University of Dundee

IT Report
2017
Director’s Foreword

I am pleased to present the University of Dundee’s IT Report for 2017. As you browse through the pages of this report, you will become acquainted with both the variety of responsibilities that UoD IT has for our community, as well as learn about the major projects undertaken.

I joined UoD IT in December 2014. Since that time we have all gone through huge changes and developments. We have brought over 120 people together over the last few years and it has been a truly transformative experience. We decided that because this was the first of our new series of annual reports, we should start from the inception of One IT in those early days under Paul Saunders.

We have made great progress this year in delivering our much improved network service, and in conjunction with new laptop client technology and securing our mobile devices for staff, we are well on our way to re-imagining how and where we can work and seamlessly collaborate. We have made good progress on ambitious projects with colleagues across the University such as the implementation of OneUniversity, as well as upgrades to services such as My Dundee and SITS.

I have been proud to review these pages and the biggest challenge has been the activity and developments that we have had to leave out due to space limitations. The defining characteristic of the group of people who are behind these colourful pages is a common desire to improve the performance of both IT and the University. It is their passion, dedication and commitment to improving themselves and the services we provide that make working with them and others across the University a rewarding experience.

The ultimate goal of our work is to provide technology services that enable the University of Dundee to achieve our aim to transform lives, locally and globally through the creation, sharing and application of knowledge. We look forward now to 2022 and the new University strategy, aligning Digital and IT strategic plans, and being a key part of the University’s high performance community.

Dr. Jonathan Monk
IT Director, University of Dundee
## Director's Foreword

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## Thank You
AV    Audio Visual
BI    Business Intelligence
CISO  Chief Information Security Officer
CTIL  Centre for Technology and Innovation in Learning
DUSA  Dundee University Student Association
EUS   End User Services
HE    Higher Education
HIC   Health Informatics Centre
HR    Human Resources
IRIS  Innovative & Research Information System
IT    Information Technology
LLCCI Library & Learning Centre and Culture & Information Services
KPI   Key Performance Indicator
MSI   Medical Sciences Institute
PACS  Picture Archiving and Communication System
RDMP  Research Data Management Programme
REF   Research Excellence Framework
SAM   Student Account Management
UoD   University of Dundee
As a University, we have a big goal.

It’s ambitious and challenging. It’ll take commitment and unreasonable effort to achieve. It may take us 25 years of on-going energy to get there – and we may not succeed. But it’s better to shoot for something big than make timid and incremental changes.

We will become Scotland’s leading University.

- Professor Sir Pete Downes, Principal & Vice-Chancellor
The University of Dundee’s big goal was the primary focus of the Information Technology strategy to 2017. To succeed in achieving the leading status we all continue to strive for, the quality of the University’s supporting operations must be first-rate. We recognised that our part to play in that was a large one.

The University’s IT systems, people and processes had to undergo a step change to deliver on the University’s ambition.

We set out with a commitment to deliver services aligned to the following themes:

- Support the **student and staff experience**
- Deliver technology that enables the drive for **world leading research**
- Provide information and systems that allow us to make optimum **data driven decisions**
- Use IT **responsibly** by way of efficient technology, whilst reducing environmental impact

We established One IT as part of One Dundee to bring this forward and take us towards the University’s vision.

To stay unified in our activities and direction of movement, we relied on these principles:

- **IT Operational Excellence** We must strive to be the best at what we do to provide value.
- **Secure Compliant Computing** We will meet our legal and moral responsibilities in safeguarding data and make sure this is embedded in everything we all do.
- **Continuous Service Improvement** We must stay current with the rapidly changing landscape of the organisation and its desires for excellence.
- **Customer Service Focus** We will understand the opportunities and challenges faced by everyone we support and partner with them to develop solutions.

These guiding forces have allowed us to make informed choices, resulting in a significantly improved IT environment across the past three year period.
About us.

In 2014, we set out on an ambitious journey to transform how we do IT. Effective IT expertise already existed but the delivery was inconsistent and fragmented. The need to re-imagine what it could be took centre stage.
A new department

A choice was made to shift away from the organically developed structure of IT and re-organise into a hub and spoke model that leveraged existing talent, promoted financial transparency and enabled IT to transition from system-to-service. We created the One IT we are today.

High level progress summary
Most of the restructuring was completed in 2015. This involved:

- Designing an organisational structure
- Clarifying roles and responsibilities
- Moving existing staff into the new structure
- Recruiting new staff into residual vacancies

Over the past 18 months we have transitioned more than 5,000 IT related tasks and operations to ensure they are aligned with the new structure and responsibility passed to new owners. This has required significant ongoing activity in knowledge transfer, documentation and training.

Our attention has since focused on: maturing working practices, embedding and optimising processes, modernising technology, and embracing a business/customer focus approach. These are the things that will ensure we succeed in providing a fit-for-purpose, quality set of services that meet the needs of students and staff.

Internal initiatives have been setup to remove silos and take us towards being a single team that is collaborative and functions as a community.

We encourage inclusion, accountability and reinforce the fact that everybody works for the betterment of the entire organisation, not just IT or their own area within it.

All of these activities have contributed to a major cultural change for our department and the wider University. Many challenges have been faced, but definite progress has been made.
Evolving roles: People supporting service

A number of different, cross-cutting and complimentary customer-centric roles and remits have been incorporated into the IT structure. These are now bedding into their primary focus and have brought about a change in approach to how we interface with students and staff.

End User Services: Leading on day-to-day service
EUS is the customer facing front-end of IT. They comprise 45% of the University’s IT workforce, are the voice and face of the Service Desk, and deliver most of our services to students and staff.

Our four EUS Service Delivery Managers ensure that we have the best possible resources in place to meet changing demand and they coordinate major service incidents. They also work with other parts of IT to facilitate the smooth transition of new and changing services.

Knowledge transfer
When we appointed our EUS team, we started a significant journey to train everyone to the same standard. This helped our people to develop and deliver our services consistently. We have also learned that, while we aim to deliver a fairly standard service that is flexible to a degree of need, we all have to understand the different parts of the University in more detail to be able to be responsive at all times.

Therefore, we have started a programme of IT staff rotation to help build resilience in our knowledge of the organisation and develop both our people and our understanding of the University.

Key initiatives over the last period include:
→ Supporting high-profile activities such as:
  → Clearing, Matriculation, Welcome Week and the Saturday Evening Lecture Series.
  → Master’s Degree Show, where we worked closely with the School of Art & Design to capture student IT requirements. This allowed us to supply the equipment they needed to showcase their work and we offered support throughout the event.
  → Rolling out in excess of 800 laptops across campus to staff so they could benefit from portable, high specification work computers. This allowed them to start performing their tasks more efficiently and effectively, both in office and on the go.
  → Rolling out new PC’s in the Main Library, Dalhousie and Tower Basement Suites with 24 inch touch screens.
Business Services: Leading on corporate applications
Five Service Delivery Managers lead on our corporate applications within our Business Services division. Their teams work in collaboration with business users to provide innovative solutions to business challenges and day-to-day support for the applications which underpin the University’s: Student, Research, Learning & Teaching, Finance, HR and Payroll activities.

They partner with the business to identify areas for improvement within current procedures or processes and find ways to act on them.

Staying up-to-date with developments across their specialist sector allows them to deliver a responsive, flexible service. The teams are currently actively involved in the delivery of the Business Transformation programme, as well as supporting business as usual.

Business Relationship Management: A strategic cross-section
Each School and Professional Service now has an assigned Business Partner to ensure we understand differing student and staff IT needs. This role builds relationships to gain a clearer understanding of customer requirements, representing these within IT service delivery processes.

