influence the journey beyond the pure innovation cycle to include initial market seeding in their commercial exploitation and make then truly accountable for economic growth
- Ensure buy-in from all stakeholders in the medium to long term journey, avoid competitive actions within the IC programme and with further SG initiatives. (Don’t constrain them with short-term thinking, and give them time to evidence success).

Appendix I

The extension of the below traditional TRL model (1-8 and 11-14) is the additional proposal DHI is working on at present it highlights the current capabilities, but the gaps, particularly around TRLs 6-8 in simulation testing, and beyond TRL10 in technology commercialisation.



Appendix II

The evolving DHI model places greater focus behind the areas of strategic importance as directed by the central themes of the SG Health and Social Care Directorate noted as areas of need below:

1. Improve anticipatory care and preventative spend
2. Reduce avoidable admissions and improve patient pathways (admission to safe discharge)
3. Establish transformational Hospital/Care at Home capability ('no ward like home')
4. Enable connected Health and Care (devices/ services/ records/ platforms)
5. Improved patient/user engagement in their health and care

It is now clear that any product or service must be fully integrated within the relevant part of care pathway it serves, this is as important as the technology innovation itself. DHI can be seen to play an important role in providing the "connectivity layer" between the innovations themselves and the health and social care system.

Appendix III

The Scottish Government policies and strategies below all impact on the area of digital health and care either advocating for or promoting service change underpinned by innovation. However, these documents are often focussed on a single aspect of health and care provision. This level of complexity creates challenges and when taken alongside the cluttered innovation landscape can result in the progression of an idea into a tangible product can take up inordinate amounts of time and effort. DHI aligns itself and its own strategies with the strategies, policies and frameworks listed here as a way of providing cohesion and ease of access to innovation for industry through these and other strategies and initiatives.

List of strategies, policies and frameworks DHI must align itself to in order to support industry engagement with public sector partners:

- National Clinical Strategy for Scotland (Health and Social Care Directorate, SG)
- 2020 Vision (Health and Social Care Directorate, SG)
- Quality Strategy (Health and Social Care Directorate, SG)
- E-health strategy (Health and Social Care Directorate, SG)
- Technology Enabled Care Programme (Health and Social Care Directorate, SG)
- A National Telehealth and Telecare Plan for Scotland (SCTT, NHS 24)
- Economic Strategy (Enterprise, Environment & Innovation, SG)
- Global Scotland Trade and Investment Strategy 2016-2021 (Enterprise, Environment & Innovation, SG)
- Innovation Scotland Forum (Enterprise, Environment & Innovation, SG)
- Scotland Can Do Forum (Enterprise, Environment & Innovation, SG)
- Skills for Scotland Strategy (Learning and Justice, SG)
- Scotland's Digital Future – High Level Operating Framework (HLOF) (Communities, SG)
- Digital Participation: A National Framework for Local Action (Communities, SG)
- Scotland's International Framework (Strategy and External Affairs, SG)
- The Strategic Plan (Scottish Funding Council)
- A Framework for Action (Scottish Enterprise)
- 2020 Vision for Scottish Lifesciences Strategy (Lifesciences Scotland)
- Digital Health Care (Highlands and Islands Enterprise)
- Research Strategy (Healthcare Improvement Scotland, NHS Scotland)
- Delivering Innovation through Research, SG Health and Social Care Research Strategy (Chief Scientist Office, SG)
- Local Government ICT Strategy (Scottish Local Governments)
- Scottish Local Government Digital Transformation Strategy (Scottish Local Governments)
- Numerous Procurement Policies (SG and NHS)
- Scotland's Manufacturing Action Plan (Scottish Enterprise)
- Numerous Third Sector Policies

Appendix IV

DHI High level successes in the first three operational years

- Over eighty five projects have been initiated within first three operating years and approximately another twenty currently in the intake or early engagement process
- For every £1.00 DHI invests in a project, our partners invest £1.72, we now have a total project portfolio worth over £3.4m
- DHI was offered investment of £3m from SG and Scottish Enterprise to grow and expand DHI capability and capacity as a strategic infrastructure in Scotland, and a further £1m effective insurance underwrite
- Innovation of the Year 2015 Finalist at the Lloyds Bank National Business Awards after only 24 months of operation
- Successfully secured strategic relationship with Andy Murray, International Tennis Personality as DHI's International Ambassador
- Strategic Partnership signed between DHI and the SCRIPPS Institute in California
- Three further strategic partnerships with significant international organisations
- Established a significant International Business Development Pipeline
- Identified and built an international knowledge exchange network (>8 EU regions, USA and Canada)
- Our CEO and COO are members of the SG e-health Strategy and Programme Boards respectively and the Digital Health and Care Innovation Partnership Board providing advice and support to strategic developments
- The DHI CEO was nominated as International Director of the Year at Stanford University Annual International Medicine X Digital Health Conference and Awards by the Director General for Enterprise, Innovation and Environment (SG) and Finance Director of Health and Social Care (SG)
- The DHI CEO and Chairman were recognised by Holyrood Insider as one of the top Tech One Hundred Most Influential People in Scotland 2015

The following response is focussed exclusively on the Industrial Biotechnology Innovation Centre (IBioIC), being the centre I am familiar with. I make my response in my capacity of Chairman, Chemical Sciences Scotland, Member of the Governing Board of IBioIC and as Managing Director of Sasol Technology UK Ltd (STUK) who are Core members of IBioIC.

1. Is the original vision for the Innovation Centres programme current and correct?

I believe the original motivation for the Innovation centres can be traced back to the long standing concern that the vigour of the Scottish Science base (University research) is not reflected in Business R&D activity in Scotland; better links between the Science Base and Industry would stimulate economic growth. This is still a laudable goal that needs pursuing. A quick analysis of the Scottish Industrial base, certainly in the chemicals sector reveals other reasons for this low research intensity; the sector has many SMEs, making both in-house R&D and technology transfer difficult. The larger Companies are often regional manufacturing operations of global companies, with little R&D activity and little latitude to adopt new technology. This requires mechanisms for increasing the absorptive capacity of small Companies, for inter-company activity and de-risking low TRL activities. As an emerging, potentially disruptive technology, Industrial Biotechnology (IB) presents both opportunities and challenges.

2. From your experience so far, are the Innovation Centres delivering against this vision?

IBioIC understands this reality and has provided mechanisms for both Industry-Academia and Business to Business activity. It is a good example of the so called Triple Helix interaction of Industry, Academia and policy makers. It has clear and ambitious targets that underpin its vision and regularly and critically measures progress against these. This has ensured that it has met and indeed exceeded targets for this stage of its development. It has engaged widely with the University sector and Industry as well as funding agencies and the public sector. It has raised the profile of IB in Scotland internationally, as witnessed by success in attracting a major international conference to Glasgow later this year. It has an active portfolio of projects that demand Industry-Academia collaboration and has trained and graduated high quality scientists, with all but one (16 of the 17) of the first MSc cohort going on to either employment within the industry or further education.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

IBioIC has undoubtedly benefitted from the recruitment of seasoned Industry leaders as both CEO and Chairman. There is an unmistakable focus on the needs of Industry that pervades all of what it does. It has a healthy industrial membership (who pay an annual subscription), good retention of members and a good pipeline of potential new members.

It has proved agile in adapting its project calls e.g. to foster involvement of SMEs, to use its scale up facilities and underpin central strategic aims. Via one exemplar project it has spawned the setting up of a new joint venture, Prasinotech Ltd – a new Company registered in Scotland. The introduction by IBioIC of the IB Accelerator Programme now allows Companies as well as Universities to obtain funding (the former vie SE/HIE) to move technology towards commercialisation. My own Company has benefitted from the use of an IBioIC expert consultant to provide critical input to a global investment decision. The equipment centres at Strathclyde and Heriot-Watt are targeted to facilitate scale-up. In addition to the MSc and PhD programmes IBioIC continues to consider the needs of industry and has worked to establish a HND course in IB and has explored the CPD needs of the sector.

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

The various project vehicles have ensured the development of new collaborative partnerships this has been augmented by two very successful annual conferences, where much attention was given to fostering collaboration. The aforementioned IB Accelerator programme is an example of how IBioIC has looked to facilitate innovation across the Industry-Academia interface.

5. How effective and proportionate has the oversight of Innovation Centres been?

I judge the governance of IBioIC to be proportionate. The existence of three main Boards (Scientific, Commercial and Governing) supplemented by the Audit Committee and Remuneration Committee, all

of which have broad membership means there is transparency and accountability without hindering the ability of the CEO and his team to pursue their strategic agenda.

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

IBioIC has made an excellent start in establishing Scotland's position in this emerging technology. However IB is undergoing an explosive growth phase and IBioIC needs the capacity (support) to build on this momentum and secure a leading role. Activities should involve

i) Further fostering Business to Business activities, in particular looking along the value chain to build new relationships (e.g. low carbon energy, the rural economy, the feedstock base).
ii) Explore ways to build on the equipment centres to de-risk investment and support the progression through TRLs. One example may be support of biorefinery type investments.
iii) Nurture activities where Scotland may have an inherent competitive advantage such as in Marine Biotech.
iv) The CEO has demonstrated the will to reach out and form collaborations with other Innovation Centres (such as Oil and Gas), this is to be encouraged.
v) Aggressive targeting of additional funding mechanisms will be required.

These are additional activities and current excellent work must not be negatively impacted.

Construction Scotland ILG Feedback

1. **Is the original vision for the Innovation Centres programme current and correct?**

   - CSIC's vision: "**champion innovation & connect Scotland's construction industry to deliver transformational change"**

   - CSIC's vision is perhaps a little more holistic than most of the other IC's as it is recognized that in Construction, the situation is perhaps more complex and at an earlier stage than some other industries due in part to the scale and fragmentation of the industry. It is also critical the universities infrastructure and expertise is connected with other innovation support provision and presented in an integrated way to industry; in order to encourage industry uptake.

2. **From your experience so far, are the Innovation Centres delivering against this vision?**

   So far the Innovation Centre has been working across the whole of Scotland and achieved the following:

   - CSIC's Business Relationship Managers are based throughout Scotland ensuring CSIC is able to engage with businesses at a local level and are accessible to businesses across the country
   - CSIC has collaborates closely with Scottish Enterprise, Highlands and Islands Enterprise and other partners across Scotland to help deliver appropriate support to businesses who are undertaking innovation
   - CSIC has already worked with 6 out of the 13 of Scotland's HEI's that originally signed-up to the initial proposal, thus ensuring comprehensive geographical spread
   - In terms of projects underway and under development, CSIC are working with businesses supporting projects in locations such as Newtonmore; Aberdeenshire; Perthshire; Wishaw; Glasgow and Dumfries.

   - From the outset, due to the fact the public sector has such a major influence on Scotland's construction industry as a major client, regulator and partner, it was recognised that CSIC should seek to work closely with a range of partners and

stakeholders including government; public sector organisations; trade bodies; and intermediaries.

- CSIC are currently working with a range of public sector organisations throughout Scotland including Cairngorm National Park; Aberdeen City Council; Transport Scotland; Forestry Commission Scotland; Glasgow City Council.

- Whilst CSIC are well engaged with some representative organisations such as Homes for Scotland and Institute of Civil Engineers, opportunities exist for greater collaboration with a number of other representative organisations if these organisations are receptive to the CSIC's mission.

- One of the founding principles behind CSIC's mission is that in construction, collaboration can be an enabler of innovation, encouraging companies to work together to overcome challenges or seize opportunities. CSIC's project catagorisation structure reflects this with four of the five categories based around some form of collaboration – whether that is between companies; with academia; with the public sector or a combination of all three.

- CSIC's most intensive project category, Hub Programmes, seek to bring business together with academics and public sector actors to address a common challenge or market opportunity. This can be shown with the progress that "The Scotland's Offsite Hub" initiative has made to date featuring eight core member companies; Edinburgh Napier University and Scottish Enterprise. Other Hub Programmes are in planning or development (such as social/affordable housing).

- CSIC also plans over the next year to organise and facilitate a range of workshops around market opportunities / key challenge areas to bring businesses and academia together, gauge interest and hopefully create further collaboration vehicles.

- CSIC also works closely with Interface, where CSIC's Board Chair sits on Interface's Board and one of Interface's senior staff members sits on CSIC's Project Advisory Group.

- CSIC also has a strong relationship with a number of other innovation centres:

mainly DataLab, Digital Health & Care IC and CENSIS – which helps to ensure projects that, are strategic and multi themed in nature can obtain the most appropriate support.

3. **To what extent do the priorities of Innovation Centres reflect those determined by industry?**

- With an industry as large (31,000 businesses), diverse (approx... 26 sub sectors), cluttered (120+ trade bodies) fragmented, and dis-engaged as construction, it is not an easy industry to engage with. Whilst CSIC routinely exhibit and visit businesses across Scotland, CSIC are currently, advertising for two new Marketing roles and an additional Senior Business Relationship Manager will enable greater levels of industry engagement. These new roles will be critical in raising the Centres profile across industry.

- CSIC supported, as part of its Offsite Hub initiative, a large project to further skills around offsite construction featuring two major Scottish offsite businesses.

- Additionally, CSIC have been in discussions for some time around a collaboration harnessing Scotland's college network – which plays a significant role in this sector.

- Similarly, a venture with Scottish Enterprise around supporting the industry around training needs for BIM is almost finalised for launch

- Further work will always be required around this subject, but at the same time, there have been some issues in securing academic capacity to support projects required by industry, despite a network of 13 HEI's. Once the initiatives mentioned above have been launched during 2016-17, we are confident CSIC will be recognised as delivering leading collaborative best practice.

4. **How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?**

- As CSIC have only been operational for 18 months, it is perhaps too early to report any change here, but good work, which will hopefully result in a more effective

relationship between business and academia, is underway.

- It could be observed that some university partners appear more willing or able to respond to industry demand than others could. Whilst work is under way regarding REF and HEI funding arrangements, perhaps more work could be done at a strategic level within SFC to promote this.

