Annual review
2018/19

Jisc

Customer satisfaction increased to

89% in FE and

88% in HE

2018/19

As a result of merging with Eduserv and combining our negotiations activity, we are now responsible for negotiations for over **50% of library subscriptions**. In addition, our software licensing includes the largest Adobe educational licence agreement in the world which contributes to the **sector saving £79m per annum**.

Controlled publishers' price increases at an average of 2% for HE and FE (compared to 5-6% on the commercial market), saving members

£128m

"There's a wealth of knowledge and experience in Jisc to help."
Alex Harding, Runshaw College

"Jisc has helped us to form our vision."
Jamie Lee, Goldsmiths, University of London

Saved 40 universities

£600k

with our new digital archives collective purchasing

"Jisc's recommendations helped me to get buy-in from staff as Jisc is very respected in the education sector."
**Michael Egan,
The Northern School of Art**

at a glance

29,531

students responded to our digital experience insights survey

"We've generated some excitement about thinking in a totally different way about higher education. Because, for sure, universities will not look like they do now by 2030."
**Liz Barnes,
Staffordshire University**

"For me, participating was transformational. It gave me opportunities to learn new skills and develop confidence."
Catherine O'Donnell, Ulster University

"Copac was a fantastic thing but Library Hub Discover has improved, enhanced and progressed it further!"

"...as a result, we will deliver a much stronger suite of leading-edge data-driven services for the benefit of all members."

Foreword

It's been a year of change in Jisc. We've taken steps to bolster our offer in data, cloud and digital solutions for the tertiary education and research sectors, which includes merging with Eduserv and welcoming HESA's data analytics team into Jisc. As a result, we will deliver a much stronger suite of leading-edge data-driven services for the benefit of all members.

In spring, we welcomed the launch of the government's education technology (EdTech) strategy in England and I am working to implement its aims on behalf of members as part of the EdTech Leadership Advisory Group. We're also proud to be working with the Welsh government on its 'Digital 2030' strategic framework for post-16 digital learning. This will help to ensure that learners in Wales have the digital capabilities and confidence to succeed in the workplace.

Following a shift in our funding earlier this year, we introduced a subscription model for FE in England. We worked hard with our colleges and sixth form colleges to navigate the way to subscription and I'm really pleased that all our FE members in England decided to stay with us in 2019/20. We will continue to work with every one of our members to ensure they receive maximum value from their Jisc subscription.

For the UK's research base, we continue to support members in the transition to open access, in line with Plan S and other funder policies. We are also investigating how artificial intelligence, robotics and other emerging technologies will affect the UK's world-leading research sector in the years ahead.

I welcome UKRI's recent report on boosting the capability of next generation infrastructure for research and innovation, which recognises the need for Authentication, Authorisation and Accounting Infrastructure (AAAI) to enable researchers to access resources collaboratively, easily and securely. I'm pleased that Jisc will be chairing a new expert working group to explore both a framework and possible AAAI solution to support the report's aims.

We'll also be continuing to make it easier for universities and colleges to embark on innovative projects with Jisc-assessed EdTech startups as part of our 'Step Up' programme. Twelve startups are already working with members and we're aiming to assess another 50 businesses in 2020 to ensure our members can quickly and confidently access the best solution-driven, procurement-ready innovation.

I am grateful to all members, colleagues, funders and owners for being part of the journey this year. As we embark on a new year, I look forward to working in partnership with colleges, universities and research institutions to help make our shared vision for digital transformation a reality across the UK.

Paul Feldman, chief executive

Introduction

This past year has seen much change for UK education and research and it shows no sign of abating. We're working hard with members to prepare for whatever lies ahead and, in particular, to ensure that the strong relationship and powerful connections we have across the European research and education community remain unaltered, whatever 2020 holds in store.

Despite the uncertainty, there has been plenty of positive progress in the sector that provides a strong foundation for expanding innovation in UK further and higher education. This annual review highlights many examples, in universities and colleges across the UK, of the very tangible benefits of working in partnership to achieve digital transformation. From a chatbot called Ada at Bolton College to Goldsmiths' move to the cloud, Education 4.0 in action at Abertay and Staffordshire Universities to Runshaw College's cyber security journey, members' impressive achievements are an inspiration to us all.