By feeding progress updates into established key stakeholder meetings and committees, they help to build a consistent strategic awareness of IT. This ensures a collaborative approach, whilst managing expectations.

Accessibility & Usability: Making inclusion and easy use the default
We invested in a new, joint funded resource with Disability Services. The Accessibility & Usability Officer helps to ensure what we do is fit for purpose and works well for all students and staff, and sits within a team (Technical Service Transition) which is heavily involved in project delivery.

In addition to working on new online services, ID cards, web design and policies, the first OPD course to support accessibility awareness was delivered in June. We will continue to build on activities like this to reduce the chance that someone is unintentionally excluded from using a system, service or resource, and ensure we continue to meet our moral and legal obligations.

Communications: Keeping everyone informed
We made funding a departmental communications resource a priority in our new organisation. Two roles were assigned to facilitate IT Communications so that we could make sharing our stories, operational activities and promoting IT services an integral part of everything we do.

Our requirement to communicate with students and staff is important to the work we do, and the relationship we have with the central Internal Communications team supports its coordination.

Key initiatives over the last period include:
- Major upgrades to most corporate applications, addressing many years of neglect, and establishing an annual cycle of maintenance that gives everyone access to recent versions of the applications.
- Transforming timetabling processes, including the delivery of appointments directly to academic calendars and improving student access to timetables.
- Transforming the student admissions process, enabling students to interact with the University securely online, including the payment of fees.
- Streamlining the invoice matching process for Finance.
- Incremental migration of services to the cloud, offering improvements in performance, resilience and capabilities.

IT Report 2017
We want to empower IT staff to actively discuss their services and IT Communications facilitate that by ensuring their messages:

- Reach the right people at the right time via audience targeting
- Have greatest impact via consideration of content types
- Can be understood and use a consistent language and tone
- Are delivered through trusted University channels

Establishing IT Buying
Previously, a significant amount of spend for IT took place outside of IT. Our aim, in line with One Dundee, was to shift to a consistent ordering process managed by UoD IT. Over the last three years, we have made significant progress in consolidating this ordering. As a result, we have processed over four times the volume of orders when we compare 2014/15 with 2016/17.

Our intention when formalising IT Buying was to standardise on PECOS with a strong adherence to frameworks using only approved suppliers in compliance with procurement rules and legislation.

We have significantly improved the quality of information contained within PECOS orders to facilitate a clear audit trail. This has required a new team with new skillsets to be created in partnership with the other parts of IT and the Finance Procurement Group.

Pictured above: Percentage of IT spend processed by UoD
New ways of working: Industry best practice enabled by technology

We formalised many aspects that relate to the way we operate. Most of our fundamental processes are now in place, training has been provided and an approach of continual service improvement introduced to enhance them over time.

Governing what we do

Our new governance structure was accepted by the University Executive Group in December 2015. This included re-aligning the Information Management Committee and creating three new Sub-Committees to support key IT work streams.

Various service-specific steering and working groups have been established (e.g. Student Systems, Research Administration) to provide an inter-department forum for discussing and agreeing the detail of functional requirements, scheduling and delivery of services.

→ The Information Management Committee provides a clear performance accountability forum to monitor the management of information across the organisation and inputs into the University’s Digital strategy.

→ The Projects Portfolio Sub-Committee provides an inter-department forum for assessing the prioritisation and high-level scheduling of IT projects, ensuring that University-wide requirements are considered and an impartial approach taken.

→ The Enterprise Architecture and Innovation Sub-Committee. Plans are in place to convene this group during 17/18 to provide standards around information, data and technical architectures to ensure that a University-wide approach is taken and followed when introducing or significantly changing existing IT services.

→ The Data, Records and Information Sub-Committee provides a framework for approving policies that relate to the management of data, records and information security.
Replacing our Service Management System (Help4U)

In February 2017, the department went live with a new Service Management tool.

We use our Service Management tool to:
- Manage requests for service from students and staff¹
- Identify, record, manage and resolve incidents² and problems³ to improve user productivity and continually improve our services
- Control changes to the live infrastructure⁴
- Manage our assets

This project achieved the first iteration of a single, industry-standard, technology that we now work within to administrate services in IT. Other resolver groups from across the organisation (e.g. Web Services and CTIL) also joined the tool to run their services. This has also improved how we manage anything IT related that interfaces with other service providers.

The provision of information about our assets, including client hardware and software, allows our teams to help students and staff more quickly and accurately, and track the lifecycle so that we can be more proactive with replacing hardware in the future.

Post-introduction, we no longer have to use multiple, duplicate systems and processes daily to function, and the effort involved in supporting the University’s needs has improved. One source of data is now available to provide IT performance metrics and a Virtual Service Desk⁵ model has been implemented.

This means we are more efficient and have greater visibility of what we do.

Managing changes to the live environment
The move into the new tool prompted a review and redesign of the change control approach that had been in place for five years. Training was provided to all IT and IT related staff.

At the time of writing, over 360 changes to the University’s live environment have been delivered through the new process, which went live on the 14 February 2017.

Auditing the services we provide
We built up a comprehensive list of IT services⁶ with identified business and service owners.

Capturing this view of what we offer and support as a collective One IT has been imperative and it will continue to be developed and revised. This will help our users to better understand and access the services we provide.

Storing and sharing our knowledge
Improving efficiency by reducing the need to rediscover knowledge is one of our priorities.

An exercise to gather, analyse, store and share information in a managed way within our new system is ongoing, which will:
- Make IT staff responses more consistent
- Increase our first contact resolution rates
Developing service metrics
The new system has given us a measured understanding of IT services like never before.

The metrics it provides allow us to monitor service effectiveness in a data-driven way and in turn, introduce targeted improvements.

As simple examples, we can now:
→ track how many calls we get per month (top right), and
→ when those calls are logged (bottom right).

We can also pin point which IT components are causing problems or taking the longest to fix, helping us identify where investments are most viable.

Maturing towards proactive organisation-wide digital collaboration
Emphasis was placed on developing performance and maturity metrics for the department, so that we can begin to benchmark against ourselves and industry standards, and expand our capability.

Pictured to right: UoD IT Maturity Scores. Source: Gartner Enterprise and Infrastructure & Operations Maturity Levels (2013).
We have introduced a series of Gartner Indexes to measure our maturity in specific areas on an annual basis. We use this to set targets and track progress towards a digital partnership role with the rest of the University, rather than a stand-alone set of supporting services.

**Deciding what projects to do and when**
We began to address the projects backlog that had arisen due to a historic lack of capacity and build-up of legacy problems. We worked with other areas of the University to develop a new process, which saw us start to streamline our approach and set out basics such as:

- **Phase identification** providing a better view of projects that are still at concept stage or that are actual requirements for the IT department to deliver.
- **A University-wide IT project roadmap** displaying an overview of what projects will be delivered, when over the next two financial years where known.
- **Prioritisation mechanisms** including a benefits vs value/risk calculation to allow factual comparisons between requests to be made.
- **Risk complexity assessment** of each request (e.g. major, medium) to determine the most appropriate means of delivery and ensure the project controls applied do not over-complicate.
- **Regular high-level reporting** on project progress to provide transparency across the organisation.
- **New project documentation** around roles and approaches to ensure that projects are delivered flexibly and rapidly, but with an appropriate level of governance.

Discussions to ensure the method is more closely aligned with the organisation’s Annual Planning process are taking place, so that future budgets are set with clear expectations of what will be delivered.