  CSIC are currently developing in collaboration with Scottish Enterprise and others such as Knowledge Transfer Partnership, an online portal via its website to simplify and improve the accessibility and relevance of a range of innovation support, delivered by a range of partners, to construction businesses – with the aim that by improving accessibility to support available, more businesses will find it easier to innovate.

5. How effective and proportionate has the oversight of Innovation Centres been?

- CSIC has an industry-led Board (containing two public sector observers) that meets regularly. A wealth of management information is provided regularly to the board to ensure adequate scrutiny, oversight and support.

- The Centre recognizes that an area it could improve on is by sharing more information via its website, but this may be challenging with the limited resources it has at its disposal, thus the requirement to recruit.

- Again, in relation to its limited resources, reporting to SFC, Board, updating partners and stakeholders and for purposes of programme wide evaluation, CSIC do appear to be devoting a large amount of time on this – which prevents them from engaging with industry and academia on projects. Perhaps this is disproportionate at this stage, considering CSIC's early stage of development?

- An added complexity is the way in which the Innovation Centre's have been setup – administered by a university. Working with university systems and compliance with its policies, procedures and ways of working, which are sometimes not appropriate for the Innovation Centre's objectives, add an additional layer of complexity in what is already a challenging task. I do wonder sometimes that it feels like this has never been done before and we ourselves are the experiment.

6. **Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?**

- Perhaps Innovation Centre's should be allowed to have slightly more freedom and be more innovative themselves – in order to help encourage industry to be innovative. Current operating models where they are administered by large universities with all of the complexity, culture and compliance this brings, does not appear to promote a culture of innovation, I thought that's what we were trying to avoid?

- In order to deliver against what is a challenging brief, and has added complexity, the Innovation Centres need to be appropriately funded and resourced. This could perhaps be given further consideration?

- Future commercial activity and income will be key in evolving the future direction of the Innovation Centres.

Independent Review of Innovation Centres Programme – Led by Prof Graeme Reid

Submission

Name :- Prof Geoff Simm
Job Title :- Vice Principal Research SRUC; Board member SAIC - NB I am responding in my capacity as the academic member of the Scottish Aquaculture Innovation Centre Board (since early 2015).
Org :- SRUC/SAIC
Tel :- [redacted]
Email :- geoff.simm@sruc.ac.uk
Who :- Individual
Confidentiality :- No
Confidentiality Reason :-

Q1 :- Yes – SAIC provides a valuable catalyst for interaction between industry and academic partners, in support of innovation. This is highly relevant to the Scottish Government's purpose of sustainable economic growth, and in particular its renewed emphasis on innovation. There is strong evidence that co-creation between academia and industry is the most effective model for generating industry-relevant research. SAIC is on target to deliver this.

Q2 :- Yes, SAIC is well on course to do so – although it is early days to have definitive proof yet. I have been involved in many industry-academic partnerships for over 30 years, and I am impressed by the framework and ethos that SFC/SAIC have created for these, and the very promising early results. The SAIC portfolio contains projects that are likely to deliver both high quality science and real practical impact in aquaculture.

Q3 :- Entirely – industry members have set the priorities and guard these strongly. SAIC stronly promotes the concept of a succesful, innovative industry being based on strong partnerships between industry and academia. The SAIC independent scientific advisory panel (which I chair) believes that there is already a strong foundation of partnership working between academia and the Scottish aquaculture industry, and that SAIC will deepen this partnership.

Q4 :- A greater degree of mutual understanding of the key issues/opportunities, and the contributions each party can make towards solving/realizing them. A greater degree of awareness of where Scotland already has world class research capability, and where it needs to be developed further.

Q5 :- It appears to have been effective and frequent in the case of SAIC – some might say over-frequent for this stage in the life cycle. I believe there is a good relationship

between SAIC and SFC. Arguably this review is a little early in SAIC's case.

Q6 :- This is an important initiative which is capable of achieving great results for Scotland, but which needs to be given time to deliver. I am also involved in UK Government-funded AgriTech Innovation Centres, and I believe that the flexibility around the funding model for SFC Centres is a great advantage (e.g. in relation to capital vs revenue funding streams, which are more rigid in AgriTech).

Independent Review of Innovation Centres Programme – Led by Prof Graeme Reid

Submission

Name :- Dr John Webster
JobTitle :- Technical Director
Org :- Scottish Salmon Producers' Organisation
Tel :- [redacted]
Email :- jwebster@scottishsalmon.co.uk
Who :- Organisation
Confidentiality :- No
ConfidentialityReason :-

Q1 :- This submission focuses on my own experience specifically in relation to the work of Scottish Aquaculture Innovation Centre (SAIC). By way of background, I chaired the Task Group charged with developing the proposal to SFC, SE and HIE and with developing the business and operating plans. An award was made to SAIC, administered through the University of Stirling, in February 2014. I chaired the Interim Board of SAIC until the current Chair and CEO were appointed and currently serve as an industry member of the SAIC Board. I am a scientist and have worked in support of the Scottish salmon farming industry for over thirty years. The original vision for the IC programme was warmly welcomed by players in the Scottish aquaculture industry. In particular, aspirations to cultivate and improve relationships between the Scottish academic and research community and Scottish fish and shellfish producers in order to bring about transformational change in the performance of both for the benefit of Scotland's economy fitted well with industry thinking at the time, as it does today. Aquaculture plays an crucially important role in Scottish food production and the shared aspirations of industry and Scottish Government to sustainably grow production requires the support of members of the research community within Scottish HEIs and other innovative thinkers in industry. It is important to stress that Scottish farmed salmon production is built on a foundation of relevant, high quality science and innovation and this continues to characterise the modern industry. The great majority of the most important developments in the industry's relatively short (c.40 year) history, especially those that relate to fish health and welfare, have come about because of the willingness of the producers themselves to respond forcefully to major challenges through innovation. Some important aspects, such as the development of efficacious vaccines against important bacterial diseases and, over the course of the past decade or so, the development of 'cleaner fish' as a biological tool for use in the management and control of sea lice, have enjoyed the support of a relatively small number of researchers in Scottish HEIs, along with researchers and development scientists in specialist commercial companies. It is important that such strategically important initiatives continue and that relationships between Scottish aquaculture food

producers and members of the academic and research community who have the skills, knowledge and expertise to support growth through innovation continue to be fostered.

Q2 :- On developing relationships between the Scottish HEI research community and industry, once again from my personal perspective and experience within SAIC, I feel that progress towards achieving one of SAIC's key objectives has been slower than might have been hoped for. This is not intended as a criticism of SAIC, but comes from a sense of frustration that issues which would not constitute hurdles if left to industry to deal with appear to be more complex in the context of collaborative work between HEI and industrial partners. There are some very good examples of exceptions to this (especially as far as Scotland's only specialist aquaculture centre at IoA, Stirling is concerned, where some exceptionally high quality, industry relevant work has been, and is being, done) but otherwise, there is still a strong sense of many academics wishing to pursue research where they have an established track record in areas that are of interest to them, rather than their thinking following the need to address practical challenges and solve real problems. I fully accept the challenges for academics and researchers created by established criteria on e.g. publication in peer reviewed journals and the need to demonstrate that they are engaged in cutting edge science, but science focused on solving real problems is very often of equivalent or higher quality compared with some of the fundamental science carried out in HEIs and is often of much greater relevance. If the aspiration of bringing about transformational change, both in relationships and economic and social outputs, is to be realised and, accepting that the IC model is a new one, I strongly believe that more must be done to address this critical obstacle. Attempts within an early draft of the SAIC business plan to suggest the development of alternative career paths for clever young scientists and researchers interested in practical problem solving through high quality science were rejected as being in the too difficult basket... On innovative research, reiterating the point made in response to the first question, the Scottish aquaculture industry already has an exceptionally strong record on innovation. In contrast, innovative thinking, with one or two notable exceptions, seems currently not to be a particularly strong feature of aquaculture research within many Scottish HEIs. A notable example of this comes from the call from industry, through SAIC, for proposals for work on engineering solutions to the sea lice issue. Scottish HEI engineering departments have been consulted several times with a view to preparing bids under a number of funding initiatives in the course of the past five or six years and, mainly through The Telford Institute, were involved in the early development of SAIC's business plan. Despite attempts to engage, few, if any, meaningful proposals have come to light so far. This situation contrasts markedly with that which exists in Norway, where salmon farming is also a strategically important food production industry and where innovative research has given rise to a number of mechanical devices that are now being piloted in Norway, Scotland and elsewhere. We estimate that, this year, £15-20m will be

invested in bringing Norwegian mechanical anti-sea lice technology to Scotland. I propose to comment on potential opportunities for the greater involvement of commercial businesses, including engineering companies, in innovative research under Q6.

Q3 :- In my view, the priorities of the Scottish Aquaculture Innovation Centre currently mirror industry priorities. It is important that this position is maintained and that renewed energy is devoted to broadening the number of Scottish HEI researchers and academics actively involved in developing new ideas and in conducting innovative research designed to improve industry performance and support economic development. It is important, especially at this relatively early stage in proceedings, that tight focus on the key areas of importance highlighted in the business plan remains and that SAIC is not viewed as a funder of aquaculture research more generally.

Q4 :- My response to Q2 responds partly to this question. I believe that, with some exceptions, many players in the Scottish HEI research community who have the potential to make an important contribution to the general objectives of the IC initiative and the specific objectives of SAIC and its constituents have been slow to acknowledge and take up the opportunities created. It is not clear what requires to be done to address this, but inward looking attitudes, a reluctance to collaborate, ingrained thinking and artificial hurdles in relation to career progression all seem to be part of the problem.

Q5 :- The oversight of ICs by SFC largely seems to have been effective and proportionate. Acknowledging the need to ensure that the spending of public money (which is, in fact, a relatively small proportion of the value of SAIC projects commissioned so far) is justified, that the ICs are being well managed and that spend represents good value for money, I have some concerns about some relatively minor issues e.g. the requirement for formal quarterly reports to SFC, which I believe may not provide a reasonable picture of progress over such short timescales, and absorb resource which might be better used elsewhere. The oversight of SAIC by its Board has been good, although some frustrations occasionally emerge because of the often contrasting expectations of its members.

Q6 :- Given the degree to which innovative thinking often emerges from commercial companies involved in the aquaculture supply chain, many of which are SMEs or micro businesses, I believe that it is important that commercial companies actively involved in innovative research are not prevented from gaining funding for such research simply because they do not need to become formally involved in doing this through a Scottish HEI. I fully appreciate that there are other routes through which funding for such companies may be made available, and that SFC may only fund Scottish HEIs, but I believe that current arrangements are relatively inflexible and

may prevent otherwise willing players entering the arena. The development of an improved model based on experience and learning will require careful though, but I believe this is a good time to reflect on where we stand today and how things might be improved for the future.

Independent Review of Innovation Centres Programme – Led by Prof Graeme Reid

Submission

Tourism Leadership Group, The Scottish Tourism Alliance
Stephen Leckie,
Chair, Scottish Tourism Alliance
Tourism Leadership Group
Email: Stephen.leckie@crieffhydro.com

Overview

The Scottish Tourism Alliance (STA) was formed in 2012, an evolution of the Scottish Tourism Forum which was established in 1998 to act as the Industry Leadership Group for tourism and the leading voice for the tourism sector in Scotland. The role of the STA is to 'lead on industry matters', collaborating with and representing industry views to government and agencies, bringing public and private players together to encourage the voicing of opinion about problems and priorities to find solutions.

As the Tourism Leadership Group, the STA is also responsible for the facilitation and co-ordination of the ongoing development and delivery of the national tourism strategy: Tourism Scotland 2020, industry wide, the strategy ambition being to make Scotland a destination of first choice for a high quality, value for money and memorable customer experience.

For more information on the STA and the national strategy: Tourism Scotland 2020 please visit **scottishtourismalliance.co.uk**.

Response

The Scottish Tourism Alliance (STA) understands that there have been two bids to create Tourism Innovation Centres in Scotland. The first application led by University of Edinburgh was rejected at the first stage and the second which was led by Queen Margaret University, reached the final application stage.

The STA was invited by Scottish Funding Council (SFC) to be involved with the second bid. The SFC were very clear in their advice to Universities that the STA, as the industry leadership group, should be at the heart of any application.

The QMU-led application was unsuccessful. It was recognised by SFC that the scoring system in place was not sufficiently flexible to allow for a sector as diverse as tourism. Following the application, the SFC have been working with the STA to

explore other opportunities for University-Industry collaborations and to ensure that should a future application be submitted that it would be assessed.

The tourism industry is a broad sector, comprising of over 13,000 mainly small and micro-sized businesses. These organisations range from accommodation providers to tour operators to transport providers to large visitor attractions to technology companies, all with differing objectives, priorities and access to resources. Historically there have been few links between tourism businesses and academia and therefore for many a culture-change has been required. Levels of R&D (and therefore innovation) are considered to be low in the sector and such terms often do not resonate with small businesses. We therefore suspect that innovation is occurring but is not being captured.

Due to the nature of the tourism industry and stimulated by the opportunities to work with Universities as a result of the Innovation Centre approach, the last 2-3 years have seen greater clarity on the key areas where academic partnerships could help drive growth in the tourism industry. The Scottish Tourism Alliance, as the Tourism Leadership Group and the guardians of the national tourism strategy, have been working with the Scottish Funding Council, Highlands & Islands Enterprise and Scottish Enterprise to determine how the academic sector can better engage with the tourism industry and have considered themes such as data (which has involved liaising with Data Lab) and adventure tourism. We have recently started working with Interface who have received short-term funding to focus on tourism innovation clusters.

Tourism could undoubtedly benefit from any number of academic interventions and this has been the key challenge for the sector in focusing on a single Innovation Centre for the sector. We believe that there are many opportunities for the academic research to support growth of the tourism sector through innovation, and these are starting to come to the fore through building relationships with SFC and individual Universities, however to date the Innovation Centre model has been difficult to apply to the sector.