Research is also changing. Increasingly, research both shapes and is shaped by the convergence of a range of 4.0 technologies, with shifts towards massive and complex datasets, machine-learning tools and new computational techniques. At the heart of our support for UK research is the Janet Network, which is seeing traffic double every 18-24 months over the last decade, and I am pleased that this year we successfully completed the third and final year of the Janet mid-term upgrade programme. Janet enables Research 4.0 breakthroughs such as the vaccine innovation at Bristol University you can read about in these pages.

On behalf of the board I would like to thank all members, staff, partners and funders for your ongoing collaboration and encouragement in enabling all of us together to continue to power the UK's higher and further education teaching, learning and research, and to be at the centre of its digital transformation in the exciting years ahead.

Professor David Maguire, chair of Jisc and vice-chancellor of the University of Greenwich

"This annual review highlights many examples of the very tangible benefits of working in partnership to achieve digital transformation."

Making e-books accessible at Leeds Beckett University

Having disabilities in university can be an isolating experience," says Tosin, who's studying dietetics at Leeds Beckett University. "I struggle to read printed material due to text size. Flexible, adaptable e-books should mean I have access to the same resources as my course mates."

For university students like Tosin, with visual impairments or learning difficulties, e-books can be a game changer. Adaptable fonts and background colours can improve visibility and clarity. With the right software, they can be read aloud. Without these options, some students simply wouldn't be able to complete their course.

Susan Smith, the university's learning support officer, helps students locate accessible texts for their courses. "We were finding that technical issues were stopping students using e-books," she says. "We had this whole group of students who didn't have as equal access as their peers to the books they needed."

Susan and her colleagues often had to go back to suppliers to request e-books in different formats or to get accessibility information. With around 3,200 disabled students at the university, each with a long reading list, the task was onerous and time-consuming.

Working with Leeds Beckett and 48 other universities, our Aspire project team set out to tackle this problem by carrying out an audit of suppliers' information about their e-books. It builds on the Aspire team's 2016 audit looking at the functionality and accessibility of e-books.

Susan and her colleague analysed the results from 54 e-book platforms and 87 publishers, and scored suppliers on how successfully they provided the information support staff and students needed.

"If we've got a choice between two different e-book companies, we're now going to look for the one that has both better accessibility and information about that accessibility," says Susan.

"Having Jisc's backing was really important – it's why this project worked so well. I'd advise other universities to join forces with Jisc and get the weight of their expertise behind you."

"I'd advise other universities to join forces with Jisc and get the weight of its expertise behind you."
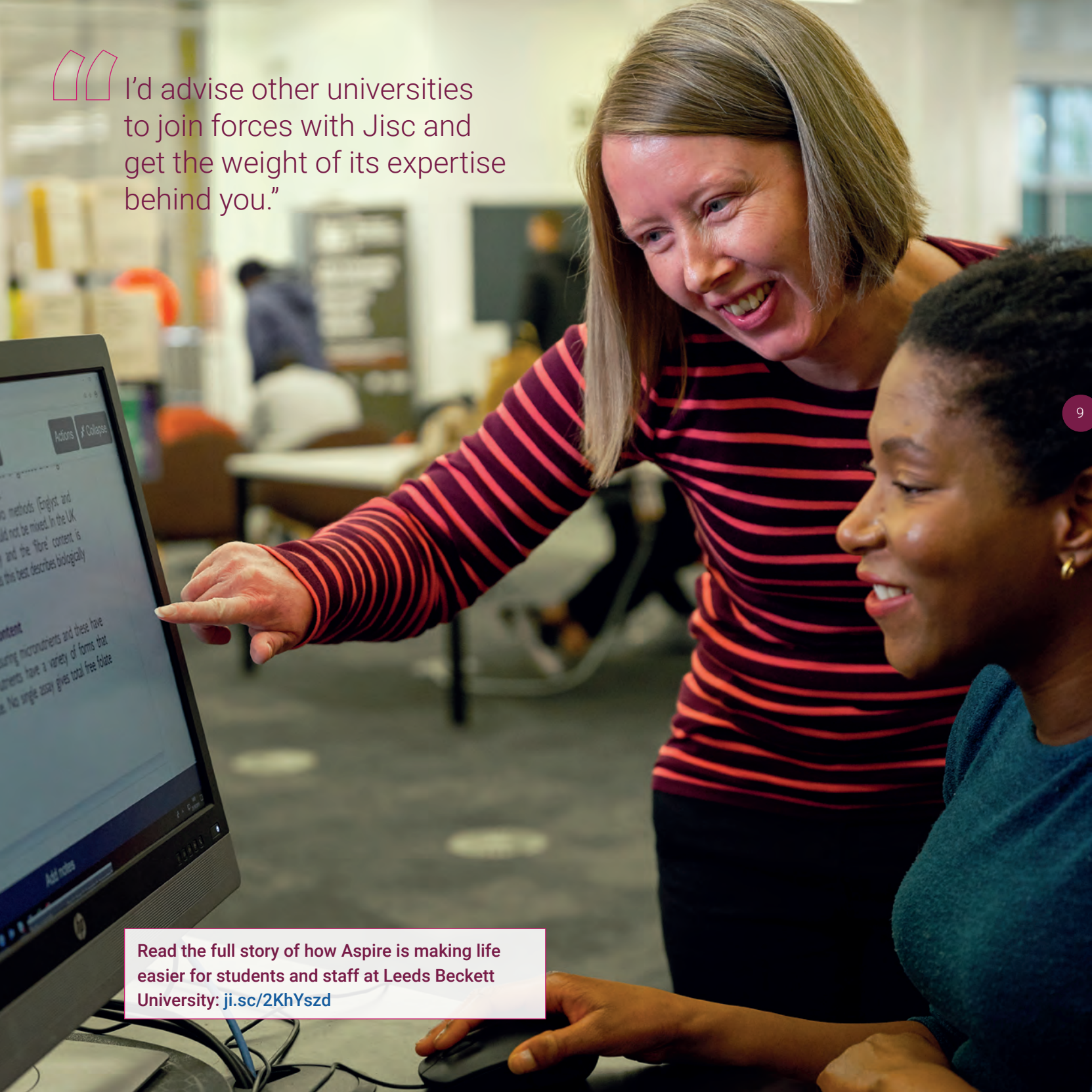
Read the full story of how Aspire is making life easier for students and staff at Leeds Beckett University: ji.sc/2KhYszd