Whilst significant improvements have been realised in IT project delivery, more are to come. The framework is in its infancy, but its existence is allowing us to become the trusted project stakeholders others want to partner with.
Valuing people: Working together in our environment

The focus on our One IT staff members has remained beyond the restructuring. A great deal of cultural and leadership activity has been undertaken and attention paid to the spaces we operate within.

All staff meeting

Introduced in 2014, this aimed at providing a monthly, away from the desk experience for all IT staff. It allowed us to get to know each other and we continue to come together regularly via this forum to hear updates on priorities and progress.

A recent survey provided evidence that the meeting is viewed as a valuable opportunity and it will remain, with various suggested improvements, as one of the internal mechanisms for supporting departmental communications.

All of this feeds into making us a better functioning collective and takes us towards becoming the high-performing team we want to be.
**Culture and Communications**

It is essential that our culture is embedded and that it aligns with the University’s desired one. A committee that focuses on rebuilding and fostering positivity, trust, appreciation and respect, and improving communication between colleagues within IT was established to encourage this.

This group carried out a staff survey to gain further detail on how we can achieve the organisation’s goals together. Responses have since shaped further activity across the department.

**Enhancing our working environment**

Refurbishment of our office locations through working together with Estates and Buildings has been an ongoing activity.

What we do is diverse and the spaces we use needed to facilitate that. For example, we are becoming more collaborative and exploratory, but the demand for short catch-ups remains.

A multi-functional space did not exist to suit this range of requirements, which led to the redesign of a large room (C04) in the Computing Centre, City Campus. This room will be opened up for wider use in due course to help break down inter-department barriers and improve transparency.

The reception area in this building looks more welcoming following a refresh, and a dividing wall between it and the remainder of the ground floor has allowed one of our service delivery teams to make best use of the available space.

Becoming more mobile is high on our agenda, which saw us move to predominantly using laptops combined with docking stations and monitors. This has expanded our ability to hot desk and work between campuses, increasing our overall productivity and resilience.

**Connect IT**

A number of social, training and team building exercises have taken place as a result of this autonomous group (examples given at bottom of page), which promotes internal initiatives that allow our staff to bond, improve morale and develop camaraderie across the organisational structure.

This strengthens our professional relationships within One IT, whilst raising funds for our local nominated charity. All of their activities underpin a simple goal – to foster an environment where morale is high and staff are valued and motivated to provide a first class service to students and staff.
Outwith Park Place we have made significant improvements to other sites we work at:

→ Our team at Ninewells moved from an office on Level 8 where no one could find them, to a purpose built location on Level 7 close to high levels of student and staff footfall.
→ We now sit side-by-side with Library colleagues in the Main, Duncan of Jordanstone and Kirkcaldy Libraries to provide a shared service. This has allowed us to work in partnership to share support for particular tasks such as performing password resets, helping us better manage queues at certain times. Feedback on this suggests it has been positively welcomed.

Surroundings can have a big impact on team morale. Our continued intention with this programme of upgrades is to provide quality spaces that are flexible enough to accommodate both the social and professional aspects of the IT staff work day, and that allow us to interface better with others.

CO4 contains a:

→ Large open seating area for group meetings that can be flexibly split into 2 U’s
→ Number of individual pods, each with its own screen for smaller scale meetings
→ Single high table intended for quick meetings
Empowering staff to train others
IT contributes to University-wide learning via OPD. The sessions we offer are delivered solely by our IT Trainer at present, but this is changing. Instead, training responsibilities will be distributed across our entire workforce, allowing our staff to further expand their knowledge and/or apply it in a new setting. Volunteers have been mentored via workshops designed to develop their confidence, so that they can ultimately facilitate IT courses themselves.

Service and support annual conference
As the key role of EUS is to support the delivery of all IT services during our opening hours, it is impossible to hold meetings where everyone can attend. However, supported by the rest of IT, the team held its first one day annual conference to reflect on the previous year and consider future developments.

Feedback from the event was positive as team members were able to put faces to names and understand different perspectives about our direction of travel. Sessions included work on how to improve the quality of interactions with users, staff rotation, and how EUS contributed to the IT Strategy.
IT Financial Transparency.

UoD IT spend over £10M every year on a wide range of activities. Our staff account for 57% of our spend with the remainder split between software and hardware.

We continue to focus on optimising our costs to deliver the best service.
Financial comparison

We regularly compare our financial performance against a global pool of mid-size enterprises in education provided by Gartner.

This allows us to compare our allocation of finance against the rest of the sector and ensure we remain competitive. As can be seen, we spend less on hardware which we attribute to our focus on migrating services to the cloud, rather than investing in on-premise systems.

Investment highlights

Hardware: We invested over £450k on Audio Visual Display equipment, including new projectors for every room in Dalhousie allowing a cascade of projectors throughout the campus.

We allocated almost £250k on client devices across the University, even before we took over the budget for Professional Services’ IT spend. This helped to remove computers which were out-of-date or did not meet minimum criteria.

We spent £260k refreshing IT Suites; all student computers are now All-In-One touchscreens with the latest specifications. On the enterprise infrastructure front, we invested £77k on cabling outside of the network project and £83k on Dell EMC servers and storage to ensure we have capacity and performance.

On personal computing and client devices, we have purchased the following from HP:

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
<th>Spend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laptop - 820s</td>
<td>539</td>
<td>£275,512</td>
</tr>
<tr>
<td>Laptop - 840s</td>
<td>610</td>
<td>£307,499</td>
</tr>
<tr>
<td>Small Form Factor</td>
<td>361</td>
<td>£181,399</td>
</tr>
<tr>
<td>All-In-One’s</td>
<td>782</td>
<td>£99,270</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,292</strong></td>
<td><strong>£1,230,383</strong></td>
</tr>
</tbody>
</table>

Software: We purchased Apps Anywhere which will enable streaming of applications to any client, enabling total flexibility of application deployment during 17/18. We also procured our new Service Desk system (TOPDesk) through G-Cloud and took advantage of locking in the pre-BREXIT prices for our Microsoft agreement, which took effect in January 2017; this was was fixed for three years, resulting in considerable savings.

Top Software Costs in 2016/17:

<table>
<thead>
<tr>
<th>Rank</th>
<th>Vendor</th>
<th>16/17 Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Microsoft EES Campus Agreement</td>
<td>£325,304</td>
</tr>
<tr>
<td>2</td>
<td>ORACLE CORPORATION</td>
<td>£266,636</td>
</tr>
<tr>
<td>3</td>
<td>CISCO Telecoms Maintenance</td>
<td>£142,602</td>
</tr>
<tr>
<td>4</td>
<td>TRIBAL EDUCATION LTD</td>
<td>£126,894</td>
</tr>
</tbody>
</table>
We are committed to delivering an excellent IT service by providing continuous support and online platforms that streamline the journey of students and staff.

To further enhance the experience of our University community, we also strive to maintain a high standard of technology within our facilities.
Creating a single point of contact for support

Aligned to the University’s geographical footprint
When designing our structure, a clear decision was taken to assign a significant portion of the workforce to service delivery. As a result, our model aligns with the University’s geographical footprint and not its structure, so students and staff can seek IT help via any of our physical or virtual service points.

This setup means we can also redeploy our support team to meet the ebb and flow of the University’s activities, ensuring an improved response to issues and requests in a timely, satisfactory manner. We are starting to move towards meeting and exceeding expectations thanks to this boost in resource.

Virtual Service Desk
As part of our restructure, we changed how we provide a Service Desk. We opted to deliver this important function via the service delivery teams in a virtual format. This retains a connection to local service needs, instead of having a team based in one central location.

We now vary the number of staff providing the telephone-based Service Desk according to the University’s needs. More students and staff now have more of their calls answered and resolved on first contact because we deliver in a way which leverages technical competencies, whilst remaining customer focussed.

