

SFC-Jisc Outcome Agreement AY 2019-20 to 2021-22: 2021-22 update

Introduction

1. Jisc is the UK's higher education (HE), further education and skills (FES) sectors' not-for-profit organisation for digital services and solutions. We champion the importance and potential of digital technologies for UK education and research; and do three main things:
 - We operate shared digital infrastructure and services
 - We negotiate sector-wide deals with IT vendors and commercial publishers
 - We provide trusted advice and practical assistance for universities, colleges and learning providers.
2. Our research and development (R&D) work is integrated across these three areas.
3. Working closely with colleagues and sector bodies, our aim is to:
 - Deliver considerable collective digital advantage, financial savings and efficiencies for UK universities, colleges and learning providers today
 - Ensure these benefits are sustained and intelligently further enhanced
 - Do all this as affordably, efficiently and as cost effectively as possible.
4. We work in partnership with Scottish universities and colleges to ensure that they not only make the most of the digital opportunities available, but at the same time make substantial savings compared with doing so individually.

SFC funding of Jisc

5. Jisc is funded by the UK HE and FES funding departments and bodies to deliver essential UK-wide digital infrastructure. We are a critical part of building both the capability and capacity of Scotland's HE, FE and vocational education sectors, using grant-in-aid from the Scottish Funding Council (SFC).
6. Every developed nation needs a National Research and Education Network (NREN) to ensure it remains competitive internationally. Part of the rationale for the funding for Jisc is that it helps to ensure this network in the UK remains sustainable, whilst seeking a contribution from providers of education and research given they benefit most from such an infrastructure. However, it is acknowledged by government that it is not desirable nor feasible to ask providers to pay for all the costs of such a national infrastructure, therefore central funding continues to provide a significant proportion in the public interest.
7. The UK funding bodies have agreed a shared funding model for Jisc¹ on the basis of a two thirds contribution from HE and a one third contribution from FE. Proportions are then divided between the respective nations across the UK. The funding provided by the SFC is approximately 20% of Jisc's total core grant funding². HE institutions in Scotland provide a contribution of approximately £1m. The funding bodies have recently reviewed the funding model and reaffirmed their

¹ Described in the Jisc – HE and FE Funding Bodies Memorandum of Understanding, 2012.

² In 2021-22 this equates to £5.2m for HE (12% of Jisc's total funding) and £2.9m for FE (8% of Jisc's total funding).

commitment to this approach for the foreseeable future.

Why this funding agreement is needed

8. We see reduced public spending within the context of the pandemic, Brexit and skills shortages. There is also a need to improve the student and staff experience and protect wellbeing for our universities, colleges and research institutes. This agreement provides certainty to institutions as to our priorities over the three year period and clarifies the outcomes we seek to achieve on behalf of the Scottish education and research sectors. It should be noted, however, that the activity described in this agreement is subject to a flat cash funding settlement from Jisc's core funders, including from the SFC. Any cuts to our funding could result in some of the activity in this agreement being reduced or stopped and/or increases to the HE subscription in Scotland.

Capital funding

9. In addition to the core funding above, SFC may, from time to time, provide Jisc with capital funding for critical infrastructure investment. For example, in 2021-22, the SFC has provided capital funding towards upgrades being carried out in Scotland that are part of the [Janet network access programme](#).

Reporting against our priorities

10. We will report against the priorities and outcomes in this agreement in September each year for the preceding academic year.

Strategic context

Vision and mission

11. We believe education and research improves lives, and technology improves education and research. Our vision for the UK is to be a world leader in technology for education and research. Our mission is to power and empower our members with the technology and data they need to succeed.

Jisc strategy 2019-22

12. Jisc's [strategy](#) for 2019-22 is to build on our transition to a membership organisation, taking our achievements to the next level and enhancing what we do to the further satisfaction of members and funders. We will:
 - [Satisfy members and funders](#)
 - [Deliver world-class core services](#)
 - [Offer value-added services](#)
 - [Inspire with thought leadership](#)
 - [Transform Jisc](#)
 - [Provide financial leadership](#).
13. We have a number of sector specific strategies, with associated priorities and targets, for example, [Further education and skills strategy 2020-23](#), [Powering UK Higher Education 2021-24](#) and [Research and Innovation sector strategy 2021-23](#). We include a selection of targets within this agreement as examples of indicative outcomes over the period. These may be updated annually.
14. Recognising the impact of the pandemic on UK education and research, we explored (in partnership with UUK, AdvanceHE and Emerge Education) preferable scenarios for what HE might look like in the near and longer term future in [Learning and teaching reimagined](#). Similarly, we worked in partnership with AoC on [Shaping the digital future of FE and skills](#) to help colleges to realise the potential of technology to benefit FE during the pandemic context and into the future.

15. Jisc contributed to the digital elements of SFC's [Review of coherent provision and sustainability](#) by taking forward the 'Supporting the digital revolution for learners' consultation. Other policy priorities include:
 - The outcomes in [SFC's Strategic Framework 2019-22](#)
 - Scotland's [College and University sector ICT strategy 2019-21](#)
 - [Digital Scotland](#)
 - [Working collaboratively for a Better Scotland](#): outline strategic plan 2018.
16. Finally, the so-called 'Industry 4.0' technologies such as artificial intelligence (AI), the Internet of Things (IoT) and machine learning are changing industry and the workplace but are yet to be fully realised across tertiary education. We have therefore also developed a 15-year vision to guide our R&D: ['Education 4.0'](#) and ['Research 4.0'](#) which will explore ways for education and research to take advantage of the new technologies.