Supporting students to stick with university at Abertay

The student population at Abertay University bucks trends. Of the Scottish students, 96% went to state school. Many are the first in their families to go to university. Over 60% are local, travel into campus each day and have jobs and other commitments.

Encouraging these students to fully engage with university life and achieve the best possible results can be challenging. The campus needs to feel welcoming and flexible.

So Abertay, following a new strategic plan to improve student progression, retention and attainment, took on an ambitious project to update its learning spaces.

Alastair Robertson, director of teaching and learning enhancement, attended the Jisc sticky campus roadshow. "That was quite a catalyst for us," he says. "We started to adopt the sort of technology on display at the roadshow and used many of the principles in our campus renovations."

The team also found the Jisc digital experience insights survey useful when they compared what they were doing with other institutions. "The survey has been fantastic for benchmarking, as well as getting staff and student feedback on our learning spaces," says Alastair.

And student feedback has been excellent. "The rooms are great for creative work. It's easy to visualise your materials and we have the ability to write on the walls, which is really cool," says Asha, a student who enjoys the blend of formal and informal spaces. "In a traditional classroom or lecture hall, students can be afraid to ask questions. That's not the case in this classroom. It improves the way groups can work together, and the lecturer can explain things."

Discover more about the impact of Abertay's learning spaces project: ji.sc/35LVZFP

The VLE challenge: how The Northern School of Art turned around its virtual learning environment

An unattractive VLE with an unappealing visual identity is a poor advertisement for an art school. If it's also hard to access and navigate, something needs to be done.

So, at The Northern School of Art, learning technologist Michael Egan took on the challenge to transform his college's VLE into a valued teaching and learning space. "I thought it would be best to bring Jisc on board to provide additional insight and get a second opinion," he says.

Two of our consultants went to the school for the day. "Jisc's recommendations backed up what I was thinking," says Michael. "They helped me to get buy-in from staff as Jisc is very respected in the education sector."

Michael put usability, engagement and accessibility at the fore and implemented changes to the VLE in summer 2018, ready for the new academic year.

The result? User engagement increased by 65.5% in a year and students have been delighted with the changes.

Read more about how The Northern School of Art solved its VLE headache: ji.sc/348YWQl

Delivering a digital education at the University of Sunderland

Sunderland University has an ambition to deliver truly digital education. With a long-term plan, the first step is to understand the big picture. So David Conway, head of the university's IT services, approached us for a financial X-ray.

"When you know how much you're spending, where your staff skills are and what your infrastructure looks like, you get a picture of your business and the role IT plays in that," says David. "The financial X-ray was incredibly useful in pointing out some areas where we were not investing and possibly should be, and some areas where we were spending more than we would like to."