Stephen Leckie | CEO | Crieff Hydro Family of Hotels | [redacted] | stephen.leckie@crieffhydro.com

Scottish Sea Farms

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Tel: (44) 1786 445521 Fax: (44) 1786 450164 **Date: Monday 20th June 2016**

Professor Graeme Reid
Chair of Independent Review of Innovation Centres Programme
The Scottish Funding Council
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Dear Graeme

REVIEW OF THE INNOVATION CENTRES PROGRAMME

Thank you for the opportunity to contribute to the Independent Review of the Innovation Centres Review. My responses to your questions are based on my experience as a board member of the Scottish Aquaculture Innovation Centre (SAIC), and as Managing Director of one of Scotland's leading salmon producers.

I have been Managing Director of Scottish Sea Farms since 2001. We operate over 40 salmon farms on the West Coast of Scotland, Orkney and Shetland, employing over 400 staff in largely rural and remote locations. Our annual turnover is in the region of £130 million.

I was part of the industry leadership group that made the case for an Innovation Centre in aquaculture to be set up, and a shadow board member of SAIC before its launch. I am now a main board member, representing industry interests.

A management accountant by training, I have worked in the aquaculture industry since 1998.

1. Is the original vision for the Innovation Centres programme current and correct?

The original vision is correct, and the need for an aquaculture Innovation Centre remains compelling. Aquaculture is a major economic contributor to Scotland, but the industry faces biological challenges and ambitious global competition. The Scottish industry needs technical innovation and increased production capability in order to win back global market share, and these will come from the research community engaging with the industry's challenges.

Since SAIC's launch, there has been increasing industry appetite and activity around it – evidenced in the pipeline of project proposals and the growing consortium membership. This underlines the need and appetite for the IC.

2. From your experience so far, are the Innovation Centres delivering against this vision?

SAIC has delivered against its vision, and the outcomes of its work are being noticed well beyond the industry. One example is the SAIC-sponsored £4m wrasse project involving Scottish Sea Farms and another leading salmon producer, Marine Harvest Scotland, along with BioMar and the Institute of Aquaculture at the University of Stirling. The project is pre-competitive and could result in efficiency savings in the cost of salmon production, and deliver environmental benefits through the reduced use of licensed medicines.

Already, on the strength of early work on the 42-month project, Scottish Sea Farms has recently won the Innovation Category and Business of the Year awards at the Scotland Food & Drink Excellence Awards 2016, and Marine Harvest Scotland won the Innovative Collaboration Award at the Scottish Enterprise Life Sciences Awards 2016. These awards are important – they clearly demonstrate to wider stakeholders that salmon producers in Scotland are part of a growing, innovative industry that is committed to using the best R&D and innovation to support sustainability and economic growth in Scotland.

As for wider industry / academic culture change, that is work in progress, but we are seeing signs of positive engagement. The aquaculture industry will benefit from SAIC's work to widen the pool of researchers in aquaculture and related fields who understand its challenges and want to tackle them.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

SAIC's four priority innovation areas (PIAs) were developed by its industry-led board. Each PIA is critical for the development and sustainability of the industry. Since launch, the board has advocated a rigorous focus on these PIAs, and all projects funded have been orientated towards progress on them.

The challenges facing the aquaculture industry are evolving continually, as new biological challenges and knowledge arise, and there is the possibility to add some research areas to SAIC's current PIAs and focus. This would also add some flexibility to SAIC's ability to work with the entire supply chain in Scottish aquaculture.

The time horizons for the aquaculture industry in Scotland are long-term. This reflects investment time horizons, but also the time it takes to embed new biological technical knowledge, and to apply new technologies to fish and shellfish farming. We therefore welcome the long-term perspective taken by SAIC – for example, in the theme of its first major conference event in 2015, "Aquaculture innovation: a springboard to 2030", and its involvement in an industry working group mapping out a vision for aquaculture growth to 2030. The 2030 working group is indicative of the appetite and desire in every part of the sector to grow, and SAIC has read the mood on this well.

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

Scottish Sea Farms, and other companies we talk to, find it easy to deal with SAIC. It has emerged as the 'go to' place for industry, and is industry-responsive and efficient at getting things done. This has simplified the route to innovation for aquaculture businesses of all sizes.

Scottish Sea Farms

5. How effective and proportionate has the oversight of Innovation Centres been?

The industry do have concerns about the constitutional position of the Innovation Centres, and their lack of legal entity or legal responsibility. The current arrangement, whereby IC board decisions can be superceded by the host institution, is unsatisfactory and confusing.

It is a clear part of the ICs' vision that ICs should reflect the innovation styles of their sector, and reflect the priorities of their industry. It can therefore be frustrating for senior industry board members who invest time to sit on IC boards, that the board could make a decision on a particular project or issue, but have that decision thwarted by the administrative host. The industry preference would be for universities to operate as administrative hosts facilitating delivery of each IC's business plan, rather than function as a decision-maker of last resort.

The industry would therefore welcome more clarity from the SFC over the autonomy and accountability of the IC boards.

Apart from this concern, my experience at SAIC is that the model and the relationship with the host university has functioned well. Occasionally, the difference between university timeframes for handling administrative processes such as HR can be surprising to those more accustomed to working to commercial timeframes.

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

We believe there is a medium- to long-term need for SAIC beyond the current timeframe of the programme. A window of 5 years is too short to achieve the change in collaboration approaches required of both businesses and universities. In particular, 5 years is a short timescale for universities and academics to fully realise the benefits to them of a higher level of industry demand for commercially relevant R&D.
This may well apply to all the ICs, but is particularly the case in aquaculture research, development and innovation, given that salmon have biological growth cycles of 2-3 years. The project lifespan of highly important and instrumental research means it may take more than 5 years to reap the full value and cumulative benefits of the research.

Yours sincerely,

[redacted]

Jim Gallagher
Managing Director

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16 June 2016

Dear Graeme

SUBMISSION TO THE INDEPENDENT REVIEW OF INNOVATION CENTRES PROGRAMME

As a Board member of the Scottish Aquaculture Innovation Centre, I welcome the invitation to contribute to your Independent Review of Innovation Centres Programme. My responses are below.

I have over 20 years' experience of working in the aquaculture and seafood industry, and since 2008 have been Managing Director of the Scottish Shellfish Marketing Group (SSMG). We are forecasting turnover of £25 million this year and employ 160 people. In addition to operations in central Scotland (Lanarkshire) and Shetland, we have cultured shellfish operations around Scotland's coastline, with 70% coming from Shetland.

I represent the interests of the shellfish industry and SMEs on the Scottish Aquaculture Innovation Centre board, I also sit on the management committee of the Association of Scottish Shellfish Growers, Council member for SAOS and am a member of the Scottish Government's Shellfish Forum.

1. Is the original vision for the Innovation Centres programme current and correct?

The Scottish Aquaculture Innovation Centre's vision is about creating industry success through research partnerships. It connects businesses with academics on projects that can help businesses grow or become more sustainable.

Its vision and work are as relevant to SMEs (such as my own organisation) as they are to larger companies. The shellfish sector in Scotland is dominated by SMEs, many of them in remote locations, and many of them unaware of the possibilities for academic research to support their business success. The vision of the Scottish Aquaculture Innovation Centre to connect businesses and researchers on commercially relevant projects is therefore correct.

One very positive aspect of the vision for the Innovation Centres is that they are able to respond to sector/industry leadership with different models and approaches. Different sectors have different needs (even within aquaculture, the shellfish and salmon sectors are very different), and my impression is that different ICs have evolved accordingly. SAIC has been able to work very responsively with the industry as a result.

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Another welcome aspect of the vision for the Scottish Aquaculture Innovation Centre is its comprehensive focus on the whole aquaculture industry – the first time in Scotland that we have had a single aquaculture body creating a vision for where the whole industry can go.

2. From your experience so far, are the Innovation Centres delivering against this vision?

SAIC's collaboration with stakeholders across the aquaculture sector has been strong. A good example is the launch of three inter-related projects to start up a pilot commercial shellfish hatchery in Shetland, announced in late 2015. This launch represents the first-ever major innovation in the Scottish mussel sector.

SAIC's support was critically important to these projects happening. For example, the project stemmed from an international fact-finding trip, where an industry representative, an industry partner and SAIC visited Tasmania and New Zealand to explore how best to transfer hatchery technology and know-how to Scotland.

Following that trip, SAIC was instrumental in bringing together these three major projects combining industry hands-on expertise, an operational research team in Shetland, and cutting-edge genomics input from a spin-out company from the University of St Andrews.

In connecting different stakeholders on the hatchery project, SAIC is delivering on the fourth of its Priority Innovation Actions (PIA): the development of secure Scottish mollusc spat production systems. It is therefore on track in the delivery of its targets and vision.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

SAIC's priorities reflect the industry's priorities. Its board is industry-led, and its activities are targeted firmly on industry success and commercially-relevant projects.

For example, within my own sphere, the PIA on shellfish spat was put there by industry. Having a reliable source of spat will help the industry reach its shellfish production targets for 2020 and beyond, and the new technologies and processes made possible by the SAIC project could help shellfish producers in Scotland to generate increased yields and target new export markets.

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

The shellfish sector in Scotland needs academic solutions that match its commercial priorities – particularly bearing in mind that the shellfish sector is made up of small businesses and microbusinesses, often in remote locations.

As with all industry and academic collaboration, there's a learning process for all parties in working together on commercial projects and to commercial timeframes. It requires openness to doing things differently, and SAIC is helping small businesses and researchers work through the challenges involved. In doing so, it's important to retain the focus on industry needs and ambitions.

Based on our experience on the hatchery project, there are some signs of academics beginning to respond to our commercial needs, though changes in the relationship will be gradual, rather than immediate. We do want to see the academic base genuinely deliver value to companies, including SMEs.

5. How effective and proportionate has the oversight of Innovation Centres been?

Based on my experience on the SAIC board, the governance arrangements are appropriate.

However, one challenge on the hatchery project has been around aspects of university processes. The pace of university procurement processes has caused delays to the implementation of the project, resulting in slower progress and poorer value for the project as a whole. For example, procurement delays in the university led to higher equipment costs, and threatened work linked to seasonal and biological timeframes.

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

My organisation is very attracted to SAIC's vision and targets. The sector needs a mechanism for industry and academia to work together to deliver commercially-relevant innovation, and SAIC's work to spur business and researchers to connect and collaborate is effective and relevant.

Learning is required on both sides, and we need an organisation like SAIC to help the aquaculture industry engage and understand how best to work with academics; and equally to help the research base to understand what the industry needs. So, SAIC is doing a necessary job effectively.

In terms of the future, there is good progress, but still much to do, and huge potential for getting more academic input into helping the shellfish industry to grow. The industry would appreciate the reassurance that there will be continuity in this – that SAIC will be able to deliver against its plan well into the future.

The innovation and R&D needs in the sector are long-term. Both SSMG and SAIC are involved in a working group that is setting out a vision for aquaculture growth for 2030 and beyond. It would therefore be useful if the current vision for the Innovation Centres could reflect these long-term horizons.

In addition, the process of getting shellfish businesses to work effectively with academics could possibly be more effective with a simpler innovation landscape – perhaps with SAIC as the single innovation agency for aquaculture. This could help to educate the industry on the possibilities to work with academics to tackle challenges and fuel growth.

Yours sincerely,

[redacted]

Stephen Cameron

Managing Director

SCOTTISH LIFESCIENCES ASSOCIATION (SLA)
RESPONSE TO SFC CONSULTATION ON INNOVATION CENTRES

The SLA exists to represent and promote the interests of the life sciences sector in Scotland. Scottish Government / SFC policies aimed at encouraging the sector's competitiveness by enabling universities to help drive economic growth, and through better access to university research by businesses are issues of very great interest to our member companies, and so we are glad to have this opportunity to state our views on the important questions raised by this SFC consultation exercise.

1. Is the original vision for the Innovation Centres programme current and correct?

The vision to use universities to drive economic growth in collaboration with businesses is a very long standing ambition. Ever since the then Scottish Office's commercialisation enquiry in the 1990's, much Government funding and effort has been put into this vision in Scotland. The Intermediate Technology Institute (ITI) attracted £450m, the Proof of Concept programme £30m and the Translational Medicine Research Centre £17.6. In our view, there has been a poor return on this investment, with all 3 programmes having been run down (the ITI closed 3 years ahead of schedule).

Despite this, we do believe that the ambition to harness the strength of Scotland's academic community to assist businesses to grow into large scale employers is worthy. As an industry group, we were interested in the concept of the innovation centre programme and indeed attended the SFC event to launch the idea. To succeed, however, it is necessary that the structures created to do this must be business, not academic, led. While the original aim of the Innovation Centres was to learn from earlier experience and give companies a significant role in their work, we are not convinced that the Centres have "broken the mould", and are in our view too academically orientated in organisation and operation.

2. From your experience so far, are the Innovation Centres delivering against this vision?

Areas you might like to consider: How well are the Innovation Centres working across the whole of Scotland? How appropriately are the Innovation Centres collaborating with relevant stakeholders? Are the Innovation Centres offering collaborative knowledge exchange and research activities to help solve industry defined problems and co-create innovation opportunities for growth? How are the Innovation Centres helping to create a culture change towards greater and more effective academia/business collaboration? Are there examples of good practice across the programme?

The SLA was encouraged by some universities to support applications for setting up Innovation Centres as they had to "have the backing of industry" before they would be agreed by SFC. What we have witnessed is a typically academic engagement model where the Centres happily engaged with businesses to get initial support, then once the SFC funding had been awarded, business engagement lessened in priority and academic priorities were used to decide what to do with the funds. This is not uncommon even with academic grants, and is one reason that there have been recent changes at the European Union and Research Council level (e.g. the EU's decision to set up the single SME model for Horizon 2020 funding with no academic involvement in the projects).