Outcomes

17. SFC provides grant funding to Jisc to contribute to the following SFC strategic objectives:
 - To invest in education that is accessible to learners from all backgrounds, gives them a high-quality learning experience, supports them to succeed in their studies, and equips them to flourish in employment, further study and fulfilling lives
 - To invest in excellent research and innovation that adds to current knowledge, delivers economic and societal value, enhances Scotland's international reputation and attractiveness, and makes the world around us prosperous, healthier and more sustainable
 - To ensure colleges, universities and specialist institutions form part of a successful, world-leading, coherent and sustainable system of education that responds effectively to the future needs of learners and the skills needs of the economy and society, enhances our rich cultural life, and strengthens Scotland's international connections.
18. And to support the following Scottish Government strategic priorities:
 - To provide the best student experience, seamlessly connected for learners of all ages and backgrounds
 - To provide high quality learning in a system where institutions work in partnership and demonstrate the highest standards of governance and financial accountability
 - To support Scotland's global reputation as a Science and Research Nation synonymous with high quality teaching, research, knowledge exchange and innovation.
19. These contribute to the following Scottish Government National Performance Framework Outcomes:
 - Communities – We live in communities that are inclusive, empowered, resilient and safe
 - Economy – We have a globally competitive, entrepreneurial, inclusive and sustainable economy
 - Education – We are well educated, skilled and able to contribute to society
 - Human Rights – We respect, protect and fulfil human rights and live free from discrimination
 - International – We are open, connected and make a positive contribution internationally.

Priorities

Network

Context

20. Pressures on public finance in education are leading universities and colleges to look for more [efficient and effective ways](#) to deliver these services. One high-level aim of [SFC's strategic framework 2019-22](#) is to ensure colleges, universities and specialist institutions form part of a successful, world-leading, coherent and sustainable system of education. [Digital Scotland: Digital connectivity](#) aims to deliver a world-class, future proofed digital infrastructure across all of Scotland by 2020 and [city region deals](#) welcome data innovation in order to improve regional economies. [Scotland's College and University sector ICT strategy](#) calls for improvements in ICT efficiency and productivity to be enabling, and include improved responsiveness, personalisation and usability.

What Jisc already does

21. Jisc provides value to our member universities and colleges, and saves them time and costs. For example, we provide:-
- Access to the high speed, reliable and secure Janet [network](#) It allows our members to safely deliver their services and data to end users across the UK and internationally, and at a lower cost and with maximum flexibility. It consists of a large backbone network to which 18 regional networks connect serving over a 1,000 connected organisations and 1 million users.
 - Access to a range of related [connectivity services](#) offering secure and seamless internet access and roaming across organisations (e.g. [eduroam](#)), locations and devices. This includes IP network connections with high availability and uncontended bandwidth to support innovation, research and learning.
 - Access to a range of [trust and identity services](#) (e.g. [certificate service](#), [domain registry](#), [UK Access Management Federation](#), [OpenAthens](#), [student voter](#) registration service and [consultancy](#)) which help universities and colleges to manage access to their resources and services efficiently and effectively.
 - Brokerage and peered connectivity to public cloud services including access to a range of [cloud solutions](#) and additional data centre capacity if required.
 - High-level advice and guidance on IT infrastructure via our account managers, as well as a range of [online guides](#) on reducing costs, and being more efficient and effective with digital. We can also provide bespoke consultancy through our [infrastructure review service](#).
 - High-quality [training](#) and events, such as [Networkshop](#), designed for university and college staff to develop in-house expertise and make the most of our services and solutions.

Priorities for Jisc 2021-22:

Outcome (for the Janet access programme):

By 2023, Scotland's universities and colleges will benefit from the upgrade of the Janet access infrastructure, providing better network coverage, more resilience, lower costs and faster provisioning of additional connectivity services

- We will continue to run our multi-year programme to upgrade and rearchitect access to the Janet network infrastructure across the UK to meet the growing demands of our members. Design work for the four Scottish regional networks has started in 2020-21, and the new access networks will be delivered in 2021-22, followed by transition of customer connections to the new networks by 2023. Implementation of updated access networks across the rest of the UK is planned to complete in 2023-24. The new access infrastructure design will involve creating resilient rings based on a combination of telephone exchanges, carrier neutral data centres, dark fibre, and a range of ethernet and optical

based services from Openreach. The design should also reduce the costs of delivering scalable services across the UK and delivery increased security and flexibility to run institutional processes and services. Work in Scotland began in Spring 2021 and is expected to complete by 2023.

Janet network: indicative outcomes			
Priority	2019-20 outcomes	2020-21 outcomes	2021-22 outcomes (Subject to funding)
Janet transitioned to new access structure			<ul style="list-style-type: none"> • New Scottish access network infrastructure delivered during 2021-22. • Transition of member connections to new access infrastructure to commence in 2021-22. • All member connections provided on new Janet access infrastructure will be delivered in a more efficient and agile manner.

How will this benefit Scottish institutions?