Carrying out an **infrastructure review** and **applications review** helped inform plans to move to the cloud more rapidly. Then, using information gathered through the reviews, David wrote a proposition for the executive team, showing that the university needed to refocus its expenditure if it was to be truly transformational.

And so the '**digital first**' initiative was born, which includes a range of projects from online assessment and marking to going paperless to creating collaborative working spaces for staff.

Taking all their staff on a journey and reskilling them is essential. Sunderland is working with us and Microsoft to look at solutions such as LinkedIn Learning so that resources can be linked back to the digital skills framework, gaps identified and suitable development plans put in place.

"The key for us moving forward will be how we're supporting staff to build their digital skills. We know we've got some areas of real strength in the delivery of digital education so we're using the champions network to make sure that, where possible, we're upskilling other staff," concludes David.

Read the full story of Sunderland's digital-first strategy: **ji.sc/2Dd07SL**

"The financial X-ray was incredibly useful in pointing out some areas where we were not investing and possibly should be, and some areas where we were spending more than we would like to."

Sensors and satellites: training the farmers of the future

From learning to milk cows using VR to predicting harvest conditions by interpreting data, technology is altering the way land-based specialist Plumpton College teaches students the skills they need for the changing rural economy.

"Digital technology is just going to get more and more embedded in industry within the next 10 to 20 years," says James Maltby, learning technology manager at Plumpton College in East Sussex. "We need to make sure these skills are fully developed into the curriculum now," says James. "So our students are prepared for the future."

The focus at Plumpton is on blended learning: mixing digital technology with traditional teaching practices, which includes investing in 360-degree video technology and using virtual reality headsets in the classroom.

"I've been to a lot of Jisc workshops," says James. "They have helped me understand blended learning on a strategic level and how we can start embedding it at Plumpton. That's been a huge benefit of our collaboration with Jisc." Another benefit is how his account manager's expert knowledge makes it easier for him to collaborate with other local colleges.

"Things are constantly changing with technology. If you're going to keep up, you need to be looking outwards all the time. Our relationship with Jisc is a way of enabling that. It's collaborative, which is really important for the college's long-term approach to digital technology."

Find out more about VR in land-based courses:
ji.sc/2rYkmkZ

Moving fast and thinking radically at Staffordshire University

Staffordshire University's 2030 strategy aims to make it the UK's leading digital university. It's an ambitious goal with staff and student digital capabilities at its core.

One key to its success is 'digital champions'. They may be students, academics or professional staff but they have traits in common: they embrace change, enjoy trying new digital things and are keen to share their enthusiasm with others.

"They can take other people with them because they can translate digital opportunities into meaningful contexts in their local areas and take a peer-to-peer approach," says vice-chancellor and chief executive Liz Barnes

She believes Education 4.0 technologies such as artificial intelligence will change curricula radically. "We're saying every subject will be interdisciplinary. Students will choose if – and how much – they blend their learning, and whether they come to campus or not.

"We've generated some excitement about thinking in a totally different way about higher education. Because, for sure, universities will not look like they do now by 2030," says Liz.

Read the full story: ji.sc/2xnqZgd

Cardiff Metropolitan University: putting people at the heart of digital strategy

"Our ambition is that digital is threaded throughout what we do," says Paul Riley, director of library and information services at Cardiff Metropolitan University. "It will drive everything, from carrying out excellent research to increasing student numbers, helping to provide a first-class student experience."

We worked with Paul to put staff and student experience at the heart of the university's digital strategy. The aim is to support more students to reach their potential and for the university to be an employer that uses digital to support communication, collaboration and productivity.

"Our new digital strategy looks at what business problems could be resolved by taking a digital approach and how we use digital to enable us to hit our organisational strategy," says Paul. "Before we were concentrating too much on technology, rather than people."

Paul took part in our digital leaders programme, a four-day course which looks at creating a digital strategy that enhances learning and teaching. Paul says he learnt how storytelling could support him to get buy-in for change from senior staff.

"The course provided space to reflect and think about what we were looking to get from a digital strategy," says Paul. "I learnt to tell the story about what I wanted to do with the strategy. "

Our digital experience insights service focused Paul on the student experience and influenced the university's strategic direction with digital. It includes a short survey which gathers students' expectations and experiences of technology and offers comparative data from other institutions. The university had done their own student surveys in the past but Paul says this Jisc-branded one saved time, and provided credibility and objectivity.