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

Areas you might like to consider: Is industry appropriately engaged in the relevant Innovation Centres? How are (or should) Innovation Centres respond to the skills needs of the industry sectors represented? Are the industry-led projects 'stimulating and challenging' the Scottish research base in the most effective way? Are there examples of good practice across the programme?

The primary life sciences interest is in the Innovation Centres for Digital Health, CENSIS, IBioIC, Datalab and SMS-IC. The SLA has 13 company-driven Special Interest Groups, several of them mapping onto the areas covered by these ICs. The industry led projects are academically interesting, otherwise they would not be approved, but there has been little additional support for the projects from SIB, while commercialisation support either public or private has not been attracted. The subcontract model of the SMS-IC has helped companies secure some business where they had not been securing business before, but follow-on contracts have not been forthcoming. SMS-IC has received additional grant funding based on (in our view) untested 5 year deliverables. A major part of the lifesciences industry needs are to develop quality and regulatory skills, and these are not being met by ICs or universities.

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

Areas you might like to consider: Do the Innovation Centres complement and exploit existing initiatives (e.g. Interface, the Knowledge Transfer Partnership programme et al) in the academia/business collaboration space? Are there specific Innovation Centre activities, which have helped to simplify routes to innovation for business? Are there examples of good practice across the programme?

In our view, the engagement model has not improved. Any model that sees industry having to pay its way whilst academics are financed must be fully controlled by industry. The traditional model where the SFC controls the funds after award is not seen as effective. If a company wishes to sub-contract work then there will be controls and penalties to ensure that the work is done to the requisite quality on time. We have had considerable feedback from SLA members on project delays, bottlenecks, layers of bureaucracy and requests for ownership of IP. Project management has also been seen as an issue with the ICs needing to provide the top level management of the projects. None of our member companies have identified a successful IC project model.

5. How effective and proportionate has the oversight of Innovation Centres been?

Areas you might like to consider: Are governance arrangements suitable for the programme as a whole and/or each Innovation Centre? How much clarity exists around how the performance of Innovation Centres will be assessed against the objectives of the programme? Is there an appropriate balance between an Innovation Centre's freedom to operate and the accountability necessary for a public sector initiative? Are there examples of good practice across the programme?

At a recent Digital Health SIG, we asked the senior management of the DHI for metrics on performance which the Institute has been unable to provide. To a significant extent, the ICs have become large organisations which have not evidenced the agility required from

industry. The availability of SFC funding has enabled the ICs to grow their structures with no input from industry. We have not seen, as a result of IC operations, any significant increase in business related R&D whilst maintaining or improving HE R&D. The goal of the ICs was to deliver economic growth in Scotland, which we have not seen any evidence of, and their sustainability will, we believe, require long term government funding.

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

If the ICs disappeared, they would not be missed by the lifesciences business community. The SLA has good links with academia and if a member company needs to make a connection with a university to take forward a project, we facilitate this, and in some cases manage the relations to ensure that outcomes are delivered on time. The key to success in this is to ensure that the business funder has control over the academics working on the project. However, this conflicts with the notion of academic freedom and is why member companies often engage in research with other bodies better aligned to their commercial goals. If another IC programme is developed, of relevance to the lifesciences sector, we would like to see life sciences businesses control this, with academics being welcome to assist. As an industry body, we are very keen to engage with Government on how to achieve actual economic growth through better engagement with academia.

Independent Review of Innovation Centres Programme – Led by Prof Graeme Reid

Submission

Name :- Alan Sutherland
Job Title :- Former Managing Director, and part of shadow board and then full board member of SAIC until January 2016
Org :- Marine Harvest (Scotland)
Tel :-
Email :- alan@agsutherland.co.uk
Who :- Individual
Confidentiality :- No
Confidentiality Reason :-

Q1 :- I have worked in the Scottish aquaculture for more than 30 years, for the last 9 years as MD of Marine Harvest (Scotland) Ltd. Yes the vision was correct, and chimed with industry itself identifying the need for greater collaboration between itself and Scotland's academic base.

Q2 :- SAIC has had a major positive impact for Scottish aquaculture in making progress towards dealing with a number of industry defined problems in, the progress thus far has been impressive and has indeed been ground-breaking in terms of bringing together industry and academia.

Q3 :- For the majority of my career in aquaculture I have been frustrated by the disconnect between two of Scotland's most impressive sectors; aquaculture and academic r & d (towards aquaculture), put very bluntly, when the aquaculture sector required problems solved the companies or individuals concerned rarely regarded universities as their default choice to seek solutions or indeed diagnoses. Various academic institutions in Scotland have fantastic, cutting edge facilities and programs yet they lack the pragmatic approach to problem solving (and diagnostics) so badly needed by the aquaculture industry. Scotland's aquaculture sector has been one of the great economic success stories in Scotland over the last 20 – 30 years and still has huge potential; to produce even more top quality aquaculture products that are in demand the world over. Further growth of the Scottish aquaculture sector will of course lead to job creation, increased exports and many downstream benefits to the Scottish economy. When the concept of an innovation centre in Scotland that would be focused on aquaculture was first suggested I was therefore immediately interested and did all that I could to help facilitate and thereafter support the creation of the Scottish Aquaculture Innovation Centre. The idea that an innovation centre would provide the means for industry / academia collaboration was a very attractive proposal and one which in my opinion was long overdue.

Q4 :- In 2014 I became one of the founding directors of SAIC and remained on the board until my departure from MHS in 2016. MHS have always been enthusiastic supporters of SAIC and in turn I believe MHS (and the rest of the industry in Scotland) have benefitted from the support SAIC has received from the SAIC consortium and the wider Scottish Industry. Several notable projects are now underway and their project design and structure are excellent examples of collaboration between industry partners and academia, with the additional benefit of SAIC funding. 'Scaling up production and implementation of farmed wrasse' was the first major SAIC project and based at Machrihanish involves collaboration between MHS, SSF. Biomar and the IoA, this project has been a great success and has provided the 'jump start' that the production of farmed wrasse for Scottish salmon farming required. The other major project that MHS are involved in is a similar to the first but is based on lumpfish 'to establish a secure and sustainable supply of lumpfish for Scottish salmon farms and to optimise their deployment' – this project has also proved to be a great success and involves collaboration between MHS, SSC, Otter Ferry, Biomar, Benchmark animal health and the IoA.

Q5 :- There is a disproportionate requirement for written reporting in addition to the scrutiny available to the funding partners through their attendance at every board meeting and receipt of all board papers. Arguably this level of what amounts to internal focus at a time when a new organisation is getting up and running, and should be directing the majority of its energies outwards towards finding out what industry needs, and how academics can help meet those needs, is a diversion of management effort away from the core purpose of SAIC. This has potentially contributed to delays in getting more projects up and running - the real activity which deliver value to the industry and impact on the Scottish economy.

Q6 :- SAIC has made an excellent start in driving industry success through research partnerships, funding 9 projects worth over £9m, with just £2.3m of public money injected. Such leverage demonstrates clearly both the Scottish aquaculture industry's appetite for connecting and collaborating with research excellence. It further demonstrates the sound management by the SAIC board by our Chairman to secure the highest possible impacts from the initial £11m of public money available. In my view it is essential to continue building on this solid foundation. Aquaculture research, working with live animals which develop through a 3 year biological growth cycle, is more amenable to providing breakthrough impacts where there is ongoing, long-term investment in projects. I therefore suggest that SAIC should be a minimum 10 year project, so that the forecast GVA benefits from the first 5 years can be proven (many will be realised in years 2020-2023) and that ongoing industry-led R, D & I can drive the growth the the entire supply chain seeks to 2030 and beyond. Alan Sutherland MD Marine harvest (Scotland) Ltd 2007 – 2016 SAIC Board 2014 - 2016

Innovate UK

Independent Review of Innovation Centres Programme – formal response from Innovate UK

Innovate UK - overview

Innovate UK works to drive economic growth by promoting and supporting business-led innovation across the UK. To deliver this we invest in high potential innovation projects in a number of priority technology areas and help to connect businesses with each other and with Universities the wider research base. We have also established and manage the network of elite Catapult centres across the UK, several of whom are based in or now have hubs operating in Scotland.

Innovate UK has a strong track record in working with companies in Scotland – helping them to develop new ideas and technologies, to create new products and services and to bring these successfully to market. Over the past three years (2013/14 – 2015/16) we have committed to support over 800 projects in Scotland with a total combined investment of £132m.

We work and collaborate closely with the Scottish Government, Scottish Enterprise, Highlands and Islands Enterprise, the Scottish Funding Council and other key Scottish partners, and we have good and effective links with many of Scotland's leading Universities. We also have a seat on Scotland's CAN DO innovation forum.

Innovate UK has been involved with Scotland's Innovation Centres from the outset of this programme, and was directly involved in both the original and subsequent bid assessment panel. We do have some positive and useful links and connections with a number of the Centres, though not all – see further details below.

Response to this Call for Evidence

Innovate UK is grateful for this opportunity to respond to this Call for Evidence and to address and comment on the questions that have been asked and the issues raised. However, given that as an organisation we operate on a pan-UK basis and are not actually based in Scotland, please note that we are not in a position to answer all of the questions posed. But we hope that the following responses will be helpful to Professor Reid and to the Review team.

1. Is the original vision for the Innovation Centres programme current and correct?

The document announcing the open call for the first tranche of Innovation Centres set out the vision for these Centres as follows:

"Using the Scottish university infrastructure, human resources and research excellence as a platform for collaborations across the whole of Scotland, Innovation Centres will create sustainable and internationally ambitious open-communities of university staff, research institutes, businesses and others to deliver economic growth and wider benefits for Scotland".

It also outlined a number of high level objectives for the Centres including: helping solve industry defined problems and co-create innovative opportunities for growth; enhancing knowledge exchange between universities, industry and others; supporting the development of the next generation of business innovators and entrepreneurs in Scotland; more effective university/industry collaboration; and to simplify the innovation landscape in Scotland.

This original vision remains current and entirely valid, and in our view all of these objectives are still extremely important and ongoing priorities for Scotland. Innovation must be at the heart of economic and business growth, and depends fundamentally on the effective translation of knowledge and ideas into new products, services and technologies. And for this to happen there must be effective mechanisms and opportunities to stimulate and facilitate positive interaction and collaborations between individual businesses, and between businesses, academia, researchers and entrepreneurs.

The Innovation Centres are clearly well placed to help deliver this agenda, although in our view it is important that this activity does retain a clear focus on and is driven by the needs of business.

2. From your experience so far, are the Innovation Centres delivering against this vision?

As indicated above, since our inception Innovate UK has had contact and dealings with several of the Innovation Centres, though not all.

We have good links and working relationships with a number, notably with Stratified Medicine Scotland, the Centre for Sensor and Imaging Systems (CENSIS), the Scottish Aquaculture Innovation Centre (SAIC), the Oil and Gas Innovation Centre (OGIC) and with the Construction Scotland Innovation Centre (CSiC). Some of our Catapults have also had direct contact with a number of these Centres.

For those Centres that we know and with whom we do have regular contacts, our overall impression is that they are generally well connected and do operate effectively across Scotland, or certainly with those geographic areas where there are clusters and groups of businesses that are relevant to their particular sector or technology. The Centres appear to have a high profile in Scotland and to provide a visible and accessible route for businesses to Scotland's Universities and research base.

As examples of these developing connections, Stratified Medicine Scotland has worked closely with Innovate UK from the outset; and is an important and effective conduit to businesses and others working in this sector. It has also been an active collaborator in several of our projects and events both in Scotland and elsewhere; and has recently been identified as a centre of excellence with our Precision Medicine Catapult.

Innovate UK also works closely and has regular contact with the Oil and Gas Innovation Centre (OGIC), primarily through its Chief Executive Ian Philips. We have developed a good working relationship with them and they have been active in promoting relevant Innovate UK oil & gas competitions to the businesses in their sector.

What is especially encouraging is that several of the Innovation Centres are actively forging effective and productive links not just across Scotland, but across the wider UK and beyond more generally.

Some of the Centres are also undoubtedly helping to raise the profile and status of Scotland within certain disciplines, for example Stratified Medicine Scotland is helping to position Scotland as leaders

in experimental clinical medicine within their particular areas of speciality, and the Centre for Sensor and Imaging Systems (CENSIS) is also well known within the sector and outside of Scotland.

3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

Again, for those Innovation Centres in Scotland that we know and are working with we generally see strong evidence of close and effective engagement with businesses large and small in the industry sectors that they cover and beyond.

The Centre for Sensor and Imaging Systems (CENSIS) is another Centre with whom Innovate UK is well connected. Once established, CENSIS made significant progress and has now undertaken or is currently involved in delivering a significant number (some 30+) of projects – which are mainly business focused and driven. They are very business focused and well connected with industry both in Scotland and throughout the UK, though understandably most of their projects are working with Scottish companies.

4. How has the relationship between business and academia evolved since the creation of Innovation Centres Programme?

We are not in a position to provide a general response to this question. However, as far as we know, the Innovation Centres are not directly involved in any of our Knowledge Transfer Programme (KTP) projects – although it is possible that there is some involvement with KTP through the participating Universities and businesses who are working with the Centres.

5. How effective and proportionate has the oversight of Innovation Centres been?

Innovate UK does not have the relevant knowledge and is not in a position to comment on this particular issue/question.

6. Do you have any other views such as suggestions for the evolution or future direction of the Innovation Centre programme?

In response to this question we would make the following observations:

Links and relationships with Innovate UK's Catapults: When the Innovation Centre programme was first conceived and announced, concerns were expressed by some that these Centres might to a degree overlap or duplicate with Innovate UK's own network of Catapults that was already being developed and rolled out across the UK.

In fact, to date that has not proved to be a major issue or problem. The Innovation Centres perform a rather different role to that of the Catapults, and they have a stronger academic focus and emphasis on encouraging and forming business/University links and collaborations. It also helped significantly and was a most welcome step that Innovate UK (then the Technology Strategy Board) was consulted and had some input into setting up the Innovation Centres, including sitting on the appraisal panel and so being directly involved in assessing the bids.