As we continue to train and develop our team, we will improve our level of first contact resolution, which we hope will mean more happy customers.

Out-of-hours support
Responding promptly to the needs of students and staff who work and study at different times of the day, and who are typically mobile or active in the evening, was something we wanted to address with our new structure. We also wanted to be more proactive towards the non-core hours work that the University undertakes.

The provision of an out-of-hours team who are located across our Library sites in Dundee has made a positive difference to the service we provide. All in all, this means that we now respond to IT service and support requests until 22:00 hours, seven days a week.
Enhancing learning and teaching spaces

New IT equipment has been installed in a number of key locations across campus, including projectors, digital signage, interactive displays and wireless microphones.

A consistent, high-standard of technology now exists across most spaces, making it easier for:

→ Staff to use different areas because they work in the same way
→ Us to provide a reliable room support service
→ Real-time content sharing between nearby areas during events

Library Mid-Floor Refurbishment

A huge amount of work has gone into this design and installation project to provide more group study rooms with the latest technology, and a bookable creative space with flexible furniture. This was completed in conjunction with Estates and the Library.

Supporting the International College

Six teaching rooms and one office were supplied with AV equipment for this programme. Two of the teaching rooms now have interactive displays and both in-house and vendor training was provided. Staff within the college are now able to work the technology and assist students in its use.

Standardising approach

We developed a range of AV/IT standards, which allow enhancements to be delivered more easily because we:

→ No longer have to go out to tender for every room upgrade
→ Can engage with our integrator at an earlier stage on projects
→ Follow a more cost-effective approach with better pricing and service

These were achieved with the help of colleagues in Procurement, and through collaboration with Estates and Room Bookings.

JISC Digital Classroom Roadshow

We were the only Scottish host of this event in 2017, which saw an entire digital classroom installed in Scrymgeour Hall.

Staff from across the University attended a series of internal workshops throughout the month of June that aimed to expose them to the possibilities of this active wireless learning environment. 156 registered to attend and two external workshops were also hosted, with attendees visiting campus from as far as Liverpool.

The event required substantial work to setup and run. It allowed us to raise awareness of the preliminary considerations and levels of IT support required to implement and maintain these types of environments.
Benefits include:

→ Sharper image projection
→ More visible alerts in public areas
→ Next-level device interaction
→ Excellent sound quality
→ Increased space for delivery of visual teaching content

It was clear that an appetite for this technology exists. We came to better understand the roles and functions of staff members involved in teaching delivery and supporting learning pedagogies as a result.

Pieces of the showcased hardware have since been introduced in the Main Library Mid-Floor to allow students to work collaboratively in small groups with multiple devices.

**Automating student and staff journey**

**Self Service Password Reset**
Prior to August 2016, students and staff had to contact IT to have their password reset. We introduced a new cloud-based system to the Office 365 environment to allow everybody to self-reset in the event they forget or simply want to change their password.

Empowering our community to take control of this has had a dramatic effect on the levels of calls being raised to IT and ensures nobody has to be locked out of their account until a help call is actioned.

**Paying fees made simpler**
We released the Student Account Management (SAM) module in eVision. This means students can now manage their tuition and accommodation payments to the University online, removing the need for them to queue to take care of their finances. Within the first six months of its release, over £5.5M flowed through it as a result of 4,638 transactions.
Fee handling used to be a largely manual process that resulted in a high footfall to the Cash Office. SAM’s introduction also means staff in Admissions & Student Recruitment, Registry, Residences and Finance now spend less time responding to face-to-face enquiries about fees.

Post-move, these are pushed back and forth more seamlessly. Intelligent matching of current students applying for further UoD study was delivered as part of this work, preventing account duplication. This means applicants get quicker responses via a common approach.

Replacing the residence portal
Induction and arrivals processes were manual and hard to track so we worked with Student Services to deliver a new platform to address this issue. As a result, a new solution that is more intuitive to use and compatible with mobile devices was introduced. This allows students to book a time slot online to arrive at their accommodation on move-in day and means we can manage the process easily.

Enhancements to pre-matriculation
Applicants are not classified by our IT systems as having ‘student’ status until they matriculate. This meant they could not access Wi-Fi on campus and had to register to use Pay2Print in the run up to their conversion, resulting in large queues and frustration.

We made some back-end changes to improve the September 2017 Welcome Week experience so that new students could stay digital and avoid manual registration processes.

Integrating timetabling
Student Systems worked closely with Registry and Central Timetabling to make it easier for staff to access a single source of information that relates to their teaching commitments.

This resulted in a pilot of the recently implemented Timetabling into Calendar solution following positive feedback from the School of Education and Social Work. This service enhancement removed the need for academic staff to manually transfer their central teaching activities into their Outlook email calendar.

Streamlining postgraduate applications
The UKPASS integration is used to transmit information that relates to postgraduate applications between the University and UCAS. We moved it to an import/export facility earlier this year as part of a project driven by Admissions & Student Recruitment. Their operations team were spending two hours every morning manually fulfilling document exchanges.
Widening services to meet more needs

Anytime, anywhere, any device file storage
We launched the Box cloud-based service in March 2015, at which point we became the first UK HE institution to do so across the board. A more flexible approach to file storage outwith traditional network drives was required because students and staff were becoming more mobile and collaborative, and our distance learning community was ever increasing. Post-release over 13K are making good use of their limitless space and files can now be shared easily.

A new careers placement system
The University prides itself on its graduate employment rates and the Careers Service are taking huge strides to improve these further by making work experience opportunities available to current students in one place.

IT delivered a single solution to facilitate this, which has entered a year long pilot phase. If adopted, it will allow for:

- A uniform approach across the whole organisation
- Better reporting capabilities
- A simpler way for students to find and apply for placements

Loan laptops
We purchased 20 laptops which can be borrowed to support key events such as Matriculation.

Outwith this business need, these are distributed across campus (five to each geographical location; maximum one-month loan) to staff members if they:

- Require a temporary substitute because their device is awaiting warranty repair
- Need to be mobile for a short period of time (e.g. to attend a conference or conduct field work) but their main device is a stationary desktop PC
- Have a personal need to work from home

They are brought back in for events as priority.

Outstanding digital innovation
In June 2016, the University was recognised for its launch of Box when we were shortlisted into the top 6 out of 150 nominee’s in the Times Higher Education Leadership & Management Awards (THELMA’s).

Visitor Wi-Fi
The University is a hotspot for events, from open days to conferences, and our students and staff also receive visitors at our campuses. Many of these guests are not a part of the organisation and cannot, therefore, connect to our Wi-Fi.

App access to My Dundee
We recently delivered full integration for the mobile Blackboard Student and Instructor apps.

This means students and teaching staff can access their My Dundee course content without needing to use a web browser, and uptake is gradually increasing.
We delivered TheCloud Wi-Fi in June 2015 so they could get online for free and have an excellent all-round experience with us.

Guests can connect on any device and support is provided during the events to facilitate this. The Wi-Fi is activated in 15 separate areas often used by guests and can be flexibly switched on in additional spaces if and when demand arises.

**Making eVision mobile friendly**

A better eVision experience was delivered when we upgraded the platform to achieve a responsive design. This made it accessible to all via smartphone and tablet, and in-platform navigation was significantly improved by making highly used functions more prominent. The latter was achieved through user testing and involved working with Web Services and DUSA to produce a suitable interface. Staff also benefitted from a more functional client.

*Pictured above: Example of the new, responsive eVision interface.*
World Class Research

Making new discoveries and pushing the boundaries of knowledge often requires novel experimentation and non-standard technological practices.