Indeed, the ambition is for this current digital strategy, which runs to 2023, to be the university's last. "The Jisc digital leaders programme encouraged us to ask if we actually needed a separate digital strategy at all," says Paul.

Discover more about Cardiff Met's digital plans in the full story: ji.sc/2CiuAPa

Investing in digital to make a difference

When you're spending significant sums on digital infrastructure, transformation projects and supporting students and staff to develop digital skills, there is immense pressure on budgets and resources. To make well-informed investment decisions, you need credible data. That's where our digital capabilities framework and digital experience insights service come in.

It was really invaluable to have a ready-made solution, especially for a small institution without the capacity, time and resource to develop something like this. It is a great end-product based on years of development, all done in consultation with the sector."

Phil Vincent, educational developer (TEL) at York St John University

I feel passionately about taking part in the insights survey because I use a lot of the university's digital resources and so I wanted to point out the areas that I thought benefited me and areas that I thought could do with some improvement for future students coming along."

Rachel, student, University of Stirling

I think it is really important that other students can get involved with the conversation around digital technologies because technology is so widely used everywhere in every job role."

Josh, student at City of Wolverhampton College

Read more stories about how our building digital capability service and digital experience insights service are providing valuable data to universities and colleges: ji.sc/2VWVljv

Hello Ada

"If you're feeling anxious to go up to a teacher because you feel like what you want to ask might seem wrong or a bit silly, you can ask Ada and it's restricted to only you and Ada knowing what the question is. I think every college should have Ada."

Brandon, B-tech level three computing

Students at Bolton College use a chatbot, Ada, to find out everything from when their next class is to how far away they are from the nearest cashpoint, while tutors save huge amounts of time on data wrangling thanks to their virtual team member.

"When I first heard about the project, it did have a bit of a science fiction feel about it. It is now clear it is having a genuine impact on learners," says Bill Webster, principal and chief executive.

"We're up to over 80,000 inquiries in two years cumulatively. It's making life easier for students to access straightforward information. It is reducing the time that staff are spending answering mundane questions. I think the natural consequence is that it will save money through being more efficient. We're freeing staff time up to spend more time on the learners' individual needs rather than the administrative burden.

"We've got a very close partnership with Jisc. They've been enormously supportive. I'm absolutely clear that Jisc will be part of our plans going forward."

Watch Bill and other Bolton College staff and students talk about what Ada means to them: youtu.be/NN8RTEeKz7E

How big data could vaccinate the world

"Half a century ago, many people started to think that infectious diseases had been solved. And we were totally wrong. Infectious diseases have never been more of a problem than they are today," warns Professor Adam Finn, University of Bristol.

For more than 300 years, we've depended on vaccines. But vaccines need to be kept refrigerated – difficult where adequate power supplies are a major challenge – and we do not yet have prevention for all diseases. Then there is virus mutation.

The answer may lie in a new class of synthetic vaccines now being developed, with proof of concept being tried on the chikungunya virus.

We call it the ADDomer," says Professor Imre Berger, University of Bristol. It's a protein engineered to resemble a virus, to which are added small, harmless pieces of the actual virus "so when the immune system sees it, it develops antibodies against it, which will protect when the real virus arrives."

It is a stable vaccine type that does not depend on refrigeration, can be mass produced at low cost and can be developed rapidly in the wake of virus mutations. And it is made possible by big data.

Berger explains: "We had to know the structure of the ADDomer at near atomic resolution. This we determined by cryo-electron microscopy, which yields literally thousands and thousands of images of your particle."

Research software engineer Dr Matt Williams continues: "By using very advanced reconstruction software packages to align, classify and then reconstruct, we were able to get out a full 3D surface model of the particle."

This was achieved using fast, high-volume cloud computing; getting the massive amounts of image data to the cloud demanded fast, high-volume connectivity. Enter Janet.

"If we hadn't had access to the high-speed Janet Network, we would have to use smaller amounts of data in our analysis, which would have resulted in a lower resolution. We wouldn't be able to do our jobs," concludes Williams.

"If we hadn't had access to the high-speed Janet Network … we wouldn't be able to do our jobs."

Discover more about this potentially life-changing project in a video with the researchers: ji.sc/addomer

Cloud with clarity

As Goldsmiths, University of London finalises a major cloud implementation, head of infrastructure services Jamie Lee explains that it is more than just an IT project.

As well as delivering IT services faster and with agility, resilience and lower costs, the planned project is also about fostering a digital culture.