The Innovation Centres also operate in slightly different, though often complementary, disciplines and technologies. And where there are potential overlaps or synergies, for example between the Oil and Gas Innovation Centre (OGIC) and the Offshore Renewable Energy Catapult, these are often recognised and acknowledged and can actually provide positive opportunities for closer working and collaboration.

Overall, there are some good and encouraging connections being developed between a number of the Innovation Centres and the Catapults, for example the Oil and Gas Innovation Centre (OGIC) has recently been working with the High Value Manufacturing Catapult and has provided it with a hot desk facility in its Aberdeen office. The Satellite Applications Catapult Centre of Excellence in Scotland has had dealings with some of the Centres, notably with Ian Reid from CENSIS and Ian Phillips from OGIC, and the Catapult is for example helping them to think about using space data and technologies when putting projects or proposals together with their industries. They have also met with Donald Fowler & Heather Jones at the Scottish Aquaculture Innovation Centre.

So there are some interesting and useful connections being developed. Overall however, there is also no doubt that there is scope and opportunity for more dialogue and increased collaborations between the Catapults and Innovation Centres, and this should be further encouraged and explored on both sides.

Longer term sustainability: As we understand it, the Innovation Centre programme is being funded by the Scottish Funding Council for up to £120 million over five years (2013-18), and a number of the Centres are now at or approaching the three year mark with two further years funding remaining. Additionally, the centres are also expected to generate further income from business or other sources.

There appears to be some uncertainty amongst some of the Centres and indeed the businesses they work with around their longer-term sustainability and what will happen beyond the end of the programme in two years' time. This doubt and uncertainty may possibly be hampering the Centres' ability to take on new projects that could extend beyond the 2 year period, and some greater clarity on this matter may be helpful.

Academic vs business focus: We recognise that University/business links and collaboration is a fundamental cornerstone of the Innovation Centres programme, and that the model is based on and uses, as was originally intended: *'the Scottish university infrastructure, human resources and research excellence'.*

Given that, it is inevitable that the programme will inevitably have a strong focus and leaning towards the academic/research side. However, at the start of this response, we urged that the programme must equally have a solid business-led focus and dimension, and noted that was also one of the programme's original objectives and purposes. Certainly we are aware of feedback from some businesses who do have concerns that the programme is overly focused on the academic side and that that is where the majority of funding goes to. This may be something to consider in reviewing the future purpose and direction of the Centres programme.

We hope the above comments and responses are helpful.

Innovate UK

June 2016

Advice Paper 16-15

Independent Review of the Innovation Centres Programme

Submission from The Royal Society of Edinburgh

June 2016

A. Introduction

1. The Royal Society of Edinburgh (RSE) welcomes the opportunity to contribute to the Review of the Innovation Centres Programme, which is chaired by Professor Graeme Reid and commissioned by the Scottish Funding Council. In preparing this response the RSE consulted with members of its Business Innovation Forum, chaired by the RSE Vice President for Business, Professor Iain Gray of Cranfield University. The submission has been approved on behalf of the RSE Council by Professor Alan Alexander, General Secretary.

2. The Innovation Centres have featured in two recent editions of the RSE publication, Science Scotland. The latest edition (No 19 - summer 2016) describes the current position and this may be compared with the position outlined in the earlier edition (No 16) which appeared in summer 2014. Both editions have detailed articles on all eight of the Innovation Centres and were written by the same person (Peter Barr) who is an independent free-lance writer. Reading both editions shows the good progress made since the Centres were created. Copies of the latest edition have already been sent to members of the Review Group. Further hard copies can be sent on request. Electronic versions of both the 2014 and 2016 editions are available at the following links:

https://www.royalsoced.org.uk/cms/files/publications/sciencescotland/ScienceScotland16.pdf

https://www.royalsoced.org.uk/cms/files/publications/sciencescotland/Science_Scotland_19.pdf

3. In the foreword to the latest edition Ian Ritchie, former Chair of the RSE Business Innovation Forum, observed, "According to reports in this special issue of *Science Scotland,* it looks good so far, in terms of the number of projects launched and the amount of matched investment now pouring into research. This gives us reason to hope that these new Innovation Centres can rise to the challenge of helping the Scottish economy to compete better in the modern world."

4. Our responses to some of the questions will sometimes raise issues where the RSE believes that the Centres can become more effective in achieving their aims in the future. However, these should be read with reference to the fact that many of the examples explored in *Science Scotland* indicate that the Innovation Centres could, potentially, make an important contribution in addressing the long- recognised problem in the Scottish economy: its poor

record in business enterprise R & D, which is well below both the UK and EU average as a percentage of GDP.

B. Responses to the questions posed:

Q1. Is the original vision for the Innovation Centres Programme current and correct?

5. The Scottish Funding Council's vision for the Innovation Centres is to use the 'research excellence' of the Scottish universities as a platform for collaborations across the whole of Scotland. The Innovation Centres "will create sustainable and internationally open communities of university staff, research institutes, business and others to deliver economic growth and wider benefits for Scotland."

6. In the view of the RSE, this vision remains valid today – the recent National Centre for Universities and Business *Growing Value Scotland* report restated the need to maximise business uptake of innovation. Potentially, the Innovation Centres can contribute to addressing this challenge.

Q2. From your experience so far, are the Innovation Centres delivering against this vision?

7. In the view of the RSE, it is too early to reach a definitive conclusion as to whether the Innovation Centres are fully delivering against the original vision, which is based on medium to long-term aims. There have been many promising projects delivered so far, however members of the RSE Business Innovation Forum reported a perception that industry engagement is not at the level that had been envisaged, and that several of the Innovation Centres can appear to be dominated by an academic research culture.

8. The second generation of Innovation Centres had the benefits of being able to draw upon the experiences of the first generation. There may be a need for some of the first generation Centres to review their practices in light of their own experiences and those of the second generation. Overall the business drive and support for the Innovation Centres is not seen as being as strong as it is in the Catapult Centres. A particular example of a well-functioning Centre is the Industrial Biotechnology Innovation Centre (IBiolC). It has 46 industry members and as the CEO explains, "The 20th Century saw the industrialization of chemistry – the 21st Century will see the industrialization of biology." While cautious about estimating the economic impact, the IBiolC believes that an increase in value added in Scotland of £1 billion in this industry by 2025 is realistic.

Q3. To what extent do the priorities of Innovation Centres reflect those determined by industry?

9. Some of the Centres seem to have addressed their topic area broadly, so whether they are going in the right direction may take at least five years to judge. The issue of whether there is sufficient business leadership in all of the Centres is a factor here. The Review should consider whether each Centre is actively seeking to promote business involvement in its operations and planning.

10. The Strathclyde Photonics Centre was cited as a good exemplar, which is more industry engaged, being based along the lines of the Fraunhofer Institute model.

Q4. How has the relationship between business and academia evolved since the creation of the Innovation Centres Programme?

11. Rather than consider the Centres generically, the RSE would encourage the Review Group to study the Centres individually, seeking evidence of the degree of business involvement in the leadership or steering groups of each Centre. Where there is a demonstrable shortage of business involvement, the priority should be to address this. Each Centre should be evaluated for its scientific and technical capability, likely business demand and availability of funding from public and private sources.

Q5. How effective and proportionate has the oversight of Innovation Centres been?

12. The RSE is not close enough to the Centres to be in a position to judge whether the oversight of the Centres has been sufficiently effective. The Review Group will be well-placed to consider this, taking evidence from the Centres themselves and from the Scottish Funding Council.

Q6. Do you have any other view such as suggestions for the evolution or future direction of the Innovation Centre Programme?

13. The original intention of strong partnership between business and academia is essential and needs to be achieved for all of the Centres. This partnership may, when appropriate, involve a contribution of funding in cash by the business participants, and should in any event involve material, objectively quantifiable and verifiable inputs in kind.

14. The Review Group should also consider whether the Centres should be established as legal entities in their own right and thereby allow them to be able to enter into contracts with private businesses directly, rather than having to do so through their host university. The RSE hasn't reached a firm conclusion on this, but is aware that many private businesses have felt in the past that universities can be challenging organisations with which to reach commercial agreements. The legal status of the Innovation Centres should at least be explored.

15. The RSE would also recommend the Review Group examine the scope for synergy between specific Innovation Centres and Catapult Centres where an Innovation Centre is involved in a field of science and innovation that overlaps with that of one of the Catapult Centres. Where such synergy could potentially exist, then this should be encouraged.

For any further information please contact Bristow Muldoon, Head of Policy Advice, The Royal Society of Edinburgh bmuldoon@royalsoced.org.uk, [redacted]

Independent Review of Innovation Centres Programme – Led by Prof Graeme Reid

Submission

Name: Dr Alasdair Cameron
Job Title :- Director
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Email :- alasdair.cameron@ktpws.org.uk
Who :- Organisation
Confidentiality :- No
Confidentiality Reason :-

Q1 :- The Innovation Centres were set up in areas of opportunity for Scotland with strong industry backing from the start. They were envisioned to focus activity within some key strategic sectors and encourage more interaction with the University sector. Recent reports continue to highlight relatively low levels of engagement between businesses and universities and so the need for interventions such as Innovation Centres still exists.

Q2 :- At the West of Scotland KTP Centre we continue to have a dialogue with the majority of Innovation Centres and recognise that they are all at different stages of maturity. We welcome the recent launch of the new Innovation Centres website and combined offering to industry. We hope that this will encourage businesses to explore opportunities outside their traditional sector. The key offering of the Innovation Centres is their engagement with industry and as this develops they should be agile enough to evolve their priorities.

Q3 :- Others are better placed to comment.

Q4 :- At the West of Scotland KTP Centre we have maintained a close dialogue with the Innovation Centres regarding the businesses they are working with. We believe there is great potential for Innovation Centres to refer businesses to KTP and in so doing help them to develop long term strategic relationships with a University partner. To date this potential has not been realised. We would encourage an improved integration of the KTP offering within the Innovation Centres alongside other offerings such as Interface and Innovation Vouchers, etc.

Q5 :- Others are better placed to comment.

Q6 :- For the Scottish Innovation ecosystem to develop the Innovation Centres need to ensure they compliment existing initiatives. Displacement of other publicly funded programmes or private sector offerings will not increase the innovative capacity of

the system and may lead businesses to be confused about the support that is available. Where possible the Innovation Centres should be encouraged to have common templates and support offerings to business while still recognising the opportunity for sector specific interventions. Creating the links between business and universities is still an issue in Scotland and the Innovation Centres should be tasked to create communities and networks that encourage collaborative working. The Innovation Centres should continue to provide opportunities for academics and businesses to meet and exchange ideas. Highlighting regulatory changes and new potentially disruptive technologies or ideas may encourage industry participation in these events. The Innovation Centres should be encouraged to consider cross-centre events where there is a benefit to business and use this as an opportunity to encourage business to be more innovative. The Innovation Centres should have clear channels to communicate any intelligence they gather from business back to their university stakeholders. This could be around potential research areas of interest or future skills required.

Background information for the 2016 Innovation Centres Review

Scottish Enterprise's role in supporting the Innovation Centres Programme.

The enterprise agencies (SE and HIE) agreed to support the Innovation Centres Programme on three levels:

- support SFC in the design, establishment and on-going management of the Innovation Centres programme;
- support individual Centres to become operational and prepare for project delivery;
- support businesses to engage with the Centres and realise commercial value through this engagement.

SE and HIE defined their financial support for the Innovation Centres programme as:

- access for businesses to existing SE/HIE business support mechanisms (envisaged as primarily R&D Grant support and other innovation products);
- core funding to specific Centres to enhance their offering to business; for example building capacity for business innovation, with the business case for each project appraised using the SE Project Lifecycle.

To date SE has committed significant staff resources to the programme, although as yet there have been few projects where industry has sought to access SE/HIE business support mechanisms to help the companies collaborate with Innovation Centres. This is due in part to Innovation Centres having their own funding resources (i.e. through SFC exemplar project funding) and the requirement to ensure correct balance between private and public funding contributions (to meet EU state aid rules).

A core SE team assisted SFC design and manage the initial bidding process, assess bids and put in place robust monitoring and evaluation processes. This team continues to assist SFC to manage implementation of the programme, assess progress with individual Centres and assist Centres to accelerate their transition to effectiveness through delivering workshops to increase understanding of public sector working and by increasing awareness of the capabilities of the Centres with internal SE company-facing business units.

Each Centre also has an allocated SE 'opportunity team' to help ensure effective two-way engagement; initially to assist each Centre to get established and more recently to assist each Centre with the development of a strong industry-led project pipeline through initiatives such as themed calls for projects and joint review of project portfolios.

In addition SE has committed a Director or equivalent to participate, as observer, on Innovation Centre main boards.

Increasing Levels of Business Investment in Innovation

While SE is signed up to all the shared objectives for Innovation Centres, the *'enhance demand-led knowledge exchange activity'* objective is our priority in order to stimulate increased levels of business investment in innovation (including BERD) which will drive increased demand for innovation support products and leading to increased economic impact. In pursuing this, SE has attempted to focus the Centres on addressing and

stimulating the type of R&D and innovation activity which best leads to growth of the Scottish company base i.e. innovation which underpins the development of new products/processes/services.

At a simplified level, business innovation/R&D requirements can be considered in three distinct forms:

1. Tactical problem solving, which helps businesses improve their market propositions with rapid timelines to embed solutions in the market place. Time to market is typically 3-12 months. This activity is important and often a first step towards a deeper engagement, but is already well-served by Interface and Innovation Vouchers so there is limited added value in Innovation Centres prioritising this type of activity.
2. Innovation that underpins the development of new products/processes/services where time to market is typically 12-36 months. For some sectors this requires access to appropriate scaling facilities to enable manufacture of technologies to be de-risked and processes tested before market launch. The chief focus of Centres to deliver projects in Technology Readiness Levels 4-7, fits with companies developing new products/services/processes and aligns with SE's innovation support products.
3. Strategic research which helps businesses understand the potential of new scientific and technological breakthroughs, to assist in identifying future potential areas for commercial exploitation (long term). This is currently mainly of interest to larger, globally operating companies and the value in securing collaborations with these companies is already well understood by the university sector and well supported through UK Research Councils. As Innovation Centres evolve, it is anticipated their offerings in this area will form key components of Scotland's propositions to attract research intensive Foreign Direct Investment (FDI).

