

QUEEN'S UNIVERSITY BELFAST

Digital and Information Services 3-Year Plan

1. Introduction

This Digital and Information Services (D&IS) plan sets out the initiatives on which we will focus over the next 3 years to support the implementation of [Queen's University Belfast's Strategy 2030](#). To demonstrate the clear alignment with that strategy, this plan will be organised according to the four Strategic Priorities and their four underpinning Enablers (sections 4 to 11). Some initiatives belong under more than one heading, but in the interests of brevity, they will only be listed once.

The purpose of this document is fourfold:

1. To communicate to the D&IS directorate our agreed plan so that we can align all available resources to realise our ambitious goals.
2. To share our plans with other parts of the University and enable them to plan more confidently when they have dependencies on D&IS deliverables.
3. To help external partners understand our objectives and identify ways they can assist us in our endeavours (demand signalling).
4. To share our plans with current and prospective students who would like to know how things will change during their studies.

The proposals included in this plan were gathered from over one hundred staff in the D&IS directorate and other key stakeholders in faculty and other professional services directorates. The platform used to gather these contributions (Crowdicity) also allowed ideas to be voted on and comments to be added to further refine the ideas.

Much of the business of the directorate is providing existing services and, unless otherwise stated, these current services will continue for the period of this plan.

This document is deliberately brief (i.e. not giving much detail on individual projects) to make it easier for all staff to comprehend the broad scope of our 3-year plan. Where more detail is required, e.g. by a team that needs to better understand the dependencies and benefits of any particular project, this will be made available in the standard project documentation for each project.

Most of the projects listed below will be funded by existing budgets, but in some cases additional funding will be required (e.g. further, large-scale roll-out of audio-visual equipment to additional teaching spaces and meeting rooms) and specific business cases will be submitted to the University Management Board (UMB) for these at a later date.

Some of the projects on our road map will need significant investment of resource from other areas. They are included in this plan for completeness, but they are caveated by the requirement for prioritisation through the strategy 2030 delivery office. The order of the lists does not imply relative priority and the projects that are expected to be categorised as "Strategic" (see section 12) are highlighted.

This plan will be reviewed and updated as required following the Ways of Working review, and annually thereafter to take account of the changing business and digital landscapes.

2. Overview

The D&IS directorate includes Library Services and Information Technology (IT) support.

2.1 Library Services

The Library is at the heart of the campus and is an integral part of student life and academic success. The Library gives students the opportunity to engage with learning outside teaching rooms and lecture theatres, to connect with resources and collaborate with other learners, blending the best features of a traditional library with the latest technology.

High quality library spaces and services are critical to the student experience. D&IS will continue to advocate for a new modern, world-class library on the Health Sciences campus and will ensure that the award-winning McClay Library is continually maintained and upgraded to ensure it is fit for purpose for a modern student experience. We will listen and respond to feedback from staff and students to ensure we provide inclusive digital and physical spaces.

We will collaborate with other areas of the University and the student body to develop excellent support services (including digital and information literacy training) with a particular focus on cultural diversity, inclusivity and wellbeing. We will continue to provide support for widening participation by providing access to the Library and IT facilities primarily for those taking part in the Pathway Opportunity and Senior Academy Programmes.