22. The new access infrastructure for Janet will be more consistent, agile and secure so that institutions will be able to innovate in the ways in which they deliver education using technology (be it online, blended or distance learning), both locally, across large geographical distances and internationally. Universities will be able to meet the bandwidth and capability demands arising from ever-increasing volumes and complexity of research data and its processing. The rearchitect will also give Jisc the opportunity to embed the tools required for improved cyber security, and also reduce Jisc’s own running costs.

Cyber security

Context

23. The cyber threat landscape continues to deteriorate. Attacks are increasing in terms of volume, frequency and sophistication. The research and education sectors must continue to counter threats in all their forms, from sophisticated state actors to low level criminals. UK HE institutions were recently highlighted as [targets for Russian state-sponsored cyber criminals](#) in a joint statement by the National Cyber Security Centre (NCSC) and its US counterparts.
24. Jisc has encouraged all members to be prepared for further waves of cyber security incidents in AY2021-22. Following a number of damaging ransomware attacks during last year’s clearing and enrolment period Jisc provided detailed advice and guidance to universities and colleges on how to mitigate against cyber-attacks and to be better prepared this year. However there have been 17 ransomware incidents so far in 2021, which is more than were seen in the whole of 2020.
25. Distributed Denial of Service (DDoS) attacks, where attackers attempt to flood a network with traffic or overload systems to make them unusable, also continue to be targeted towards education and research organisations. In the past year, 34 Scottish institutions were targeted with 138 verified DDoS attacks. However, Jisc’s mitigation service has prevented significant disruption to these organisations.
26. The [Cyber resilience strategy for Scotland](#) (and its [strategic framework](#)) aims to build on the solid foundation of the [National Cyber Security Strategy](#) and move Scotland to a stage where everyone routinely recognises and manages risks, as well as becomes a leader in meeting the growing demand for cyber skills talent.

What Jisc already does

27. Jisc acts as a trusted partner and critical friend, supporting our members through these challenges with our range of [cyber security services](#) and in-house expertise. We also protect the [Janet Network](#) and securely connect members and other organisations. This includes:-

- A security operations centre (SOC) that detects and defends against thousands of attacks every year on the Janet network. Our incident management and alerts protect Scotland’s institutions against major issues - such as DDoS attacks. They also provide actionable intelligence for malware and other vulnerabilities that may be exploited to cause confidentiality breaches and loss of data.
- Protection for individual organisations/IT estates. For example, we help colleges such as [Forth Valley College](#) implement a robust cyber security strategy to ensure the cyber safety of their college, their data and their people
- A range of [mitigation services](#) to reduce the risk of losing a network connection – avoiding inconvenience, reputation loss or financial damage
- Services for added layers of defence: [penetration testing](#), [web filtering](#), [cyber security financial x-ray](#), [cyber security assessment](#), [managed SIEM](#), [cyber essentials](#) and [cyber essentials plus](#)
- Close alignment with the National Cyber Security Centre (NCSC) strategy for active defence
- A range of topical cyber security training and thought leadership (including [annual conference](#), [cyber security survey](#) and a number of [cyber training courses and clinics](#)).

Key priorities for Jisc

Outcome:

By 2022, Scotland’s universities and colleges will be more cyber-resilient and able to align with the Scottish Government’s Cyber Resilient Scotland strategic framework

28. In order to help our members in Scotland be more ‘cyber-resilient’, in other words, better able to respond to security incidents and have the ability to demonstrate an increased cyber security posture, Jisc will:--

- Increase the numbers of Scottish institutions using our cyber security portal, penetration testing service, managed SIEM service and our enhanced DDoS service (known as [Critical services protection](#)) so that more institutions benefit from enhanced protection of their IT and data estates, more quickly and using real-time data
- Develop a range of tailored, actionable intelligence feeds delivered to our members, aimed at different levels (e.g. network operations, senior management)
- Develop new, enhanced sector-wide services to protect our members against emerging cyber risks (e.g. enhanced digital forensics capability in our security operations centre and a new resolver service incorporating the ability to use our DNS infrastructure to filter known bad domains (RPZ))
- Improve our position as a thought leader in cyber security
- Develop our cyber security portal to report on a wider range of services and introduce self-serve capability. Further development from 2020 onward to include developing the ability for members to make payment for our cyber services directly from the portal.

Cybersecurity: indicative outcomes

Priority	2019-20 outcomes	2020-21 outcomes	2021-22 outcomes (Subject to funding)
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Cybersecurity: indicative outcomes

Priority	2019-20 outcomes	2020-21 outcomes	2021-22 outcomes (Subject to funding)
Enhanced cyber security services taken up	<ul style="list-style-type: none"> - 400 HE & FE members (80 in Scotland) using the cyber security portal - 77 enhanced DDoS services taken up by HE & FE members (15 in Scotland) - Increase usage of penetration testing service by 10% 	<ul style="list-style-type: none"> - 500 HE & FE members (100 in Scotland) will sign up to the cyber security portal - Increased use of the penetration testing by 20% from August 2019 - 77 enhanced Critical Services protection (formerly called 'enhanced DDoS services') taken up by HE & FE members (15 in Scotland) - 60 HE & FE members (12 in Scotland) to take up the Cyber Essentials service - 9 HE & FE members (2 in Scotland) to take up the managed SIEM service 	High take-up of cyber services with services changing to meet the fast moving member requirements in this area.
Enhance our DDoS and critical infrastructure hardening			Develop further new capability to provide efficiencies in the detection and visibility of DDoS incidents on the Janet network
Further development of cyber security portal including access to 'self-serve' for members	Complete development of member self-serve capability in the cyber security portal	<ul style="list-style-type: none"> - Jisc's DNS registry and the Primary Nameserver service are added to the portal in Q4 2020 - Institutions are able to make payment for Jisc's cyber security services directly from the portal 	Continued maintenance and development of the portal so that each new Jisc service has facilities within the portal

How will this benefit Scottish institutions?