Research Administration Systems provides lifecycle support for projects as standard and to inform strategic aims, while the University’s Research Computing and Health Informatics Centre teams support higher level functional needs. Although the latter have more complex reporting, their link into One IT is tangible.
Research Administration

The Research Administration team in Business Services are accountable for managing the University’s research lifecycle from an administrative perspective.

This covers initiation, design, transition, implementation, operation, monitoring and improvement, and retireal of systems that support the entire projects journey from pre- through post- award to the retention of outcomes. Supported systems facilitate the following:

- Project costing (pFACT)
- Management of award applications and commercialisation (IRIS)
- Financial management of awards project database
- Management of research outputs, activities and REF submission (Discovery/Pure)

Taking a different approach
Before IT’s restructure, our involvement in research administration took the form of database support; we were not designed to be an integrated component of the holistic research work stream.

Much of the information we gather when administrating research has value and can provide answers that will allow the University to take its research in a direction that is data-driven, so long as it is made accessible.

The previously narrow support approach limited the potential for this to occur and our new structure saw the function evolve into a team led service which aligns research administration to the University, whilst continuing to ensure technical excellence.

What we now aim to deliver, in partnership with the Research Policy Office, Research and Innovation, Research Finance and the Library & Learning Centre and Culture & Information Services, is robust administration platforms, as well as a service that helps researchers and research related staff make more use of administration data to inform strategic direction.

Key achievements
Our recent focus has largely been on making back-end technical improvements and ensuring systems are available to those who need them, including:

- Virtualised system databases away from 16-year-old server
- Replaced the integration between Pure and the HR and SITS databases
- Increased the frequency of information syncing to nightly
- Decommissioned a legacy research grant management system
- Produced a system patching roadmap to address vulnerabilities regularly
- Upgraded Pure to remain in support and bring forward the latest feature benefits
- Supported the University’s REF preparation process
- Carried out extensive validation at system level to fix errors in data
Supporting financial planning
Planning a research project includes applying for adequate funds to run the project, and Research Finance Services use pFACT to accurately predict these costs. We updated this database to include the recent pay increase and introduction of living wage, which ensures that any grant applied for is based on realistic costs, after moving it to our virtual infrastructure for performance gains.

Another first for Dundee
Discovery was welcomed to IRUS-UK in November 2016, making us the first Pure using University to participate.

This JISC funded service provides us with statistics for all the content downloaded from discovery.dundee.ac.uk, which means we can gather information on the downloads of our research publications and open access datasets to make informed choices on policies and initiatives to support our researchers.

We will also be contributing to the provision of statistics that present opportunities for benchmarking at a national level.

Saying goodbye to a legacy system
Released in 1983 and deployed University-wide in around 1990, Paradox was used for the management of research grants, including the funding for the Wellcome Trust building.

Decommissioning this service, which was no longer fit-for-purpose and whose core functionality is set to be served by the OneUniversity cloud platform, involved:

- Coordinating the migration of the data it held, which was complex given its structure related to the numerous re-organisations the University had undergone in some 27 years.
- Producing a website where data owners could convert their Paradox files into a storable format, thereby simplifying the process for others.

June 2017 marked the end of an era when the last data remnants were moved to IRIS and Paradox was powered-off - one more piece of technical debt removed!
We also use the same: best practice management approaches, processes and tool to administrate our services and capture customer requests.

Replacing our backup Tape Libraries
A great deal of activity that goes on within IT supports essential enterprise activities and services that are comparatively invisible to the majority of people in the organisation.

These solutions provide the back bone of digital working for the University and would cause significant issues if failures or loss of service took place. They reach end of life or become too expensive to support, and require replacements and upgrades.

The geographically distributed Tape Libraries, which provide backup of files and data stored on the University network, were recently replaced.
Health Informatics Centre

HIC support the secure handling of sensitive data (particularly health related) which has research value.

They do this by providing a broad range of facilities, from carrying out study feasibility searches on NHS data, undertaking patient contact / recruitment and developing software, to assisting with data entry, all within a trusted research environment.

HIC run an ISO27001 certified infrastructure and Safe Haven (Scottish Government Accredited), used to store and manage highly sensitive data. Their experienced Software Development team build databases, websites and apps for a range or bespoke projects on request.

They were 15 years old and had reached the end of their lifetime. These Tape Libraries are a critical part of our Disaster Recovery mechanisms - without them there would be no means of recovering any of the stored research data across the organisation in the event of a large-scale disaster.

The Tape Libraries also fulfil our commitment to Responsible IT by enabling us to transparently archive ‘cold’ data from expensive, energy consuming disks to lower cost, power neutral tape media whilst still facilitating easy access to the researcher.

New Tape Libraries have been installed and configured. Whilst largely providing the same level of service, the upgrade / replacement was a critical piece of work that required a significant amount of grant money to enable it to happen. An important improvement with the new solution is the widening use of transparent archiving for research data.
Managing Dundee’s Clinical Information Assets

HIC maintains its own clinical data repository of eHealth information covering approximately 20% of the Scottish population. For some datasets, this provides a continuous record that extends back 30 years.

The repository combines routinely collected datasets with those that are local speciality research and clinical for the Tayside and Fife population. All clinical datasets are online, electronically linkable and catalogued using a probabilistic system developed by HIC.

This allows new datasets to be efficiently indexed and integrated into the existing data architecture, and was successfully demonstrated by linking the Tayside Social Services data (a new external dataset) with the HIC NHS eHealth repository.

Improvement highlights

The University has invested heavily (>£1M) in HIC since 2014 by way of new software and IT infrastructure. This was to allow HIC to maintain competitive advantage and retain its leading position in offering a state-of-the-art clinical data repository and research support service.

→ Safe Haven upgrade: The hardware platform was re-designed and migrated to powerful new technology, which has resulted in an even more secure Safe Haven with higher compute performance and reliability.

→ Research Data Management Programme (RDMP): This integrated suite of applications administers the clinical data repository and was introduced to enhance HIC’s Research Data Linkage services. The software initiative has resulted in the rapid, reliable provision of cleaned and standardised data.
Our goal in this remit is to have consistent definitions and values for our data across the University, with standard data catalogues that are widely available.
**Strategising data**

Having good, reliable data is something we are aiming for. Making it accessible to all who need it will help us deliver on our strategic objectives by reducing the duplication of effort that arises from maintaining localised databases and spreadsheets.

**Towards enterprise data architecture**

A Head of Data Strategy was appointed to kick start the activities that will lead us to our ideal data environment. This role was a six month secondment position that ended in May 2017.

The role holder assessed the University’s current environment and worked on an independent, impartial basis to investigate, scope and plan recommendations within this time period by:

- Working closely with various Professional Services and their divisions, including: IT, Business Transformation, Strategic Planning and LLCCI.
- Undertaking wider consultation exercises that incorporated the: Principal, Vice- Principals, University Secretary, Directors of Business Units, Data Managers and those directly working with individual data sets across the organisation.
- A set of high-level principles were drafted and formally approved by the Information Management Committee, after which a Data/ Information Recommendations paper was drafted for Senior Management consumption. This covered vision, strategy and associated operational plans at a high-level.

**Analytics Options**

Cognos has been used as the single reporting solution for the University for some time. Unfortunately, this led to wasted effort duplicating application specific reports and delay due to the need for IT to construct reports.

We aimed to assess Power BI’s functionality as a potential alternative, self-service analytics work bench. If found to be acceptable, it is intended to supplement the functionality delivered through corporate systems such as My Dundee and OneUniversity, which we fully expect to cover the majority of everyday reporting needs.
Supporting Business Transformation

The University recently embarked on a large-scale initiative that aims to bring as many administration functions as possible that relate to finance, people, research and students into a single tool called OneUniversity.