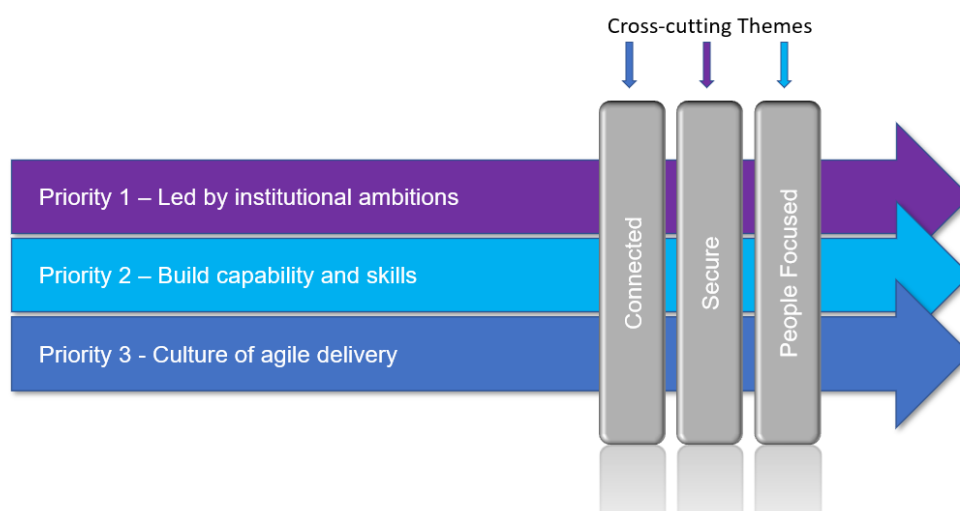
We will encourage and support the highest standards of cross-disciplinary, open research, open access (including journals and monographs), digital scholarship, research data management and preservation of digitised and born-digital resources.

Our unique and special collections (including our developing modern political archive) are extremely attractive to researchers globally and ongoing work to build and promote our digital collections serves to increase visibility and access.

2.2 Information Technology (IT)

D&IS provides the IT infrastructure and digital services that support the delivery of Strategy 2030. IT underpins every aspect of university activity; our reliance on it presents challenges, but it also provides opportunities to improve our services and deliver new ones. The IT systems and processes we implement are agile and responsive and designed to meet the needs of staff and students. We will use leading-edge technology and enhance our digital infrastructure to ensure an outstanding user experience and international connectivity.

The key themes that we set out in our [digital transformation roadmap](#) are unchanged.



Maintaining and improving the foundations of our digital estate while further strengthening cyber security will continue to consume significant resources, but we will strive to find and

implement faster, more people focused, more reliable and more cost-effective ways to deliver existing and new services as demand grows.

We will continue to use our “golden three” (Microsoft Forms, Power Automate and SharePoint) tactical technology stack to bring self-service and automation to many more business processes (we currently have centralised monitoring of more than 250 such workflows) that can be implemented/maintained by business teams (supported by D&IS), while we use our strategic, low-code technology stack (including Microsoft Power Apps/Portal, Dynamics and Dataverse) for higher-volume, more business critical processes and where a superb user experience is essential.

With the growing demand for high-performance computing resources, we will look to continue to expand and improve our offering to the researcher community, ensuring integration with internal units such as the Global Innovation Institute and external organisations at a local, national and international level.

3. Progress thus far

We have already built some of the foundations and delivered some early wins since Strategy 2030 was published. The projects have been categorised as stabilising (making them fit-for-purpose in today’s world), optimising (incrementally improving the service, including increasing efficiency or effectiveness) or transforming (significantly improving the user experience) our services.

Stabilise

- 3.1 Moved **SharePoint to the cloud** (including all intranet web sites), to provide greater resiliency and lower maintenance costs.
- 3.2 Moved our **campus-hosted email services to the cloud**, resulting in 50% reduction in delivery time for external email, 50% fewer IT support requests for missing emails compared to 2021, decommissioning of 16 servers including one with a vulnerability identified as “very high” and elimination of insecure basic authentication.
- 3.3 Agreed a new **IT governance model** that improves collaboration between faculty and directorates through regular Digital Advisory Boards.
- 3.4 Replaced our legacy Identity Management (IM) architecture with a **modern and secure Microsoft IM solution** that provides automated lifecycle management of QUB accounts (both staff and students) in our joiner/mover/leaver process.
- 3.5 Moved our primary authentication mechanism from a campus-hosted solution to Microsoft’s **modern and secure, cloud-hosted Azure Active Directory**, eliminating the need for one of the critical components that was compromised in our 2021 cyber security incident.
- 3.6 Rolled out phishing resistant Multi-Factor Authentication (MFA).
- 3.7 **Automated monitoring and alerting** of unplanned outages of key services.
- 3.8 Engaged a partner to help us provide **24/7 cyber security monitoring** through our new Security Information and Event Management (SIEM) system and implemented several Security Orchestration, Automation and Response (SOAR) play books.
- 3.9 Increased Microsoft Secure Score to 71% (industry benchmark is 52.7%).
- 3.10 Implemented **web filtering** to prohibit staff accessing illegal sites and sites with a high cyber security risk.
- 3.11 **Upgraded our core network to 40Gb**, segmented our corporate network to increase cyber security resilience and procured a non-JANET internet connection to mitigate our dependency on a single supplier for such a critical resource.