- Increased take-up of our cyber security services will result in safe and seamless access to the network for Scotland's universities and colleges, with proactive detection and resolution of issues that might affect availability. More institutions will avoid unnecessary costs and protect their IT and data estates, intellectual property and reputations. A SIEM solution makes it easier for providers to spot security-related anomalies on their network because it aggregates data from their various systems and turns data logs into actionable insights.
- Having access to real time DDoS mitigation and network traffic data through our cyber security portal will mean that organisations can react to incidents more quickly, and directly from the portal. They will also be able to request additional products via the self-serve feature.

31. Widespread intelligence sharing nationally and internationally including via our new cyber security portal will assist in crime investigation and provide information to connected organisations on emerging and ever-changing security risks and threats.

World-leading research

Context

32. The power of research and innovation are evident: UK research programmes and international collaborations are at the forefront of tackling global challenges, from Covid-19 vaccines to the climate crisis.
33. Our vision is for the UK to be world leaders in technology for research. We are guided by the seven themes of our [Research and innovation sector strategy 2021 to 2023](#):
 - Supporting a new national data infrastructure for research
 - UK research analytics: understanding systems, cultures, resources and decision-making
 - Recording the UK's 'research estate' in support of a UK- wide research capability
 - Accelerating the achievement, delivery and monitoring of the journey to open research
 - Applied research and knowledge exchange: supporting commercialisation and deployment
 - Rapid innovation in research management and active research
 - 'Research 4.0' and realising the art of the possible.
34. The themes focus on where we are uniquely placed to act in the continued development of technology, digital and data approaches, and advice and guidance to support their effective implementation. This strategy is steered by the Jisc Research Strategy Forum including PVC-R representation from Scottish institutions, and from the SFC.
35. Jisc's work supporting research contributes to the SFC's [strategic outcome](#) to "invest in excellent research and innovation that adds to current knowledge, delivers economic and societal value, enhances Scotland's international reputation and attractiveness, and makes the world around us prosperous, healthier and more sustainable". Our work also contributes to the Scottish Government's [strategic objective](#) to 'support Scotland's global reputation as a Science and Research Nation synonymous with high quality teaching, research, knowledge exchange and innovation'. Jisc's work to support research also helps place Scotland at the forefront of the digital economy as highlighted in [Scotland's Digital Future](#), which notes the vital role of colleges and universities' in exchanging research, development and knowledge with business and industry.

What Jisc already does:

36. We support UK research and innovation through the coordination of a corpus of technologies and by enhancing end-to-end research lifecycle management. We are recognised as a major provider of research infrastructure and services, a trusted partner and, in our areas of expertise, an authority on the use of technology to support research. For example: -
 - The UK's national research and education network (NREN) provides infrastructure and facilities including the [Janet Network](#), connecting all UK universities and key research establishments to the rest of the digital research world and providing the high-speed digital foundation for collaborative research. Eighteen million users in education and research organisations, science parks and public sector bodies rely on the Janet Network to stay connected.
 - Providing library infrastructure supporting access and discovery of high-quality digital content and collections

- Negotiating publishing agreements needed to support academic research: with over 50% of UK research output covered by a Jisc agreement, we're making a sustainable transition to open access a reality. This includes work with the Scottish Higher Education Digital Library (SHEDL) to ensure that the objectives of Scottish institutions are achieved via our licensing negotiations.
- Provision of a coordinated portfolio of open access and content discovery services, making compliance with open access policies more efficient and affordable
- Opening-up access to Digital Collections and archives to support researchers during Covid-19
- Data curation, analytics and management services
- Research and development services and co-design models for innovation
- Access to communities of practice such as Jisc's [digital research community](#), exploring how technology and innovation can help improve current research practices
- Representation on relevant sector working groups such as the Forum for Responsible Research Metrics. International research sector leadership is demonstrated through various infrastructure collaborations and partnerships, such as the Jisc UK [ORCID consortium](#), the [Knowledge Exchange](#), GÉANT, Internet2, OpenAIRE, EUDAT and EGI as part of the emerging European Open Science Cloud, for which we are partners in several preparatory EC projects.
- The breadth of academic- industry collaborations and commercial spinouts from academic research is set to grow. We support the acceleration of the impact of and knowledge exchange from research commercialisation through the enhanced use of shared research infrastructure. For example, we provide [high bandwidth, reliable connectivity](#) to those organisations (science parks, local authorities, businesses, NHS, Catapults, etc.) collaborating with our members.

37. Jisc's [full catalogue of services for research](#) can be found on our web-site.

Key priorities for Jisc 2021-22

Outcome:

By 2022, Scotland's universities will be supported with data, digital and technology services to achieve their research and innovation priorities and so that science and research remain cutting edge and excellent in global terms.