This is being driven by Business Transformation and requires significant ongoing input from almost every aspect of IT, especially our Business Services division.

The principles we follow here are, we will:

→ Move towards one version of the truth, with quality data available to those who need it, and fewer gatekeepers.
→ Apply standard processes across the University, adopting proven out-of-the-box processes, and reducing the amount of bespoke work and customisations.
→ Empower our staff, giving them the tools and skills they need, spending less time on repetitive, manual, low value work, and freeing up time to do work that will add value to our students, our research community and our learning and teaching.

A solid set of guidelines are now in place to ensure the approach taken by both departments is consistent. This helps us make informed decisions about which processes and procedures should shift into the system, when, as we work towards the common purpose of realising its design and position in the live IT environment.

We have been working with colleagues in Business Transformation, Technology One and Professional Services on the business processes, data catalogues and data migration. This will deliver a cohesive, integrated platform for Finance, People and Student Enquirers that is available anytime, anywhere.
Making sure systems and services are safe, secure and maintained to a best practice level is one of our top priorities.

Pictured to the left: Eric Jacobson (Risk & Security Management Officer) and Hazel Martinson (Senior Service Delivery Officer) promoting cyber awareness on campus.
Information Security

→ We joined with the University & Colleges Shared Service (CISO) to work toward implementation of effective information security practice.

→ An Information Security Officer now provides an advisory service to all students and staff across the organisation. Since April 2016, the number of requests for advice has risen to 20-30 per week on average and this has contributed to a marked improvement in information risk awareness.

→ An Information Security (‘Securing Your Data’) session has been created and is now available via OPD to help raise the profile of its importance.

→ Information Security assessments have been integrated into standard documentation to ensure consideration during the design process for new applications or upgrade/enhancement process for pre-existing ones. To date, 14 major assessments (e.g. requests for cloud services) have been undertaken since September 2016.

→ A formal Information Security Exception Management process has been implemented. This allows for the granting of a limited waver of security controls for specific business requirements. It applies where temporary access to information beyond normal permissions is required or when certain users need admin access to modify specific equipment, the latter being particularly relevant in complex research environments. This allows Information Security to be managed effectively, whilst retaining flexibility for unforeseen circumstances.

→ Outreach events such as Information Security Week and Welcome Week have become mainstay activities, as we continue to engage with students and staff to spread the cyber ‘safe and secure’ message.

(CSIRT) Computer Security Incident Response Team
In June 2017, a new CSIRT was established. This allows the effective and timely management, containment and resolution of all security incidents in an objective, confidential and evidenced manner. To date, two incidents have been resolved using this process and were completely closed within five working days.

Prior to its introduction, our ability to realise the full scope of an incident would not have been possible and the effects of the incident may not have been addressed fully. This also enables us to measure security incident metrics in the future and will be continually revised to improve efficiency.

Securing Mobile Working
Managing information compliance, whilst enabling the effective use of mobile technology is a challenge faced across the sector. We worked with the Information Governance Office to improve the security of data on smartphones and tablets by deploying a new service, which requires staff to install an app that checks they meet minimum standards before allowing University information to cache to their device(s).

As a result, the organisation can demonstrate that a 4 digit pin and encryption are in place as a consistent safeguard, and that remote wipe capabilities exist as a fail-safe should devices be lost or stolen. Without the introduction of these reasonable controls, more limiting restrictions would be necessary to meet increasing regulatory demands. They allow us to encourage mobility, whilst reducing the risk of reputational damage.

The roll-out ran between March-September 2017 and a policy was delivered to underpin it.
**Becoming more responsive to email threats**

We improved the way we react to ransomware attacks through real-life contexts.

**Case study 1: Ransomware attacks**

In early 2016, a small group of students and staff were affected by a ransomware attack after receiving a scam email that carried an attachment infected with the Locky virus. The IT Service Desk quickly identified this and a major incident was called. A team was pulled together to plan and apply measures that would mitigate the potential for this to spread to others or further impact our IT infrastructure. Some computers were taken out of service as a preventative measure and an update that reinforced the importance of being cyber aware was sent to the entire University. **This real-time response stopped Locky infecting anyone outside the initial group.**

Our responsiveness was tested again in June this year when reports that WannaCry, the virus that crippled the NHS and spread worldwide, hit the headlines. The University had not yet been infected when a major incident was instigated and a team assembled to follow industry advice on how to protect our environment from this vulnerability. Various security patches were applied to our systems with little disruption and communications were sent to students and staff advising vigilance. **Due to this pro-active response, no IT managed machines were affected by WannaCry.**

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**Partnering to improve Information Security**

**Information Governance Office**

Over the past year, closer working relations have been established between IT and the Information Governance Office. This has facilitated a greater understanding of the realistic achievement of the University’s goals in relation to Information Security and reducing risk, particularly at the overlap between technology and data.

**Business Transformation**

IT are heavily involved in the Business Transformation Programme at all levels, and there has been strong engagement on the topic of Information Security here. We have provided guidance in relation to the design and implementation of the OneUniversity solution.

**Collaborating on research data storage**

We have been working with LLCCI to identify secure data storage solutions that support research projects. These range from local network drives to use of high performance computing. Compliant options are being catalogued to provide students and staff with a choice of solutions dependent on the nature of their project. This:

→ Enhances our security by ensuring that information is held in appropriate platforms
→ Increases productivity by making data available for use across multiple stakeholders

It is common to find that spreadsheets containing information which should be stored in a controlled place are saved on PC drives. Added to this, these are often not securely shared between colleagues. Providing clear options will reduce the potential for this to continue.
Major incident and Problem Management

We continued to improve the way we respond to issues that cause unplanned service disruptions and affect large numbers of the University community.

As a result, how we handle these types of situations is becoming more timely, coordinated, and better communicated. We also carry out post incident reviews to ensure we understand how we can improve our processes and services. Where appropriate, we have started to include colleagues and partners from across the University to achieve a holistic view of the impact that incidents and problems can have.

Case study 2: Microsoft Slowness
Many staff have been experiencing poor performance with the Microsoft Office Suite which has gone on for some time. A problem team was created to troubleshoot the issue and numerous testing scenarios have been applied to find the root cause. A temporary workaround was implemented recently, which has alleviated the majority of the symptoms. We continue to keep our lines of communication open with impacted staff and deep analysis is ongoing to identify a permanent resolution as our number one priority. Longer term, we are committed to working with stakeholders to deliver a new Windows 10 staff desktop.

Case study 3: Timetable DDoS attack
The online timetable service was unavailable on the first day of term in January 2017, which meant students were unable to reach their schedule. Investigation revealed the cause was a flood of illegitimate requests that overloaded the system.

The nature of the attack meant we could not prevent this downtime, but rapid action brought the service back into use on the same day. A full, immediate review of the major incident took place and was shared with students and staff.

Using cloud services

Becoming an entirely cloud-based organisation has never been our goal; moving things to the cloud where it makes sense has.

The advent of a comprehensive list of services brought with it an opportunity to assess which would benefit from an off-premise home and we have been taking action to realise a well-balanced hybrid cloud environment since.

Now in the cloud:
- Authentication (Office 365)
- File storage (Box)
- Business Intelligence (Power BI)
- Service Management Tool (Topdesk)
- Central purchase ordering system (PECOS)
- Library Resource Management (Ex Libris Alma)
- QuestionMark OnDemand
New requests now undergo a cloud viability assessment. This means the best available option/solution is sought via standard procurement frameworks, whilst staying in-keeping with the needs of the wider University.