- 3.12 Implemented a new **ransomware-resilient backup solution** that now includes our Office 365 cloud data.
- 3.13 Piloted a **software catalogue** (and associated approval process) that allows staff to see what software is approved for use on University business and what licences/subscriptions are currently available.
- 3.14 Successfully bid for the **Agri-Food and Bioscience Institute** (AFBI) tender for the provision of library services. This contract (along with the contract with the Department of Health for staff working in Health & Social Care in Northern Ireland) helps us maintain the economies of scale that allow us to provide the comprehensive portfolio of library services required by a research-intensive university.
- 3.15 Implemented a best of breed **Web Search tool** for our public facing website to enhance our prospective students' and other users' journeys.

Optimise

- 3.16 **Extended 24 hour opening of the Library and removed fines.** Occupancy of the library is at an all-time high, but feedback from students (including 82% for Learning Resources in National Student Survey (NSS) 2022, up 3% from previous year) and Customer Service Excellence accreditation (27 Compliance Plus criteria, up one from previous year) confirms service levels are also being maintained and improved.
- 3.17 Extended our **Tier 2 High Performance Compute cluster** (by 50%) and added a further 5 petabytes of research data storage. We have more than doubled the active user base since the service was launched in 2020.
- 3.18 Set up our own **live streaming studio** in Whitla Hall which was used extensively in our recent Belfast/Good Friday Agreement 25th Anniversary conference and graduation ceremonies.
- 3.19 **Re-platformed our student records system (Qsis) to the public cloud** which reduces the risk of it being unavailable in the event of a cyber incident targeted at the University network and data centres. It also provides flexibility and cost optimisation against the previous on-site implementation.
- 3.20 Supported roll-out of **new Multi-Functional Devices** (printers) to improve user experience, reduce running costs and environmental impact.
- 3.21 **Extended support of student compute desktops to five years** (from four) to reduce annual equipment costs and reduce environmental impact.
- 3.22 Populated the **Organisation view in Teams** which helps staff to navigate our organisational structure and allows us to automate processes that require line management approvals.
- 3.23 Piloted automated, self-serve annual leave and sickness absence processes in D&IS.
- 3.24 Provided **collaborative environments and tools** for researchers to work effectively with partners across the globe, helping to reduce the amount of travel required, in line with our Strategy 2030 sustainability agenda.

Transform

- 3.25 Built our **strategic customer engagement platform**, where customers are our prospective students, students, alumni, staff, prospective staff, partners and visitors. Work is well-progressed on two key projects being delivered on this platform: our applicant management system and online student admin processes. Integration with our core systems (such as Qsis) through our new Application Programmable Interface (API) Manager allows a higher degree of automation in the fulfilment

- workflows. Feedback from the business on our initial processes (Undergraduate Direct applications and Exceptional Circumstances) have been very favourable.
- 3.26 Implemented our **University chatbot**, initially covering Library Services, One Elmwood and the IT service desk.
 - 3.27 Acquired a **new mobile app platform** which will be our first port of call for all University services. Each user will have a profile that ensures they are presented with the most useful services to them in the most accessible way and they will be able to tailor the experience for their own preference.
 - 3.28 Fitted out several of our largest teaching spaces with **state-of-the-art audio-visual equipment** to support high-quality lecture capture.
 - 3.29 **Digitised collections**, including the Northern Ireland Command Papers from 1921-1974. Retrospectively digitised 140 print theses published in 2019 to increase the visibility of research produced in Queen's.
 - 3.30 Set up a **Digital Scholarship Hub** to encourage collaboration between academics and support teams in the use of technology in scholarship.
 - 3.31 Procured and set up a **Digital Preservation System** to preserve our Special Collections and Archives and research outputs for future generations. We also joined the Digital Preservation Coalition.
 - 3.32 Participated in the **Race Equality Charter (REC) Mentoring Programme and Inclusive Employment Scheme**.
 - 3.33 Developed a tactical solution for **QS Reputation** that includes the survey data collection and consent of academic and employer contact information; the success of this has led to the development of a Mobile App for R175.
 - 3.34 Provided a **well-being area (for staff and students)** and partnered with SOS Bus NI to pilot an evening hours mental health support service on the ground floor of the McClay Library.