Supporting a new national data infrastructure for research

38. Never before have research and innovation been so dependent on infrastructure, on the capacity of network, security, connectivity and access management. This dependency will continue to grow.
39. We propose a new national data infrastructure to support research. Underpinned by the [Janet Network](#), cyber security and our national access and authorisation infrastructure, we will support the coordination of a flexible set of services for institutions and multi-partner research consortia.

UK research analytics: understanding systems, cultures, resources and decision-making

40. The data produced through the processes of research management could be used on a greater scale to transform research systems, cultures and decision-making. Exponentially upgraded analytical capacity is needed to build the strategic capabilities of UK research. For example, we will: -
 - Explore the unique perspective of researchers on the digital environment they need and use, by building on our [pilot survey for researchers](#) which was based on our successful 'Insights' model. In 2021-22, we will run the survey again (with the survey closing on 1 July 2022). We will also include ARMA representation in the survey question review, and will work with them to reach their members directly to promote the survey. This, alongside our usual promotional activity, will increase participation.

41. We will examine the potential for a new UK research analytics platform and service, enhancing our existing analytics capabilities.

Recording the UK's 'research estate' in support of a UK- wide research capability

42. The ability to identify, deploy, share and re-use physical and intangible assets that comprise the research estate are central to delivering efficiencies, the civic agenda, levelling up, open research and achieving net-zero. These assets also include the significant infrastructure which gives access to research, including content, library and archival collections.
43. We will explore expanding the well-established digital approaches to the management and use of these assets. For example:-
 - By July 2022, we will increase the number of UK libraries contributing data to the [national bibliographic knowledgebase](#) (NBK), a large data pool bringing together the holdings of 175 academic and specialist libraries and which underpins our growing suite of [library hub services](#) which help save institutions time and money across the information resources management lifecycle. The NBK is critical national infrastructure and we expect it to drive nationally co-ordinated work. For example, it could support the formulation of a more joined-up national strategy around retention of print materials and positively influence a national approach to authority controls and identifier frameworks in relation to bibliographic resources. The more catalogue data we can add to the NBK, the more effectively it can support the management of library collections so that they are optimised for contemporary research and learning needs. Our target is to achieve contributions from 200 academic and specialist libraries (22 from Scotland).

Accelerating the achievement, delivery and monitoring of the journey to open research

44. Open research extends beyond the boundaries of open access articles to all research outputs, including metadata, data, code, algorithms and software, as well as the processes of research itself. It will continue to be a high priority for the UK research base, for funders and for Jisc.
45. We commit to helping the UK embrace the full potential of open research by removing barriers, embedding open practices and developing infrastructure to support this potential.

Applied research and knowledge exchange: supporting commercialisation and deployment

46. The interconnected systems producing world-class research and innovation are increasingly reliant on shared and secure infrastructure to enable their growth. The breadth of academic- industry collaborations and commercial spinouts from academic research is set to grow.
47. We commit to further supporting the acceleration of the impact of and knowledge exchange from research commercialisation through the enhanced use of shared research infrastructure.

Rapid innovation in research management and active research

48. Research integrity, reproducibility and reuse, evaluation and assessment, new and inclusive forms of excellence and the responsible use of metrics are all areas that offer significant potential for greater efficiency and interoperability.
49. We commit to exploring and building on innovative approaches in research management, including enhanced system interoperability, common data repository standards and metrics aggregator models.

'Research 4.0' and realising the art of the possible

50. Advanced technologies such as artificial intelligence, robotics, 5G, quantum computing and biotechnologies are set to impact the UK's world-leading research and innovation sector in the years ahead in ways yet to be imagined.
51. We propose a technical enablers programme focusing on exemplifying leading-edge specialisms across each of the product and service focused themes in our Research and Innovation Sector Strategy. and a 'research reimaged' programme to better understand this future potential with and

on behalf of our members.

World-leading research: indicative outcomes			
Priority	2019-20 outcomes	2020-21 outcomes	2021-22 outcomes (Subject to funding)
National bibliographic knowledgebase (NBK)		- By July 2021, 200 libraries (24 libraries in Scotland) should be contributing data to the NBK	- By July 2022, 200 libraries (22 in Scotland) should be contributing data to the NBK - The NBK should be driving nationally-coordinated work
Open scholarship	- ORH (now named ‘research repository services’) used by 25 HE members (3 in Scotland) - Maintain current depth of participation and leadership of Jisc in European open access, in spite of Brexit	- By July 2021, 17 universities (2 in Scotland) should be subscribing to research repository services - Maintain current depth of participation and leadership of Jisc in European open access, in spite of Brexit	
Researcher Insights survey participation			Increased numbers of university groups and research groups participating in the Jisc researcher Insights survey by 2021-22 (working with ARMA).

How will these outcomes benefit Scottish institutions?

Library services

52. Our [support for libraries](#) includes a set of growing library hub services underpinned by the NBK, which was established by Jisc and is accepted as a critical component of the national library data infrastructure. Our ambition is that the NBK will make a positive contribution to the overall quality of data that circulates around the bibliographic data ‘ecosystem’. Specifically, we believe the NBK will:

- Provide a sustainable, next generation national data infrastructure
- Support libraries in making the transition from print-first to digital-first
- Support the formulation of a more joined-up national strategy around retention of print materials
- Aggregate bibliographic data with availability and usage data
- Facilitate more efficient access to e-books, digitised books and journals
- Improve metadata accuracy, effectiveness and standards across the sector
- Positively influence a national approach to authority controls and identifier

frameworks in relation to bibliographic resources

- Promote the unhindered flow of data to maximise discovery by users.