To date, all Centres have used core SFC funding to launch exemplar projects to demonstrate the value they bring to industry. However we have yet to see significant numbers of business-led nearer-to-market projects which qualify for SE/HIE innovation grant support. There is an expectation that this will accelerate as the exemplar projects demonstrate value and capability to industry and as Innovation Centres move to a wider range of project funding sources (beyond the present core SFC funding).

Innovation Centre Programme Review - further evidence submission from Highlands & Islands Enterprise – August 2016

HIE provided some initial thoughts to the IC Programme review in our evidence submission back in May 2016. As the Review has progressed during the summer, we have considered further the impact of the ICs in our region and the ideal model to build on this in future years. This short note responds to 4 key issues relating to location; the role of UHI; competition and duplication; TRL level.

1. The Question of Location:

   The question over whether the general lack of ICs being physically present in the Highlands and Islands is in any way limiting engagement has arisen on a number of occasions. HIE has deliberated over this and come to the conclusion that physical location is not the answer, at this stage. This is based on the following observations:

- HIE's relationship with SAIC is excellent and this provides a very good model – we can see what success looks like when things work well. SAIC is not located in the H & I.

- Key to success is the relationship between HIE and the IC at both strategic and operational level. In practical terms, ensuring that there is a clearly identified lead contact within HIE at both levels: Operationally, with a remit to forge relationships with key IC staff and promote and encourage IC services back through key staff in HIE (and onto the business community;. Strategically, to take their (observer) place on the IC board and provide two way communication relating to the strategic direction of the IC and how this aligns with HIE's Operating Plan. In order to ensure these relationships are effective, ICs could identify a regional lead person from their team to provide a consistent approach.

- Therefore, this is not, initially, about location in the region. However, what can be seen is that a successful relationship over time will/may naturally result in the necessity of regional location, when business demand and ongoing activity requires the physical placement of key IC staff.

- It is a fact, however, that developing these relationships is a particular challenge due to distance. The success of SAIC has been built on a two-way street involving SAIC staff being prepared to travel into the region often, and, of course, the location of a jointly funded Business Development Manager based in Argyll. Effort needs to be put into this relationship from both sides.

- HIE has offices spread throughout all geographical parts of the H & I and will make these open to all IC staff to use and access local knowledge and expertise. This should be encouraged.

- A quarterly surgery involving 2 or more ICs at any one time could provide an impetus for enhanced engagement with the region and these could be co-ordinated through the HIE-IC lead contacts. This can be picked up through normal operational activity (ie. not necessary to create a recommendation to make this happen).

- There should be, however, an onus on the ICs to ensure that they remain relevant to those businesses in the H & I which are covered by the topic, sector or activity of the IC, and that they are proactive in this. Spending time in the region (as they clearly do in the central belt), getting to know some of our businesses, would aid this and therefore part-time or long-term location in the region could be hugely beneficial to that end.

2. The Role of the UHI:

UHI is a new university made up of 13 Academic Partners, with no natural one-door into the institute in relation to ICs (ie. no recognisable Research & Enterprise office). This poses a challenge for ICs when communicating into the region and could result in missed opportunities for UHI academic staff as well as businesses in the region. There is evidence that Innovation and KT managers in academic partners are unaware of the ICs.

HIE believes that if UHI was able to develop an approach to IC engagement similar to that described for HIE above, that this would greatly strengthen the region's ability to pull IC activity and funding into the region. The IC programme was developed with the University sector and it is clear from the evidence gathered so far that where a university is the administrative hub for the IC, much activity grows out of the academics from within. Also, this can extend to universities in close proximity to the admin hub. UHI is not an admin hub, is not formally connected to any of the ICs and is hundreds of miles away from most of the hubs, and is therefore disadvantaged. Proactive steps need to be taken from both the ICs and UHI to strengthen links and build understanding. Until this happens, the disadvantage will be extended to the regional economy, given the importance of the University sector in ensuring that activity happens in the regional innovation ecosystem.

3. The Issue of Competition and Duplication:

HIE agrees that, in relation to the Innovation Centres, there are not enough behavioural guidelines across Scottish innovation actors to ensure a sensible and co-ordinated, one-stop-shop approach to how businesses access innovation support. We would support a recommendation that requires the key agencies (SFC, SE, HIE) and the ICs to create a template for how this could operate better, which would effect a change in behaviour in all partners. We think there is a great opportunity, if all parties are open about this, to address this issue.

It is worth noting, however, that in the H & I there is less evidence of this competition and duplication, as there are a smaller number of innovation specialists, so there is less confusion as to where businesses go for support. We will work with our Interface team, based in Inverness, to ensure clearer rules of engagement, and this will be aided by clearer national guidance in this area.

4. The Issue of Level of R & D activity (TRL):

From evidence gathered to date, particularly in the EKOS report, HIE would agree that the TRL level of intervention that we are seeing with the ICs is too low. This has therefore resulted in less opportunities than HIE would have hoped for the funding of commercially focussed projects. This is possibly compounded by the lack of a clear, informed referral

process from the IC to HIE. We would confirm the need for a strong recommendation for ICs to give this serious consideration in terms of how they operate in the coming years. It also highlights the need to consider the route of the financing of ICs, recognising that the SFC funding must go to the universities, and that this was in line with the vision and objectives of the IC programme at that time. Do we need to consider changing this as we go forward?

Morven Cameron
9 August 2016

Gary Bannon

From: scott@sla.scot
Sent: 15 August 2016 08:49
To: InnovationCentresReview
Cc: John A Brown; Louisa Brown
Subject: RE: Scottish Lifesciences Association - evidence to Independent Review of Innovation Centres Programme - clarification
Attachments: image001.emz

Hi Gary,

Apologies for the delay in responding but we have now submitted our consultation on the Enterprise and Skills review which covers the Innovation piece. I have included the extract (below) from that discussing the Innovation Centres. Hope this helps.

Cheers

Scott

"Other Government initiatives to support life sciences innovation have in our view been less successful. The SE-funded ITI, TMRI, SCRM projects and some of the SFC-funded Innovation Centres have been disappointing when measured against resultant economic growth produced. Our view on Government funding of the universities to set up Innovation Centres with a life sciences focus is that they have not generally succeeded in driving business innovation and growth across the sector, as evidenced by a study by St Andrews University:-

Mission Impossible
Entrepreneurial uni

However, the SMS-IC at University of Glasgow has attracted strong endorsement from the member companies collaborating with it, and our Precision Medicine Special Interest Group of businesses will watch its further work with interest to see what economic benefits are delivered by it".

From: InnovationCentresReview [mailto:InnovationCentresRev@sfc.ac.uk]
Sent: 05 August 2016 08:50
To: scott@sla.scot
Subject: Scottish Lifesciences Association - evidence to Independent Review of Innovation Centres Programme - clarification
Importance: High

Dear Scott,

I hope you're well. Prof Reid and his Advisory Committee have instructed me to ask the SLA for clarity on the below statement from your submission:

"If the ICs disappeared, they would not be missed by the lifesciences business community".

The Committee would like to know whether this view is wholly representative of the community and if statements to that effect were received by SLA from prominent business members or whether this is an opinion offered by SLA leadership based on their experiences?

Prof Reid would be very grateful for clarification on this point ahead of Committee entering drafting phase following final meeting on 11 August.

Many thanks,

Gary

p.s. Your response will be published as part of evidence received.

From: scott@sla.scot [mailto:scott@sla.scot]
Sent: 20 June 2016 15:27
To: InnovationCentresReview
Subject: RE: Form Submission - InnovationCentresRev

Hi Gary,

Not sure if you received the updated consultation document attached? If you could go with this, the latest version that would be great.

Cheers

Scott

From: InnovationCentresReview [mailto:InnovationCentresRev@sfc.ac.uk]
Sent: 20 June 2016 15:14
To: scott@sla.scot
Subject: RE: Form Submission - InnovationCentresRev

Thank you Mr Johnstone.

Best wishes,

Gary

From: Scottish Funding Council
Sent: 20 June 2016 08:30
To: Giulio Romano
Subject: Form Submission - InnovationCentresRev

Name :- Scott Johnstone
JobTitle :- CEO
Org :- Scottish Lifesciences Association
Tel :- [redacted]
Email :- scott@sla.scot
Who :- Organisation
Confidentiality :- No
ConfidentialityReason :-
Q1 :- We advise you to prepare your answer in a separate document and paste when you are ready to submit. The vision to use the universities to drive economic growth is an ambition as ever since the commercialisation enquiry in the 1990's much money and effort has been put into this with a poor return on this investment. The ITI attracted £450 Million, the proof of concept programme, £30Million and the Translational Medicine Research Centre £17.6 Million. All 3 programmes have been run down with the ITI closed 3 years ahead of schedule. The ambition that we can harness the strength of the academic community to assist businesses to grow into large scale employers is worthy, however this should be business not academic led.

Q2 :- We advise you to prepare your answer in a separate document and paste when you are ready to submit. As an industry group we were interested in the concept of the innovation centre programme and indeed attended Paul Hagan's events to launch the idea. We were encouraged by some Universities to support applications as they had to "have the backing of industry" before they would get support. What we have witnessed was a very typical academic engagement model where they happily engage with business to get support, then once the funding has been awarded the engagement drops and the academic partner(s) do what they want to do with the funds. This is not uncommon even with academic grants, and is one reason that there have been recent changes at the European Union and Research Council level.
Q3 :- We advise you to prepare your answer in a separate document and paste when you are ready to submit. As the Scottish Lifesciences Association, we have 13 member driven special interest groups. The main overlaps we have with the Innovation Centres are Digital Health, CENSIS, IBioIC, Datalab and Precision Medicine, whilst we have less of an overlap with the other centres. The remaining IC groupings were chosen without looking at alignment with industry and more where there is academic interest and a few companies around for justification. We have SIGs formed around a number of members with interest in the area. The LifeSciences industry skills needs are quality and regulatory, and these are not being met by ICs or Universities. The industry led projects are academically interesting otherwise they would not be approved but there is no additional support for the project from the government (SIB) and commercialisation support either public or private has not been attracted. The subcontract model of the SMS-IC has helped industry secure business where they are not securing business currently but follow-on contracts have not been forthcoming. In the case of SMS-IC, they have received additional cash based on untested 5 year deliverables.
Q4 :- We advise you to prepare your answer in a separate document and paste when you are ready to submit. The engagement model has not improved. Any model that sees industry having to pay its way whilst academics are financed must be fully controlled by industry. The traditional model where the SFC controls the funds after award is not seen as effective. If a company wishes to sub-contract work then there will be controls and penalties to ensure that the work is done to the requisite quality on time. Feedback from members on project delays, bottlenecks, extra layers of bureaucracy and requests for IP have been discussed. Project management has also been seen as an issue with the ICs needing to provide the top level management of the projects. As the SLA we have not seen a successful IC project model from any member.
Q5 :- We advise you to prepare your answer in a separate document and paste when you are ready to submit. At a recent Digital Health SIG we asked the senior management of the DHI for metrics on performance which we were not given on the day and have not received since. With SMS-IC we are not expecting much due to recent management changes. Freedom to operate has led to setting up large organisations but has not delivered the agility required from industry. As with the ITI, the freedom to operate has not been an issue as the ICs have been able to grow their structures with no input from industry. Their simple goal is to deliver economic growth, which we have not seen, and sustainability will only be through continuous government funding. We have not seen any significant increase in business related R&D whilst maintaining or improving HE R&D through the IC model.
Q6 :- We advise you to prepare your answer in a separate document and paste when you are ready to submit. If the ICs disappeared they would not be missed. As the SLA, we have good links with academia and if a member needs to make a connection we can facilitate this, and in some cases manage the relations to ensure there are deliverables on time. The key is where the funder has control over the academics. This conflicts with academic freedom and is why we will carry out research with other bodies aligned to the commercial goals of business. If another IC programme comes into existence we would like to see Industry control this. Academics would be welcome to assist. As industry we are very keen to engage with government on how to achieve economic growth

Tha am post-dealain seo (a' gabhail a-staigh faidhle sam bith na lùib) dìomhair agus air a dhìon le còraichean foillseachaidh. Mur robh còiragaibh am post-dealain seo fhaighinn, cuiribh fios thugainn gun dàil lefreagairt post-dealain, dubhaibh às e, agus na dèanaibh feum, foillseachadh no lethbhreac dheth. Chan eil sinne cunntachail airsonbhìorasan agus tha e an urra ribhse faidhleachan a sgrùdadh. 'S e nabeachdan taobh a-staigh a' phost-dealain seo beachdan an neach a chuir eagus dh'fhaodadh nach buin iad do bheachdan Comhairle Maoineachaidh na h-Alba.

Tha sinn a' cur fàilte air co-sgrìobhadh Gàidhlig agus nì sinn ar dìcheall freagairt innte, le bhith a' toirt fios-freagairt an ceann 20 latha cosnaidh.

Tha am post-dealain seo (a' gabhail a-staigh faidhle sam bith na lùib) dìomhair agus air a dhìon le còraichean foillseachaidh. Mur robh còiragaibh am post-dealain seo fhaighinn, cuiribh fios thugainn gun dàil lefreagairt post-dealain, dubhaibh às e, agus na dèanaibh feum, foillseachadh no lethbhreac dheth. Chan eil sinne cunntachail airsonbhìorasan agus tha e an urra ribhse faidhleachan a sgrùdadh. 'S e nabeachdan taobh a-staigh a' phost-dealain seo beachdan an neach a chuir eagus dh'fhaodadh nach buin iad do bheachdan Comhairle Maoineachaidh na h-Alba.