Building or procuring on premise solutions for everything is no longer our standard. It is the answer for some things, however. By investing heavily in areas such as the network, we’re starting to adopt a blend that offers improved efficiency, availability, flexibility and reduced support costs in the most reliable of ways.

Improving platforms

Removing legacy storage
It took colleagues in Procurement approximately 20 minutes to log in to start their working day and play their part in running the University’s finances. This was because they were working from an old storage system that was incompatible with modern hardware and unstable. We moved them off of this legacy system, which has allowed the team to start to use high quality, reliable equipment and work more efficiently.

My Dundee
Through collaboration, three upgrades to the VLE have been delivered and communicated effectively to students and staff. We are also getting better at working with the CTIL team (LLCCI) to achieve a consistently stable, supported My Dundee through practice.

Timely patching
CTIL were involved in the IT major incident process for the first time when timely patching of My Dundee was necessary to address an application defect which prevented coursework submission. The result of this experience was a significantly improved support route between IT, CTIL and the system supplier.

Quicker upgrades
We introduced faster upgrade methods for this major University platform, reducing the need for significant downtime of it. The most recent upgrade was handed over to business within a day (as opposed to five) in conjunction with CTIL – a significant display of our ability to meet demand for reduced downtime.

Deep clean
Data validation to remove redundant and obsolete accounts and content was undertaken in partnership with CTIL. Associated account numbers were reduced by around 50%, from approximately 125,000 down to 60,000 with valid access, significantly improving access control for visiting lecturers, non-credit and summer school students. This has resulted in efficiency gain through closer management of data and process.

These activities ensure we are maintaining a technically excellent learning and teaching environment and have taken us towards being better able to leverage developments flexibly.

Other Business Services Highlights
→ Revised salary scales applied to staff database to ensure we were paid correctly.
→ New fields (e.g. hourly-paid) added to staff database to meet University needs.
→ Various systems password criteria and rules were brought into line with the standards.
→ Developed, enhanced and released a suite of Absence Management Reports.
→ Developed mechanisms to actively monitor and manage access rights within Student and People systems.
One of the largest Dell EMC network installations in the world.

Significant IT resource has been assigned to supporting the delivery of this important project in conjunction with our chosen integrator, Circle IT, and Dell EMC.
Our new network

The existing network was installed in 2006 and had reached the end of its useful life. This meant we were faced with a continual cycle of device failures and service interruptions. The wireless network was a concoction of old and more modern technology, resulting in a poor user experience for students and staff.

As a result, high levels of support resource were required to resolve incidents and ultimately, this had a negative impact on productivity. To address this, an ambitious £6M network replacement project was kick started in 2015.

This sought to bring the University to the forefront of an ever-changing, technology driven landscape. The high performing network, which has been partially delivered to date, will ensure a seamless journey for students and staff.

The modern, energy efficient network infrastructure will also result in a:

- Reduction in the University’s emissions output and carbon footprint
- Stable business expenditure through adoption of a lease based solution
- Safer online environment through delivery of a more secure design

What has been achieved so far?

- 1,869 internal and 47 external wireless access points have been installed
- The majority of City campus has been fully migrated to the new network
- A number of critical routers and firewalls have been installed, configured and made live

Work is currently ongoing to:

- Install and configure the new data centre firewalls
- Remove a legacy data centre
- Replace the current VPN by December 2017
- Progress installations at Ninewells campus and Life Sciences

The final result will be networking via a more user-centric approach that accommodates our growing ‘bring your own device’ culture. The wireless provision will be powerful enough to enable mobility around campus with reliable connection, so that students and staff can work and study anywhere, anytime.

Superfast wifi

A 3-fold increase in the number of access points that supply our campus wifi network is underway and more than 2/3rds of these are now live. This means that we are starting to build up to offering students and staff blanket coverage via eduroam.

Once a complete roll out is achieved, our highly mobile community will be able to hold a Skype call while roaming the campus end-to-end without a connection drop. This will expand our collaborative ability, whilst reducing complexity by removing UoD_WiFi.
Gaming and streaming in accommodation
New students can now connect their Xbox’s, Apple TV’s and wireless printers in their home-away-from-home for the first time when we introduced the StudentResidences wifi network.

We also enabled this service in the Dalhousie Building to support May 2017’s Minecraft Marathon. StudentResidences has also been identified as the perfect solution to facilitate the TOTeM project - a thriving ‘Internet of Things’ research initiative in DJCAD.

Decommissioning an entire data centre

We need fit-for-purpose data centre environments that support our infrastructure to succeed in transforming how we deliver network services.

Each University data centre costs a considerable amount to run, as it also incurs secondary costs such as an uninterruptable power supply and standby generators. A number of our existing environments were running well below their capacity, including Core Equipment Room 1 (CER1), a legacy environment built in the computer mainframe era of the 1970-80s.

We agreed that a consolidated (virtual) data centre network could be achieved within our already more modern data centres (CER2, JBC, JWCC and Discovery Centre), removing the need to upgrade CER1 facilities. This also allowed the Network Refresh project expenditure to focus on key data centre switches and firewalls. The new data centre firewalls protect the network at its core and will provide us with a high performing security design.

Best Student Broadband
The University’s student accommodation was first to be fully migrated to the new network, which saw us significantly increase the number of device connections that could be made.

As a result, our students rated us highly for broadband satisfaction and the University was announced as a finalist in the ‘Best Student Broadband’ category in the 2017 National Student Housing Awards.
The majority of CER1’s equipment has been re-homed and some of its components have been retired, such as:

- Sky, which served as the University’s main web server for several years.
- Dux, the latest server to be powered-off after many years faithful service.
- Connect2Campus, an access service introduced to the School of Medicine in 2009.

CER1 is now very close to being empty for the first time in 40 years...

All equipment was responsibly disposed of in accordance with WEEE regulations!
How many?