Researcher insights surveys: Digital expertise needed and developed by the research sector

53. The results from our researcher digital experience Insights survey will allow university and research groups to help their staff to reflect on and improve their digital experiences and competencies for research and research management, and provide business intelligence to help universities plan and implement changes and invest wisely in technology.

Teaching, learning and assessment/student & learner experience

Context

54. The sector's digital achievements during the pandemic have been emphatic and swift with many examples of highly effective and innovative approaches to online learning and research. This presents an opportunity to accelerate the adoption of digital technologies by students, academics and professional staff within colleges and universities..
55. SFC's [Outcome Agreement guidance for colleges and universities 2021-22](#) has an emphasis on economic recovery and social renewal, including specific priorities on fair access, high quality learning, teaching and research, partnership and participation, and the climate emergency. ,
56. Jisc contributed to the SFC's [landmark review of the coherence and sustainability of FE and HE institutions](#), by leading the consultation "Supporting the Digital Revolution for Learners", including consideration of infrastructure and support requirements for Scotland's post-16 integrated education sectors. Jisc will work with the SFC, Scottish Government and relevant stakeholders to:
 - Develop a Scottish level standard for online and blended learning to support institutions to deliver an excellent experience for learners
 - Support investment in digital skills to ensure educators are equipped to develop and deliver high quality online and blended learning for students
 - Mitigate digital poverty in order to ensure equitable access to Scottish tertiary education
 - Explore the creation of a national digital consultancy service for senior leaders in tertiary education.

What Jisc already does

Culture and leadership

57. Learning and teaching reimagined has provided university leaders with inspiration, insight and tools to plot a path through an uncertain future. We have been helping universities create and refine their digital strategies to support change and through programmes such as [Digital leaders](#). [Building digital capability](#) service supports universities to develop their staff and students' digital capabilities. Moreover, our data and analytics tools provide sector-wide student, graduate, staff and finance insights. We also support universities to act ethically regarding data and digital by publishing codes of practice and guides.
58. In FE, we provide advice and guidance to help set and embed an appropriate digital strategy across the organisation. Our sector wide resources, content and software negotiations saves providers money to invest in other priorities. We are also introducing more provider-based innovation opportunities by helping Edtech start-ups with easier sector access. We continue to research and co-develop an [Education 4.0 future](#) in areas such as 'the future of e-assessment'.

Learning, teaching and assessment

59. In HE, our high-quality digital content and learning and research resources include the provision of textbook content for more than 1.4m students. We have provided teaching and learning tools and

guidance for universities, training courses designed to get the most from online tools and we are exploring virtual classrooms with several universities. An [exploration](#) of the Future of assessment has started our journey towards supporting innovative approaches.

60. Our [learning analytics service](#) is helping many universities reduce dropouts and plan appropriate interventions. Whether or not an institution subscribes to this paid-for service, there are related resources available to help institutions to make evidence-based decisions and address their strategic challenges and goals. For example:
 - Advice and guidance via account managers, publications, blogs and resources on the [Jisc web-site](#).
 - Network events/[Expert learning analytics community of practice](#)/[learning analytics research group](#).
 - Opportunities to pilot and evaluate emerging / additional analytics services and products.
61. In FE, we provide learners with access to affordable, relevant and compelling digital content (including eBooks) and resources through discounted publisher and vendor deals. We also provide learners with the opportunity to feedback on their digital experience through our digital experience Insights surveys, which help providers to design and implement learning spaces that successfully blend the physical and online learning experience.

Student/learner/staff experience

62. With the addition of the [Prospects](#) portfolio to the Jisc family we now provide career guidance and support services to more than 2m students as well as graduate market data for universities. We are exploring new ways to enable skills-led training. As part of our learning analytics work, we are helping to transform students' learning experiences and support their wellbeing through, for example, research into [student and staff wellbeing](#).
63. Our [Digital experience insights](#) surveys show how an institutions' students and staff are using the technology they offer, what is making a difference to their learning and working experiences and where improvements can be made. The aggregate UK data and findings from the 2021 surveys for [HE](#) and [FE](#) are freely available on Jisc's web-site, as well as other [reports/briefings](#) and [benchmarking toolkits](#).
64. We also provide tools that help institutions identify, manage and improve staff digital capabilities, and advice and guidance on staff well-being, effective digital pedagogy, learner engagement and online assessment. Our learning resources help practitioners and support staff discover, share and manage the use of relevant and compelling digital vocational content and resources.

Trusted partner

65. We play a role in supporting providers to perform at the forefront of best practice and in bringing communities together to tackle common problems and develop shared solutions. We are doing this through regional and national events, thought leadership activities and papers and advice and guidance – that are open to all, or through bespoke consultancy support.
66. We continue to work with UK governments in response to Covid-19 while planning for the future. In Scotland, Jisc has contributed to the development of sector digital strategy, capital funding requirements, and is has discussed affordable access to online learning with telecommunications companies.
67. Jisc's [catalogue of services for HE](#) and [catalogue of services for FES](#) can be found on our web-site.