To support the plan, Jamie is seeking investment in skills, resilience and connectivity – providing an extension of the data centre and a platform for innovation.

Of course, change like this can be challenging for a small IT team as it moves from a traditional, on-premise model. But Jamie has been aided, he says, by the "critical friend" he has in Jisc.

"Jisc has helped us to form our vision – and to stay true to the vision we had when we began the journey. They've helped provide clarity with approaches – and having experts that have experienced cloud adoption, and migrations within the sector, has been a huge plus."

Read more from Jamie about Goldsmiths' journey to cloud: ji.sc/2YgN7ER

Runshaw College's information security journey

Runshaw College's starting point on its information security journey was "effectively nothing," says Alex Harding, IT services manager. "We had basic antivirus provision and email security but no big-picture thinking on information security. No policy, no frameworks, no tracking of incidents. I think much of FE is in that situation."

With financial constraints, the college needed to build from the ground up.

"We started with the basics: a comprehensive and ongoing risk assessment, some overarching policies and then policies in specific areas such as password management and encryption. And, of course, Cyber Essentials.

"Increasing awareness across all staff – both teaching and support staff – is always the greatest challenge and is where the biggest risk lies. We've been taking the approach that it's like health and safety – it's everyone's problem.

"There's a wealth of knowledge and experience in Jisc to help with those foundation steps and starting out. That's been a big win for us. We've learned a lot from the Jisc security team."

Read the full story: ji.sc/2Q9Oyn1

Swansea University gets connected for Education 4.0

A-level physics student Sam, apprentices Jane and Mohammed, engineering undergraduate James and experienced engineer Sarah are designing a new part for an aeroplane. They represent three further education colleges, one university and a global company, all based in Wales. Each is in their own institution using video conferencing to work together on the engineering challenge.

It's a vision of how Paul Holland, dean of educational technology at Swansea University, sees the Growing Comms project working.

"It means we can collaborate more effectively with local further education colleges and be more aligned, helping students through their education journey. It also helps them to work in teams with different skillsets – as they will need to in their future careers. Growing Comms is an example of Jisc's vision for Education 4.0 – when student experiences improve because of advanced technology," says Paul.

The project is a collaboration between Swansea University, Gower College Swansea, Pembrokeshire College and NPTC Group of Colleges. Each of the four institutions involved will have an active learning space they can use to teach in, link to partner institutions for collaboration and host industry-led innovation events. The spaces are currently being designed and will contain furniture and technology which directly involve students in the learning process.

"This allows students to go deeper and do more design-based learning, rather than the traditional method of a lecturer stood at the front transmitting knowledge," says Paul.

The partnership aims to support further education students to learn more about what higher education is like and the institutions will work together to find ways for students living in remote areas to stay in education without having to come into college, improving employability across Wales. "I trust Jisc to help facilitate this process and be a partner in the work," says Paul.

> **Read the full story of the exciting Growing Comms project: ji.sc/2NpeauF**

"Growing Comms is an example of Jisc's vision for Education 4.0 – when student experiences improve because of advanced technology."

Fine-tuning resources at Morley College London

The cost of tuning 33 pianos twice a term will strike a familiar chord with many music departments. But what if only some of those instruments need it?

Since attending a Jisc event on intelligent campus, Jon Cole, head of management information services at Morley College London, has been working with Jisc and tech company Safehouse to explore ways sensors can capture data from around campus to inform decisions and save money.

"Grand pianos and harpsichords must be kept in tip-top condition and that costs. If there's data available that helps us to reduce that, we want to find it," he says. "Thanks to funding from Jisc to pilot Internet of Things technology, we've installed two types of sensors into 35 instruments. One captures data on temperature, humidity and light while small accelerometers measure the intensity at which the instruments are being played.

"We hope that once the data starts populating the dashboards Jisc has built for us, we will begin to see how we can be more efficient with our maintenance. Who knows, if we find that some pianos are being played too intensively, we may even be able to use the data as a teaching aid."

Read the full story at:
ji.sc/2mzAln6

Driving data dashboards at Ulster University with analytics labs

"During 20 years in HE as a teacher, trainer, learning technologist and manager, I had never created my own interactive data dashboards. That changed when I joined analytics labs," says Catherine O'Donnell, **research and impact manager for widening access and participation at Ulster University.**

"Analytics labs is a Jisc CPD programme that brings together teams of data analysts from HE to learn how to use dashboards to help problem-solve key challenges the sector is facing.