Tha sinn a' cur fàilte air co-sgrìobhadh Gàidhlig agus nì sinn ar dìcheall freagairt innte, le bhith a' toirt fios-freagairt an ceann 20 latha cosnaidh.

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Tha sinn a' cur fàilte air co-sgrìobhadh Gàidhlig agus nì sinn ar dìcheall freagairt innte, le bhith a' toirt fios-freagairt an ceann 20 latha cosnaidh.

scottish renewables

Professor Graeme Reid
Scottish Funding Council
Apex 2, 97 Haymarket Terrace
Edinburgh, EH12 5HD

05 August 2016

Dear Professor Reid

Independent Review of Innovation Centres Programme

Scottish Renewables is the representative body for the renewable energy industry in Scotland. We provide a united voice for around 280 member organisations working across the full range of renewable technologies to deliver a low-carbon energy system, integrating heat, electricity and transport. We engage with industry, the public sector and academia to facilitate the transition to a low-carbon economy.

It is our view that establishing an Innovation Centre for Sustainable Energy could play a crucially important role in supporting and accelerating this transition, and to maximising the benefits it can bring to the Scottish people and economy.

A Sustainable Energy Innovation Centre: the opportunity

As you will be well aware, our energy system is in a fundamental period of flux: the way we generate, consume and manage energy is changing. Both the UK and Scottish Governments are legally obligated to meet stretching carbon reduction targets[1], and are renewing policies in order to decarbonise the energy system at the lowest possible cost to the consumer. The UK Government's independent advisor, the Committee on Climate Change, has stated that the UK needs to double[2] its installed capacity of renewables by 2030 if it is to meet its climate change obligations.

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[1] https://www.theccc.org.uk/tackling-climate-change/reducing-carbon-emissions/carbon-budgets-and-targets/ and http://www.gov.scot/Topics/Environment/climatechange

[2] https://www.theccc.org.uk/publication/the-fifth-carbon-budget-the-next-step-towards-a-low-carbon-economy/

6th Floor, Tara House, 46 Bath Street,
Glasgow, G2 1HG
0141 353 4980 @ScotRenew
www.scottishrenewables.com

A strategic focus on innovation is absolutely key to developing and accelerating the move to a secure, low-carbon and affordable energy system. We believe there is a compelling case for a Sustainable Energy Innovation Centre to capture the benefits a new energy system could bring.

The global transition to a low-carbon economy presents a huge opportunity for businesses, civil society and academia across Scotland. With annual global investment at $280 billion[3] and growing, the fundamental changes required in our energy sector can also drive change in our communities and economy. The renewable energy industry in Scotland invested £910m in 2015 alone[4].

The National Infrastructure Commission reports that a 'smart power revolution' could save consumers up to £8bn a year[5]. This is based on a modern and decarbonised system – fuelled with renewable and low-carbon energy and taking advantage of innovations such as interconnection, energy storage and flexible demand.

The deployment of energy storage could also create considerable cost savings for our electricity system – saving £50 per year on the average consumer bill, and saving consumers up to £7bn a year with the right regulatory landscape[6]. The findings, from The Carbon Trust, major utilities and government, detail the benefits this could bring to the system– from saving surplus energy to meet demand later, to balancing the system and avoiding the need for new assets.

Capturing these benefits and cost savings is an increasing focus of both industry and government. National Grid's 2016 Future Energy Scenarios detail the greater level of flexibility the system will need[7], and the organisation is in the process of procuring a new set of system services where energy storage is expected to feature[8]. We understand Ofgem and the department for Business, Energy and Industrial Strategy to have an upcoming consultation on system flexibility, designed to inform future work in the area.

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[3] http://fs-unep-centre.org/sites/default/files/attachments/key_findings.pdf
[44] https://www.scottishrenewables.com/sectors/renewables-in-numbers/
[5] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/505218/IC_Energy_Report_web.pdf
[6] https://www.carbontrust.com/resources/reports/technology/energy-storage-report/
[7] http://fes.nationalgrid.com/
[8] www2.nationalgrid.com/Enhanced-Frequency-Response.aspx

With a coordinated approach to tackling these challenges, and a strategic direction to guide the innovation required, Scotland's businesses, research community and civil society can ensure that Scotland is at the very the forefront of international work to re-design our energy systems.

Scotland's high-ranking research centres and innovative businesses provide the foundations on which a Sustainable Energy Innovation Centre would be built. Scotland already has an internationally recognised subsea engineering sector (with companies like Ecosse Subsea Systems[9] , innovative university spin-off companies such as Nautricity[10] and Smarter Grid Solutions[11] and internationally exporting companies like Sgurr energy[12] and Natural Power[13].

A large network of private and public sector organisations carrying out innovative activity in the sector is already active in Scotland. There is a clear need for a focal point for this activity to ensure that it is appropriately fostered and guided.

Four Innovations that will change our energy system

Some of the most important innovations in energy are already taking place in Scotland – from the Meygen project currently constructing the world's largest tidal stream array, to The University of Strathclyde's Power Network's Demonstration Centre which is working to advance the adoption of innovations on our electricity grid.

Scottish Renewables has previously[14] set out four innovation areas which, if harnessed correctly, can fundamentally change our energy system and provide considerable opportunity for Scotland and the UK:

1. **Innovative renewable generation**
   Scotland has a particular advantage in developing **offshore and marine renewables**, with excellent resources and a long history of innovation in wave and tidal energy, subsea and deep-water technology and offshore servicing. Scotland is home to the Meygen project[15], the world's largest tidal stream project currently

[9] www.ecosse-subsea.com/
[10] www.nautricity.com/
[11] www.smartergridsolutions.com/
[12] www.sgurrenergy.com/
[13] www.naturalpower.com/
[14] www.scottishrenewables.com/publications/briefing-innovation/
[15] www.meygen.com/

under construction, and Statoil are taking forward what would be the first floating offshore wind project in the UK off the Aberdeenshire coast[16].
With heat accounting for 55 per cent of Scotland's energy demand, **low-carbon heat** solutions present a similar opportunity. Innovative technologies and business models to support renewable and low-carbon heat networks, re-use of waste heat and thermal storage will all be required if we are to decarbonise our energy system.

2. **Energy systems integration**
   Bringing together different aspects of our energy system can help us maximise the benefits of innovation. Efficiencies will be created by exploiting synergies between our sectors, and by tackling challenges in unison across electricity, heat and transport.

3. **Managing a flexible network**
   Managing a flexible network effectively will be crucial, and here we see a number of innovations of particular importance of developing our energy system. The **energy storage** sector is growing rapidly with over 19 GW applying to connect to UK Distribution Networks in the past 6 months alone[17], and a further volume expected in National Grid's Enhanced Frequency Response tender. Similarly, **Active Network Management** initiatives are continually being developed, and have been shown to cut costs by as much as 90 per cent[18]. Scottish Power Energy Networks' Accelerating Renewables

4. **Non-traditional business models**
   Non-traditional business models will be an enable for many of these new technologies and innovations. Communities, commercial enterprises and consumers are all looking to take more control over their energy usage – this is prompting innovation in supply-side arrangements, including novel tariff structures[19], power purchase agreements and off-grid arrangements.

The benefits of a Sustainable Energy Innovation Centre

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16 www.statoil.com/en/TechnologyInnovation/NewEnergy/RenewablePowerProduction/Offshore/HywindScotland/Pages/default.aspx?redirectShortUrl=http%3a%2f%2fwww.statoil.com%2fHywindScotland

17 www.energynetworks.org/assets/files/news/publications/Reports/TDI%20Report%20v1.0.pdf

18 http://innovation.ukpowernetworks.co.uk/innovation/en/Projects/tier-2-projects/Flexible-Plug-and-Play-(FPP)/

19 See the 'Sunshine Tariff' operated by Tempus Energy: http://wren.uk.com/images/sunshine/Sunshine%20Tariff%20-%20Information%20Booklet.pdf

First and foremost a Sustainable Energy Innovation Centre would coordinate the multiple organisations and programmes contributing to the already vibrant energy innovation landscape in Scotland. This coordination would act as an innovation catalyst, serving to strategically guide and harmonise innovation activity to ensure it is best directed and create new opportunities for growth.

The Sustainable Energy Innovation Centre, along with maximising the economic benefit such an innovation programme could deliver, would also support the development of deeper collaboration between agencies and in doing so support energy innovators, entrepreneurs and academics across Scotland.

The leadership from a Sustainable Energy Innovation Centre will thus encourage sustainable economic growth, upskill the energy workforce and contribute to our transition to a low-carbon economy. It would also facilitate the engagement of relevant communities in developing and shaping our low-carbon future.

The policy drivers

A number of targets and commitments underscore the need for this energy system transition.

The UK Government is committed to the Paris Climate Change Targets[20] as well as the challenging Committee on Climate Change recommendations to reduce emissions by 57 per cent by 2030[21].

The Scottish Government also presents political drivers to decarbonise, with a well-known target of the equivalent of 100 per cent of electricity generation to come from renewable sources by 2020, as well as targets for heat and transport[22].

These targets necessitate more renewable generation and better management of the energy system, and to meet them we will need to see strategic and focussed innovation across the areas we outline above.

Other elements of the policy landscape have not been so positive for the sector. 2015 saw the revenue support mechanisms for a number of renewable technologies cut considerably

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[20] http://ec.europa.eu/clima/policies/international/negotiations/paris/index_en.htm
[21] www.theccc.org.uk/2015/11/26/next-step-towards-low-carbon-economy-requires-57-emissions-reduction-by-2030/
[22] www.gov.scot/Resource/0046/00469235.pdf

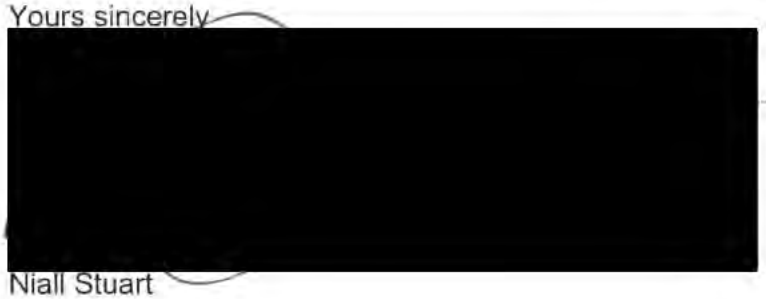
or removed altogether[23]. The economics of the new policy landscape has placed a new incentive on the industry to innovate to enable cost reduction where possible.

Conclusion

For Scotland to secure the benefits that innovation in sustainable energy can bring, strategic direction and leadership is required. Creating a Sustainable Energy Innovation Centre could fill this gap - engaging communities and developing the innovation landscape in Scotland. Such a Centre would not just help achieve our transition to a low-carbon economy but would also maximise the potential for securing sustainable growth in the wider Scottish economy.

We would be very happy to discuss this with you further.

Yours sincerely



Niall Stuart
Chief Executive

[23] www.gov.uk/government/news/changes-to-renewables-subsidies

SUSTAINABLE ENERGY INNOVATION CENTRE – INVERCLYDE

Be part of an emergent, successful Inverclyde! Riverside Inverclyde welcomes the potential of a Sustainable Energy Innovation Centre for Scotland, having it located within an innovative, ambitious community, and it becoming a catalyst for the thriving, sustainable economic regeneration of the area.

Inverclyde – an area of strong marine engineering, IT and manufacturing skills – has the ports, infrastructure, connectivity, skills and facilities to be the ideal location for a strategic Sustainable Energy Innovation Centre for Scotland. But don't take only our word for it :

"Tae see oursels as ithers see us"…….

Cameron Smith, Director, Project Development, Atlantis Resources Limited, and Director, Scottish Renewables : "As a long term Inverclyde resident, I fully endorse the area's excellent credentials to host the proposed "Sustainable Energy innovation Centre". With its deep water port access, excellent transport links, availability of industrial and commercial properties, local, central and European government support, network of innovative engineering companies and flexible workforce, Inverclyde offers an ideal location from which to develop a world class innovation and technical facility which can deliver real and tangible benefit to the new energy sector and to Scotland's economy.

The recent transformation at Ferguson Marine Engineering, the creation of new industrial and commercial facilities and the increasing focus on developing high quality technical apprenticeships provide excellent opportunities for collaborative working, product testing, knowledge sharing and skills development between industry, academia, and government agencies. In addition, the next generation of renewable technology innovation in tidal, wave and floating offshore wind technologies will unlock the enormous renewable resource offered along Scotland's West coast – Inverclyde is ideally paced to grasp these opportunities".

Alan Baker, Managing Director 2020 Renewables : "Locating ourselves in Inverclyde, we had good quality office accommodation that allowed us to extend our business; we had access to good quality staff who have the ability to train at the local college; and, working with the skilled team that we have, they can have very successful careers in the renewables sector. We are an expanding business – we have projects from South Ayrshire to the Highlands and Islands of Scotland – and with Glasgow Airport very close to us, it gives us the opportunity to encourage international investment".

Linda Scott, Senior Director, Toshiba Global Commerce Solutions : "The culture, the attitude, the creativity and the imagination that comes from the people of Inverclyde is second to none".

Robert Wicks, Chief Operating Officer, Powerboat P1 Management : “With its great rail, road, air and ferry transport links, Inverclyde is perfectly positioned – one can certainly say Inverclyde is the marine leisure capital of Scotland. Of the 32 council areas in Scotland, few are enjoying the level of regeneration that is currently underway across Inverclyde, and with this I have no doubt will come evolving levels of prosperity, of new jobs, and new opportunities – and we look forward to being part of that in the future”.

Inverclyde’s ambition is apparent - from its local authority :

greenock telegraph

INVERCLYDE has officially signed up to the giant £1 billion ‘city deal’ scheme which will deliver key local projects and 1,500 jobs for the area.