Key priorities for Jisc 2021-22

Outcomes:

By 2022, Scotland's universities will be supported and feel empowered on their journey to embed digital at the heart of their culture

By 2022, Scotland's colleges will have access to digital services that will elevate the sector's ability to serve people as lifelong learners.

68. Our priorities include:-

Culture and leadership

FE:

- Continue Digital first leadership events and launch a Digital leadership and governance benchmarking service to assist providers with quality assurance
- Continue deep dives into selected topics as part of the [Shaping the digital future of further education & skills](#) research programme, collating and sharing the best examples of innovative teaching, learning and assessment practice demonstrated during the pandemic to establish a consensus on what "good" looks like.

HE:

- Continue to urge university leaders to engage with Jisc and the Learning and teaching reimagined [strategic investment framework](#) to help them to balance long-term planning with short-term investment. It includes tools and tactics that help answer institution's questions, and links to resources and case studies
- Continue to develop our consultancy working with universities to embed digital approaches within existing institutional strategies
- Our data and analytics portfolio includes tools used by 97% of the UK's HE sector and provides student, graduate, staff, finances, estates and community benchmarking and strategic planning insight. We will provide tailored datasets and consultancy support to ensure that data-based insight aligns with university priorities.

Learning, teaching and assessment

FE:

- Increase availability of augmented and virtual reality (AR/VR) licensed content to increase teaching/training opportunities and depending upon pilot success, launch a Curriculum and learning resource analytics service to help learner insight and experience
- Develop a new FE search and discovery platform for online content
- Provide new online course templates and teaching and assessment support.

HE:

- Discuss with universities our work helping an IoT to create a virtual classroom in HE to enhance the learning experience
- Jisc's [Future of assessment](#) report suggests that by 2025, digital technology will enable assessment that meets five key goals: more authentic, more accessible, appropriately automated, more continuous and more secure. We will explore how to help universities on their journey towards 2025 as well as sharing member stories to spread best practice across the sector
- Explore early ideas in teaching and research suitable for co-design support and which will address Jisc's 'Education 4.0' and 'Research 4.0' visions, developing those which show promise.

HE & FE:

- Develop an Artificial intelligence (AI) centre of excellence providing technology solutions and legal and ethical guidance to enable AI to enhance existing services and develop new services.

Student/learner/staff experience

FE:

- Introduce AR/VR licensed content
- Develop a careers explorer for FE service
- Sign-up 50 colleges to our FE [Digital elevation model](#) to inspire change to elevate learner and staff experiences, by July 2022
- Launch digital capability benchmarking service and pre-populated online course templates
- Provide advice and guidance regarding smart and augmented learning spaces.

HE & FE:

- Increase uptake of our national [learning analytics service](#) within HE and explore and develop new data integrations and new functionality to ensure that the service has parity (or greater feature sets) than our competitors. We will begin predictive analytics pilots to explore which type of analytics would be most beneficial within FE. As sub-set of this work we will incubate work on curriculum analytics, developing a suite of curriculum visualisations
- Continue to understand the requirement of wellbeing analytics (using digital and data to support the mental health and wellbeing of students) to inform innovation development
- Explore the potential to develop an analytics service for employability, in order to improve the employability opportunities for students and graduates
- Increase take-up of our [Building digital capabilities service](#), while continuing to develop and enhance the service
- Increase take-up of our [Digital experience insights service](#), while continuing to develop and enhance the service.

High quality teaching and learning: indicative outcomes

Priority	2019-20 outcomes	2020-21 outcomes	2021-22 outcomes (Subject to funding)
Building digital capability service	<ul style="list-style-type: none"> - 38 HE members (5 in Scotland) and 18 FE members (2 in Scotland) to take-up the service - Targeted promotion by Account Managers - Community of practice event at University of Edinburgh November 2019 	<ul style="list-style-type: none"> - 41 HE members (8 in Scotland) and 30 FE members (5 in Scotland) to take-up the service 	<ul style="list-style-type: none"> - 67 HE members (8 in Scotland) and 33 FE members (3 in Scotland) to take-up the service

High quality teaching and learning: indicative outcomes

Priority	2019-20 outcomes	2020-21 outcomes	2021-22 outcomes (Subject to funding)
Well-being analytics Curriculum analytics			<ul style="list-style-type: none"> - Continue to understand the requirement of wellbeing analytics to inform innovation development. - Incubate work on curriculum analytics within our learning analytics service.
Digital experience Insights	<ul style="list-style-type: none"> - Survey completed with a minimum return of 45,000 student, staff and professional services participants (5,000 in HE/FE Scotland) from 90 institutions (15 HE/FE in Scotland) with targeted promotion by Jisc Scotland Account Managers - Community of practice event to be held in Scotland 	<ul style="list-style-type: none"> - Survey completed with a minimum return of 50,000 student, staff and professional services participants (8,000 in HE/FE Scotland) from 90 institutions (20 HE/FE in Scotland) with targeted promotion by Jisc Scotland Account Managers. 	<ul style="list-style-type: none"> - Survey completed with a minimum return of 60,000 student, staff and professional services participants (9,000 in HE/FE Scotland) from 90 institutions (10 HE/FE in Scotland) with targeted promotion by Jisc Scotland Account Managers

How will this benefit Scottish institutions?