It was also an opportunity to participate in agile development, collaborate digitally and understand the data landscape.

I was super-impressed with the quality and diversity of the dashboard outputs in such a short space of time and left feeling really inspired and motivated.

For me, participating was transformational. It gave me opportunities to learn new skills and develop confidence. What I gained personally also benefited my institution. I have since been able to create many dashboards using both external data available in the public domain and internal data."

Find out more about Catherine's experience in her blog post: ji.sc/2YuI5Uu

8,713
delegates

Sharing knowledge

116
events

Our events

Digifest
A unique opportunity to see, hear and share the latest thinking to inspire and prepare for the digital challenges ahead.

Security conference
Discovering the next generation of cyber security, together.

Networkshop
More than 200 IT and network professionals sharing ideas and experiences.

Connect More
Bringing together learning and teaching practitioners to share knowledge, celebrate best practice and explore new ideas.

Tech 2 Tech
Shaping the future of the Janet Network, together.

"The interactive manner of this training was very useful as it encouraged us to think things through rather than to just absorb information passively."
HE practitioner, on Hands-on incident response training

"It was a great mix of information and a chance to interact with Jisc and colleagues"
Delegate at Tech 2 Tech in London

Jisc training

46 training courses

Three new popular courses:

> Penetration testing: thinking like a hacker

> Introduction to VR/AR in education

> Managing emotionally challenging situations for frontline staff

We have also supported members through our free online briefings and clinics this year. Clinics have regularly brought together users of the eduroam service, govroam service, JiscMail and Cyber Essentials.
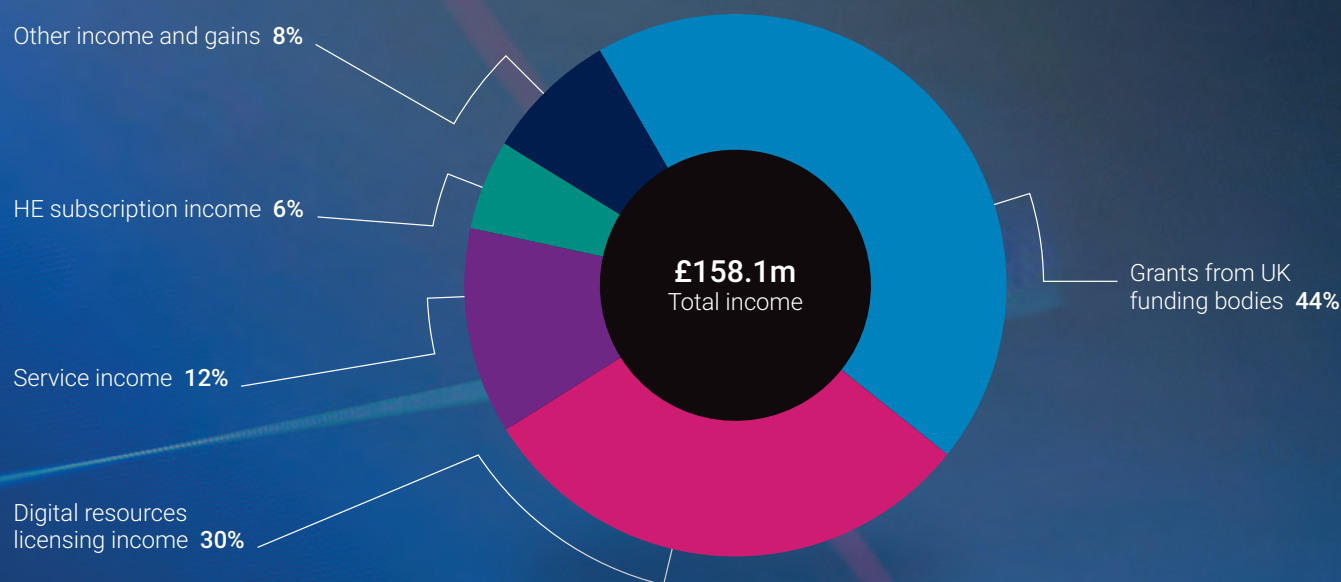
Our Prevent awareness-raising workshop ran

37 times, training

510 delegates

"Extremely beneficial day with solid action points when returning to work. Thanks for a great session!"
FE administrator, on Penetration testing: think like a hacker