INVERCLYDE has officially signed up to the giant £1 billion 'city deal' scheme which will deliver key local projects and 1,500 jobs for the area. Council leader Stephen McCabe put pen to paper on an agreement with both the UK and Scottish governments and seven other partner local authorities. Under the initiative, three infrastructure developments will take place in the district.

Greenock Ocean Terminal will be expanded at a cost of £14.2 million, **a £9.4m renewables hub will be established at Inchgreen drydock** and road improvements worth £3.8 million will take place on the A78 at Inverkip to pave the way for redevelopment of the former power station site.

The UK and Scottish governments will each give the city region £500 million in grant funding, and the local authorities will pump in a further £130m.

Published in the Greenock Telegraph: 22 Aug 2014

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to its companies :

greenock telegraph

New Ferguson’s owner plans to invest up to £60m

THE new owner of Ferguson's has revealed exciting plans to invest up to £60 million at the yard and create at least 300 jobs.

Billionaire businessman Jim McColl said there is great potential for designing a new breed of ships and revealed that he also planned to create 'an apprentice academy'.

He said: "We expect a healthy demand for ships because of tightening environmental regulations.

"We plan to invest £7m to £8m initially, but, theoretically, that could go up to £50m or £60m if the need is there."

"The yard has already been re-named Ferguson Marine Engineering Ltd. to recognise the wider variety of work it will do"

Published in the Greenock Telegraph: 12 Sep 2014

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and of course to Riverside Inverclyde, with this giant advert at Glasgow Airport between January and June 2016 :

Riverside Inverclyde has a strong track record in the renewables sector. We have been involved in this sector since setting up the Inverclyde Renewables Alliance Group in 2009 that was supported by Scottish Enterprise, public sector agencies, local companies and national companies. From this, Riverside Inverclyde became very active at exhibiting at conferences ; sponsoring programmes at Scottish Renewables (see below with the then UK Cabinet Minister Ed Davey) and Renewable UK;

advertising in The Times' RenewableUK supplements, advertorials and adverts in World Class Scotland, Real Power, Offshore Wind Engineering, Maritime Journal, Recharge, Holyrood, Wind Direction, World Wind Technology, Energy Engineering, and Offshore Wind Journal; visiting Husum Wind; being allocated space on Scottish Enterprise's stand at EWEA Offshore in Amsterdam; and being long-term members of Scottish Renewables.

Within Inverclyde's Economic Development and Regeneration Single Operating Plans (2014-17, and 2016-19) - an innovative joint public sector approach between Inverclyde Council and Riverside Inverclyde - Renewables & Marine Engineering has been identified as a key sector for growth in the area with Inverclyde's facilities, skills base, the very cost competitive high quality premises available, and prime locations for bespoke build.

GREENOCK TELEGRAPH, Tuesday, 28 August, 2012

Minister positive over investment cash for area

Job hopes

SCOTLAND'S Finance Minister ... Inverclyde is in a prime position to attract investment.

Finance minister John Swinney said that the district has a 'very strong platform' for future development, during a visit to Greenock yesterday.

The minister said Inverclyde looks to be "very strongly positioned" to be a hub for west coast renewable energy manufacturing.

He said: "The government has investment resources to support renewables development, and we will do so."

The idea of collaboration that Scottish Renewables is pursuing with the concept of the Sustainable Energy Innovation Centre is not new to us either. We have initiated collaborative attempts to set up, for example, Renewables Training West (for educational establishments in West Central Scotland); a branding of Glasgow & Clyde Estuary Marine Energy Park (with Scottish Enterprise), and a multi occupancy installation and O&M base at Inchgreen for tidal energy companies operating off the west coast of Scotland to reduce costs and enable synergies. Although ultimately these innovative initiatives did not come to fruition, it demonstrates Riverside Inverclyde's visionary attempts towards collaboration, cost reductions, and sector enhancement – common attributes for the success of the Sustainable Energy Innovation Centre, and therefore illustrating a compatibility that would add to the logic of Inverclyde being the location of choice.

Inverclyde, demonstrably, is fully in tune with the concept of a cross-sector, collaborative Sustainable Energy Innovation Centre.

Inverclyde has the features and facilities to match its ambition :

- Excellent road, motorway, rail, ferry and air connectivity
    - Glasgow International Airport 15-20 minutes away;
    - 30 minutes to the centre of Glasgow and the International Technology and Renewable Energy Zone;
    - Railway stations within 10 minutes' walk of all options for locating Scotland's Sustainable Energy Innovation Centre ;
    - Ports at Greenock Ocean Terminal and at Inchgreen;
    - Ferry terminals in Gourock and Wemyss Bay; and
    - A spectacular waterfront setting

- Business Facilities currently available and potentially appropriate for a Sustainable Energy Innovation Centre (existing and bespoke) :

Kelburn Business Park, Port Glasgow. The business park, at the eastern edge of Inverclyde at the riverside dual carriageway, features the choice of ready made, high quality units from 2,200 sqf to 15,000 sqf (from £4.50 per sqf) or 2.82 acres of land readied for bespoke build.

Cartsburn, Greenock (outlined in white on right of picture). A prominent 3.7 acre site, readied for development, that can accommodate up to 70,000 sft of office development (including dedicated car parking). Anticipated rent of up to £16.50 per sqf.

Valley Park, Spango Valley, Greenock. A valley location on the western outskirts of Greenock on the A78 dual carriageway, that contains vacant premises (three large office buildings and a large warehousing space) formerly used by IBM, plus plenty of space for bespoke construction. This area isn't part of Riverside Inverclyde's property portfolio but, should there be interest in this site, we would work to facilitate an end-to-end Inverclyde offering with all relevant stakeholders. The location has a dedicated railway station serving the park.

Custom House, Greenock. A spectacular Grade A listed building on Greenock's central waterfront. Riverside Inverclyde is on the final phase of a £4.1M upgrading and refurbishment of the iconic building, which will make available the Upper West Wing office space (rent of £12.50p per sqf).

Riverside Business Park, Greenock. This hugely successful speculatively built business park has over 90% capacity and although perhaps not appropriate for discussions surrounding the near future, it is worth highlighting for longer term consideration (rent is £12 - £14 per sqf).

When you add in its enormous investment in new schools bringing outstanding results for the community's school students, first class leisure facilities, outdoor activities, heated outdoor pool, marinas, festivals, events, affordable waterfront living, and phenomenal views, from a location perspective – whether connectivity, quality of premises, cost effective business presence, being part of a legacy regeneration programme, workforce skills and proven adaptability - or from a family focus, **Inverclyde is an ideal strategic location for Scotland's Sustainable Energy Innovation Centre.**

To conclude :


riverside inverclyde | Business Investment | Companies
Flourishing Inverclyde Businesses
ri
bpi
British Polythene Industries PLC
PEEL PORTS
amazon
Cigna.
TEXAS INSTRUMENTS
A. P. Jess
Scottish Food Group
E
E
PG Paper
TOSHIBA
Leading Innovation
Manpower
CONCENTRIX
2020 Renewables
Buchanan's
the fine taste of Scotland
FERGUSON
marine
Caledonian MacBrayne
Hebridean & Clyde Ferries
IBM
RBS
The Royal Bank of Scotland

The Scottish Parliament
Pàrlamaid na h-Alba

Professor Graeme Reid
Scottish Funding Council
Apex 2, 97 Haymarket Terrace
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EH12 5HD

Maree Todd MSP
The Scottish Parliament
Edinburgh
EH99 1SP

Tel: [redacted]
Maree.Todd.msp@parliament.scot

08 September 2016

Dear Professor Reid,

Sustainable Energy Innovation Centre on Orkney

I am writing to offer my support to the application for a Sustainable Energy Innovation Centre and make the case for it being located on Orkney in my constituency.

A Sustainable Energy Innovation Centre would offer an excellent opportunity for collaboration between the scientific community, academics and businesses who want to see the renewable energy sector thrive in Scotland. This could result in fantastic new developments for renewable energy in Scotland, as it has the potential to find innovative ways of generating and managing renewables as well as ways of incorporating renewable energy into existing business models.

We have huge renewable energy potential in the Highlands and Islands, and if we can harness that potential, and use it to benefit the people living here, the region could be transformed. We also have high fuel poverty and will benefit directly from a more sustainable approach.

I believe this centre would be best situated on Orkney because of the wealth of natural renewable resources and expertise already present there. Orkney has the highest concentration of small and micro wind turbines in the UK. Orkney can also boast several larger community owned and commercial turbines, one locally owned wind farm, and one commercial wind farm. It was Orkney's rich wind power that was the main energy source that allowed it to become a net energy exporter in 2013 & 2014.

Orkney also is able to generate exceptional amounts of tidal energy and is home to the European Marine Energy Centre whose work puts Orkney at the forefront of the development of marine renewables.

There are also already a number of other organisations on Orkney with expertise and interest in renewables, who could make important contributions should a Sustainable Energy Innovation Centre be placed there. These include:

- Aquatera
- Green Marine
- Hammars Hill Energy
- International Centre for Island Technology, Heriot Watt University
- Leask Marine Ltd
- Orkney College UHI – Science, Agronomy and Maritime Departments
- Orkney Research Centre for Archaeology (ORCA)
- Scribbilib Consultancy Ltd
- Xodus Group Ltd

Orkney has already shown a great deal of commitment and indeed investment in the industry. I attended a meeting of the Orkney Renewable Energy Forum recently and I realised that it's already a living laboratory.

I believe this presents a clear case for locating a Sustainable Energy Innovation Centre on Orkney.

Yours sincerely,

Maree Todd MSP
Highlands & Islands

Professor Graeme Reid
Scottish Funding Council
Apex 2, 97 Haymarket Terrace
Edinburgh, EH12 5HD

30 August 2016

Dear Professor Reid,

Support for Scottish Renewables call for a Sustainable Energy Innovation Centre

Scottish Environment LINK is a network of over 35 environmental NGOs in Scotland. Members of LINK would like to offer support for the call by Scottish Renewables for a Sustainable Energy Innovation Centre, as detailed in the Scottish Renewables letter to you of 5 August, 2016.

LINK members would like to highlight the need for innovation that is primarily driven by decarbonisation objectives, to be compatible with broader sustainability objectives and needs. Innovation in sectors such as energy storage and marine renewables are understood to offer significant opportunities to support a low carbon transition in Scotland, and require significant investment, but these technologies must be developed sustainably in order to ensure their viability and public support, and avoid perverse consequences such as loss of biodiversity.

A Sustainable Energy Innovation Centre, with the role of strategic direction and leadership, would be well positioned, and should be mandated to ensure that design and roll out of new technologies encompass the need to minimise impact on our ecosystems.

We would be very happy to discuss this further with you.

Kind regards,

[redacted]

Matthew Crighton
Convenor of LINK's Economics Group

LINK members supporting this letter:
Friends of the Earth Scotland
Froglife
North East Mountain Trust
Nourish
RSPB Scotland
Royal Scottish Geographical Society
WWF Scotland

Gary Bannon

From: COWAN, Ronnie <ronnie.cowan.mp@parliament.uk>
Sent: 01 September 2016 11:22
To: InnovationCentresReview
Subject: Innovation Centre - INVERCLYDE

I am writing to express my support for the Scottish Renewables proposal to create a sustainable energy innovation centre.

I recently hosted meetings between businesspeople regarding a similar proposal to establish a centre for renewable energy in Inverclyde. Many of the individuals that I met are owners or managers of international companies which are involved in the renewables industry. I subsequently learned of the proposal outlined by Scottish Renewables.

I am planning to meet again with these businesspeople and it is our intention to expand the group to include other interested bodies. The primary objective of the meeting is to push forward with plans to establish a centre of excellent for sustainable energy based in Inverclyde.

You may be aware that Inverclyde has a long history of hydro-power and our geography makes us well placed to utilise wind, wave and tidal energy. Our infrastructure and port facilities also mean Inverclyde can easily connect with other renewables projects throughout Scotland, particularly on the west coast and islands.

Further, we are already demonstrating the use of renewables with a local housing regeneration scheme embracing biomass fuel supplied from a local firm.

It is my intention to establish a scheme that would encourage businesses across the renewable spectrum to locate in Inverclyde, in close proximity to each other, enabling them to share ideas and develop best practise.

I would welcome the opportunity to put Inverclyde's case to you.

Best Regards.....Ronnie Cowan MP for Inverclyde

Sent from my iPad

Gary Bannon

From: Wyllie J (Jack) <Jack.Wyllie@parliament.scot>
Sent: 23 August 2016 13:39
To: InnovationCentresReview
Subject: Innovation Centre

Dear Sir,

I would like to add Alexander Burnett MSPs (Shadow Energy Spokesperson) name to the list of MSP supporting your proposal of the innovation centre. We recently tweeted on the subject and support our leader Ruth Davidson's commitment to such a centre.

Kind Regards

Jack Wyllie
Researcher
Office of Alexander Burnett MSP
[redacted]
www.alexanderburnett.com

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The Scottish Parliament
Pàrlamaid na h-Alba

Claudia Beamish MSP
South Scotland

Professor Graeme Reid
Scottish Funding Council
Apex 2, 97 Haymarket Terrace
Edinburgh
EH12 5HD

Our Ref: CB/CH

16th August 2016

Dear Professor Reid,

Sustainable Energy Innovation Centre

I am writing to you to highlight my support for the establishment of Sustainable Energy Innovation Centre in Scotland. I acknowledge that the period for Review has now closed, but thought it worthwhile to contact you as I feel such a centre would bring significant opportunities for the integration of the range of energy systems. I am aware that Scottish Renewables has written a detailed letter arguing the case for such a Centre and I endorse their arguments.

In my opinion, it is essential for Scottish employment opportunities that we work together to develop a strategic plan for a low carbon future. You will be well aware of the potential of the renewable energy industry in Scotland, and this could be appropriately fostered with shared knowledge, and coordination, and community engagement.

Yours sincerely

[redacted]

Claudia Beamish MSP
Member of the Scottish Parliament for South Scotland

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