69. By increasing the number of Scottish institutions subscribed to our Building digital capabilities service, we will enable Scotland's universities and colleges to:
 - Enrich students' experiences and boost their chances of success in the jobs market by developing their digital skills
 - Support digital leaders and equip them to plan an effective digital transformation
 - Help staff understand why digital capability matters
 - Benchmark progress against peer organisations.
70. By continuing to explore well-being analytics, there is an opportunity to improve the efficacy of interventions addressing mental health issues in education.
71. While most learning analytics projects focus on improving student success, the rich data sources increasingly available to us can also be used to gain insight into the effectiveness of the curriculum. This is a relatively unexploited area which has the potential to significantly enhance our understanding of how to create engaging and effective curricula – to find out what is and isn't working for students.
72. Increased participation in our [digital experience Insights](#) service will ensure that more Scottish institutions are able to make better decisions, enabling staff to:
 - Plan digital transformation
 - Improve students' attainment and employability

- Realise the return on their investment in digital
- Track progress and benchmark their organisation against others nationally
- Demonstrate enhanced levels of student engagement
- Join a [community of practice](#) with online and face to face activities to support sharing of practice, and identify and understand unique trends in Scotland and in the UK.

Jisc to operate at high standards of efficiency and effectiveness

Context

73. The SFC strategic framework 2019-22 aims to make Scotland's universities and colleges systems successful, world-leading, coherent and sustainable. They will also be making best use of their resources. By subscribing to Jisc, and/or using its services, institutions will be in a better position to achieve this. However, we can only rely on institutional membership if we can prove that we are operating to the highest possible standards and that we are delivering the products our members want and need together with high satisfaction. Our members will also expect us to share services with other sector bodies, reducing duplication of effort and expense.

What Jisc already does

- Aims to address the balance of funding/income and to achieve a goal of 50% from non-grant sources.
- Run ourselves efficiently, ensuring that costs as a proportion of revenue grow less than inflation and aiming for an annual operating surplus of around £1m pa, while at the same time fully investing our restricted income in core purpose improved offerings.
- Conduct annual HE and FE leaders' surveys to measure the satisfaction of our members, achieving a % annual improvement of member satisfaction (using established baseline perception).
- Regularly review [HE core subscription](#) and [product/service portfolio](#).
- Maintain ISO accreditation for information security management and quality management system for our key services.
- Participate in the M5 Group of services, sharing back office systems and premises with other HE sector organisations.

Key priorities for Jisc

- Aim to break even with the 2021-22 budget.
- Maintain our core grant income and continue to improve the performance of Jisc Commercial, generating £1.3m in commercial income.
- Continue the strategic drawdown of our restricted reserves to fund Janet backbone and Janet access programme.
- Continue the improvements to our finance system through the Finance Transformation programme launched in 2021.
- Manage the investment portfolio to ensure that it supports Jisc's ongoing financial plans, within the criteria set by the board of trustees.
- Maintain 100% of HE and FE members subscribed to Jisc in Scotland.
- Achieve 90% satisfaction in UK HE and 91% satisfaction in UK FE in 2022.

How will this benefit Scottish institutions?

74. By being a more efficient and effective organisation, we will save our members time and money, deliver the products that they want and need, and build a sustainable business model that relies less on central funding and successfully creates income from other sources, and without compromising our offer to our core membership of HE and FE.

Savings, efficiencies and value

What Jisc already does

75. We recognise the importance of accountability to our funder and members. Since 2014 we have evolved our approach to present information that is based on stakeholders' requirements and that uses accurate and reliable data. In some instances, the collection of this data is outside of our control and has shown significant changes in the time that we have used it for reporting. These changes in quality have led us to adopt a more agile approach, moving away from a single global value, saving and efficiency (VSE) figure, to a set of complementary metrics that give a more rounded view.
76. Demonstrating the costs the sector is saving or avoiding through the use of Jisc services remains a key indicator we use. We also want to demonstrate to our funders that the grants we are given represent good value for money.
77. Our approach to reporting impact is based on transparent use of reliable data; where the data has limitations we will be clear how we have used it.

Our new approaches

78. Sector modelling based on detailed analysis of sample members:
- Findings from independent studies, supported by further feedback from other participating members, have enabled us to develop an indicative model of the sector-wide cost savings and costs avoided
 - Further studies cross another two HEIs, four FECs and one Sixth form college are expected to complete in late 2021. These will be used to update and validate the outcomes of earlier studies and evidence the high-level impact modelling.
79. High level impact modelling based on HE and FE data:
- The scale of Jisc's impact on sector efficiency can be estimated overall as a percentage improvement on HE and FE expenditure on academic services
 - This will also be calculated as a multiple of the funding and subscriptions Jisc receives from funders and members. This will be checked against the new independent studies.
80. Other metrics:
- We will also report on key trends in take-up, usage and other impacts of services, including carbon impact.

Key priorities for Jisc

81. We predict that Jisc's impact will grow through generating new and enhanced services for our members. Our priorities are to:
- Establish baselines for the impact of new services, using the new approaches outlined above and refine our methodologies to improve how we report on existing services.
 - Increase the number of services where we report impact, and - where relevant - continue to refine the existing methodologies as well as develop new ones. This will involve working closely with our members to understand what they want to see and what helps them understand the value and impact Jisc has.
82. As more of our services have moved to a subscription-based model we will distinguish between

reporting on the impact of core membership services and services which are subscribed-for separately.

Jisc

September 2021