Financial summary

Jisc income in the year ended 31 July 2019

Other income and gains **8%**

HE subscription income **6%**

Service income **12%**

Digital resources
licensing income **30%**

£158.1m
Total income

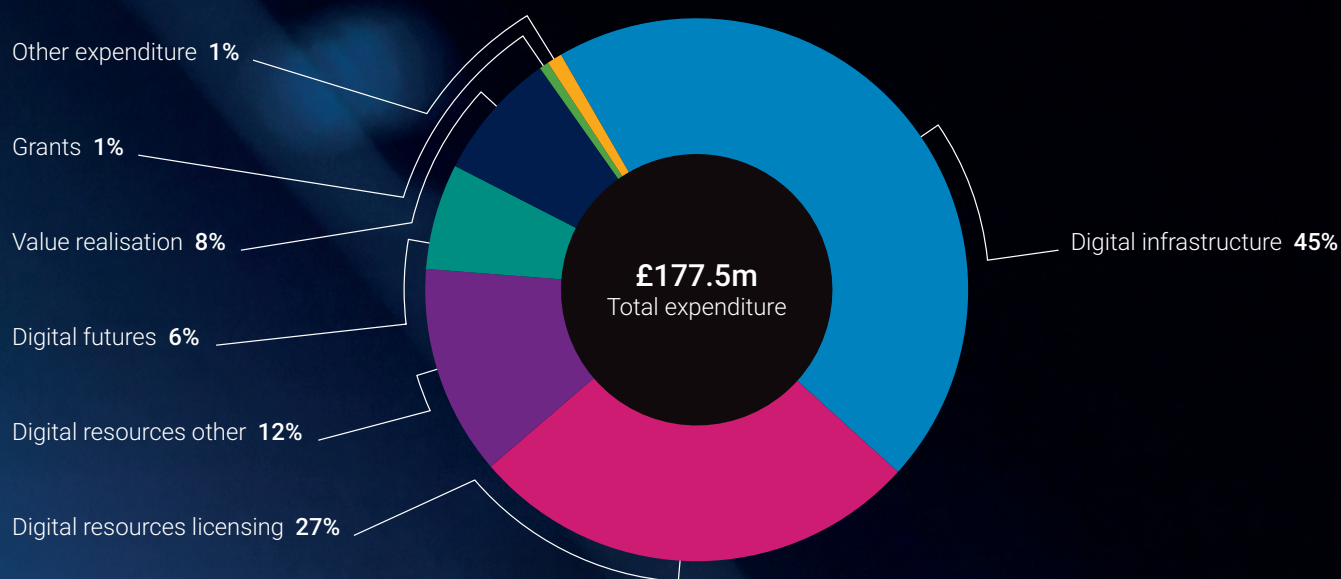Grants from UK
funding bodies **44%**

Income for the year was £158.1m (2018: £145.1m), an increase of £13.0m. This includes unreaslied gains on investments of £3.0m. The remaining income of £155.1m comprises £133.2m and £21.9m of unrestricted funds and restricted funds respectively (2018: £121.2m and £23.9m respectively).

The year-on-year increase in income was mainly due to an increase in income from charitable activities of £13.9m and a £2.2m gain on our merger with Eduserv, offset by a reduction in grant income of £5.5m. Our merger with Eduserv contributed £5.4m to income for the year.

Internally, we continued to make savings against budget. For the year to 31 July 2019 our operational costs were £963k lower than budgeted. Our net contract savings (where we have achieved a better price from a supplier) for the year to 31 July 2019 were estimated to be £531k and our net efficiency savings in year (from finding a more economical way of achieving the same result, for example by bringing more recruitment in-house) were £1,452k.

Jisc expenditure in the year ended 31 July 2019

Other expenditure **1%**

Grants **1%**

Value realisation **8%**

Digital futures **6%**

Digital resources other **12%**

Digital resources licensing **27%**

£177.5m
Total expenditure

Digital infrastructure **45%**

Expenditure for the year was £177.5m (2018: £146.1m), an increase of £31.4m. This comprises £162.2m and £15.3m of unrestricted expenditure and restricted expenditure respectively (2018: £129.7m and £16.4m respectively).

This was principally due to an increase in support costs due to the increase in the USS pension deficit recovery provision of £15.3m, additional investment in the network of £8.6m and higher licensing costs of £11.0m offset by lower technical and development spend of £6.0m.

Costs incurred in the ex-Eduserv operations were £5.0m. Of the total £177.5m expenditure, £174.9m (2018: £141.9m) was used on charitable activities.

The increased pension deficit recovery provision together with increased amortisation and depreciation has led to an overall deficit of £19.4m for the year.