Often, it’s not clear just how much activity and work our people and systems support. Here’s a sample breakdown of just some of the numbers we can share that might give you a better insight into our services.
<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,531,774,671,126,530</td>
<td>Bytes of data protected on tape</td>
</tr>
<tr>
<td>2,908,791,214,440,450</td>
<td>Bytes of data storage offered by high performance storage systems</td>
</tr>
<tr>
<td>10,995,116,277,760</td>
<td>Bytes of RAM on the high performance computing systems</td>
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<tr>
<td>2,140,000,000,000</td>
<td>Bytes of data transfer through the perimeter firewall (in and out of UoD)</td>
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<tr>
<td>561,970,951</td>
<td>Files held in high performance storage systems</td>
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<tr>
<td>33,000,000</td>
<td>CPU total compute capacity core hours per annum.</td>
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<tr>
<td>19,956,543</td>
<td>MB of Box storage associated with Box-Admin</td>
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<tr>
<td>16,366,573</td>
<td>MB of Box storage associated with top individual Box user</td>
</tr>
<tr>
<td>10,219,630</td>
<td>Daily connections against firewall (individual internet traffic requests)</td>
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<tr>
<td>6,500,000</td>
<td>CPU core hours used running HPC computations in the past 12 months</td>
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<tr>
<td>5,612,320</td>
<td>£s flowing through SAM in the first 6 months after its release</td>
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<td>4,127,606</td>
<td>£s total IT spend across UoD Aug 2016 to January 2017</td>
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<td>3,754,009</td>
<td>Emails received in the last 30 days</td>
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<tr>
<td>2,819,748</td>
<td>£s spend by UoD IT through PECOS</td>
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<td>2,192,763</td>
<td>Page views on the IT website since Jan 2014</td>
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<tr>
<td>1,802,747</td>
<td>Unique page views on the IT website since Jan 2014</td>
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<tr>
<td>570,462</td>
<td>Emails sent in the last 30 days</td>
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<tr>
<td>333,000</td>
<td>Network authentications on average per day</td>
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<tr>
<td>323,000</td>
<td>Attempted network intrusion on average per day</td>
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<tr>
<td>138,560</td>
<td>NVidia GPU cores in total</td>
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<tr>
<td>69,867</td>
<td>Unique devices found on network since the new Dell solution went live</td>
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<tr>
<td>39,124</td>
<td>All time views of IT Status blog for service updates</td>
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<tr>
<td>37,819</td>
<td>Calls logged in TopDesk since its release</td>
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<tr>
<td>36,208</td>
<td>Calls resolved in TopDesk since its release</td>
</tr>
<tr>
<td>29,706</td>
<td>Research publications added to Pure in the last 3 years</td>
</tr>
<tr>
<td>20,480</td>
<td>Nvidia CUDA/GPU cores in One Machine</td>
</tr>
<tr>
<td>17,508</td>
<td>Active email users</td>
</tr>
<tr>
<td>14,100</td>
<td>Highest number of unique users ever recorded on My Dundee</td>
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<tr>
<td>13,463</td>
<td>Page views on the IT Staff blog over the past year</td>
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<tr>
<td>13,167</td>
<td>Box users</td>
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<tr>
<td>12,238</td>
<td>Office activations</td>
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<td>12,145</td>
<td>Skype peer-to-peer (IM)</td>
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<td>10,081</td>
<td>Users store between 0-100MB in Box</td>
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<td>9,392</td>
<td>Page views on the IT Transformation blog in the last year</td>
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<td>8,467</td>
<td>Best ever view rate of IT Status blog in a single day</td>
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<td>7,124</td>
<td>Views of the IT Staff blog over the last year</td>
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<tr>
<td>7,080</td>
<td>Highest number of concurrent devices connected to the wifi</td>
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<tr>
<td>4,383</td>
<td>Views of the IT Transformation blog over the last year</td>
</tr>
<tr>
<td>3,970</td>
<td>Research activities (public lectures, etc.) added to Pure in last 3 years</td>
</tr>
<tr>
<td>3,780</td>
<td>CPU cores, 138560 GPU cores and 21TB of RAM across 186 compute nodes is current total capacity</td>
</tr>
<tr>
<td>1,869</td>
<td>Internal wireless access points installed</td>
</tr>
<tr>
<td>2,835</td>
<td>Rack units of space in our 3 datacentres (Rack Unit = 1.75in, or 44.45mm)</td>
</tr>
<tr>
<td>2,000</td>
<td>+ Visits to My Dundee between Mon 09 - Fri 13 Oct from 531 individuals using the mobile app introduced as part of the July upgrade</td>
</tr>
<tr>
<td>1,804</td>
<td>Number of PECOS orders processed by UoD IT between 2014 and 2017</td>
</tr>
<tr>
<td>1,479</td>
<td>Box logins in last week</td>
</tr>
<tr>
<td>1,452</td>
<td>Devices enrolled in Secure Mobile Working (701 iPhones, 363 iPads, 339 Android, 49 Other)</td>
</tr>
<tr>
<td>Number</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>1,224</td>
<td>Users registered an email or phone number for self-service SSPR</td>
</tr>
<tr>
<td>1,091</td>
<td>Staff members enrolled in Secure Mobile Working</td>
</tr>
<tr>
<td>1,060</td>
<td>Student theses added to Pure in the last 3 years</td>
</tr>
<tr>
<td>973</td>
<td>Twitter followers</td>
</tr>
<tr>
<td>944</td>
<td>Box logins in last day</td>
</tr>
<tr>
<td>854</td>
<td>VMs Powered On</td>
</tr>
<tr>
<td>705</td>
<td>Active Skype users</td>
</tr>
<tr>
<td>626</td>
<td>Skype for business conferences</td>
</tr>
<tr>
<td>518</td>
<td>Box users collaborating on files outside the University of Dundee</td>
</tr>
<tr>
<td>496</td>
<td>Users store between 200-500MB in Box</td>
</tr>
<tr>
<td>346</td>
<td>Users store between 100-200MB in Box</td>
</tr>
<tr>
<td>315</td>
<td>Prizes assigned to research in Pure since 2014</td>
</tr>
<tr>
<td>282</td>
<td>Press items assigned to research in Pure since 2014</td>
</tr>
<tr>
<td>252</td>
<td>Passwords reset using self-service SSPR</td>
</tr>
<tr>
<td>215</td>
<td>Users from 60 research groups across 3 schools (Life Sciences, Medicine and EPM) using the cluster for big data analysis in: bioinformatics and genomics, computational biophysics and drug discovery</td>
</tr>
<tr>
<td>194</td>
<td>VMs Powered Off</td>
</tr>
<tr>
<td>128</td>
<td>CPU cores and 1TB of RAM associated with largest single node</td>
</tr>
<tr>
<td>122</td>
<td>Storage aggregate (TB) in Box</td>
</tr>
<tr>
<td>86</td>
<td>CPU Sockets providing Virtual Infrastructure</td>
</tr>
<tr>
<td>47</td>
<td>Live new network external access points</td>
</tr>
<tr>
<td>43</td>
<td>Physical Hosts providing Virtual Infrastructure</td>
</tr>
<tr>
<td>41</td>
<td>Impacts (research that has made a difference to lives either as government policy or drug development) assigned to research in Pure in the last 3 years</td>
</tr>
<tr>
<td>35</td>
<td>TB of storage used for email</td>
</tr>
<tr>
<td>11</td>
<td>TB Memory Total for Virtual Infrastructure</td>
</tr>
<tr>
<td>4</td>
<td>Mwh (Megawatt hour) power consumption in our 3 datacentres per year</td>
</tr>
<tr>
<td>3</td>
<td>Datacentres</td>
</tr>
<tr>
<td>2</td>
<td>Of IT’s blogs sit within the University’s top 5 performing ones</td>
</tr>
<tr>
<td>1</td>
<td>UoD IT</td>
</tr>
<tr>
<td>0</td>
<td>Number of IT Managed Machines affected by WannaCry</td>
</tr>
</tbody>
</table>
1. Request fulfilment
A service request is a formal request from a user for something to be provided, e.g. password reset, install a workstation for a new member of staff. This is the process responsible for managing the life-cycle of all service requests, from request to completion.

2. Incident Management
An incident is an unplanned interruption or reduction in the quality of an IT service. This is the process responsible for managing the life-cycle of all incidents, ensuring that normal service operation is restored as quickly as possible and the business impact is minimised.

3. Problem Management
Multiple reports of a similar type of ‘incident’ received at around the same time are bundled together as a ‘problem’. This process is used to investigate root cause, with the intention of providing a workaround, and ultimately, a full fix. Following resolution, the problem team log lessons learned to incorporate them into future service provision.

4. Change Management
A change is the addition, modification or removal of anything that could have an effect on an IT service. This is the process responsible for controlling the life-cycle of all changes, enabling beneficial changes to be made with minimum disruption to IT services.

5. Virtual Service Desk
Provide what appears to be a single, centralised Service Desk through use of technology, when in fact, IT staff are spread across a number of locations.

6. Service Catalogue
A database or structured document with information about all live IT services, including those available for deployment.
Thank you

We would like to pay tribute to all of our customers, suppliers and partners who help and assist us in delivering services to our community.

We wouldn’t be able to do what we do without your help!