This section (3) will not be included in the final version of the plan.

4. Education and Skills

D&IS play a key role in providing resources students use in their learning, e.g. physical space including group study rooms, desktop computers (both physical and in the cloud), books (both print and electronic), a library catalogue and resource discovery platform, software and support in using these resources (including training for students). We also provide support and training on the equipment used by staff in our central teaching spaces.

Through the following initiatives we will deliver improvements in these areas over the next three years:

- 4.1 Complete the set up and implementation of the new Library Services Platform.
- 4.2 **Maximise student accommodation** in the Library by fitting out under-utilised space.
- 4.3 Pilot the provision of **docking stations for students** to plug in their own devices (at desks that currently have no PCs) and use the Queen's virtual student desktop to access the software they need for their studies. If students make sufficient use of this provision, we will roll it out further. For example, as desktops reach end of life, replace some of them with docking stations to further reduce equipment costs.
- 4.4 Spend a greater proportion of our book budget on **electronic books**, to improve access and ease of use.

- 4.5 Continue the roll-out of our **enhanced audio-visual equipment** to the 20 largest teaching spaces. Produce a business case for further roll-out of appropriate enhancements to all our teaching spaces and group study rooms.
- 4.6 Roll-out our **new lecture capture platform** and integrate with other core systems, e.g. our timetabling system to automate capture start.
- 4.7 We will use a Software-as-a-Service (SaaS) solution to build our timetables and publish them to standard calendar applications (e.g. the student's QUB Office 365 calendar which will be available on the new mobile app platform). This will **enable students to view their academic timetable along with other appointments in their diary** (e.g. other university/school events and social activities). This solution will also facilitate module and sub-group selection.
- 4.8 We will also standardise our room and desk booking services and include those in the new calendar feed. Having a **single solution for timetable room bookings and other room/desk bookings** will allow us to make unused areas available for other purposes, e.g. reuse a school's tutorial room as a student bookable group study room at the times of the academic year when such resources are most scarce.
- 4.9 Improve our processes for reporting issues with our services and for **communicating service changes and planned/unplanned outages**, both to the end user and front-line staff supporting those services.
- 4.10 Develop, promote and run **sign language and cultural awareness training** for both staff and students.
- 4.11 Support the use and creation of **Open Educational Resources** (teaching materials freely available online) by academic staff, including guidance on copyright, open licensing, and engaging with open education.
- 4.12 Homogenise the way we deliver **staff training** (including Digital Skills) and make sure it is also available to Post Graduate Research (PGR) students.
- 4.13 Together with faculty champions and Education and Student Services (E&SS) colleagues, develop a business case for rolling out **LinkedIn Learning** (high-quality, educational resources spanning a range of subject disciplines, digital skills development, soft skills for career readiness, and extra-curricular activities) **to students**. With unlimited access to all staff and students this would give academics the opportunity to curate personalised learning playlists and embed these into their Canvas modules for students to learn at their own pace whilst ensuring students have the same fundamental/baseline knowledge of peripheral skills for greater academic success and student retention.
- 4.14 To encourage the early adoption of **Virtual Reality and Augmented Reality in teaching** we will host a resource of 20 headsets in the Library that will be available to staff to book and will be maintained centrally.

D&IS will also work with the relevant stakeholders in E&SS to optimise and automate the student administration processes. The following initiatives will enhance the student's experience and minimise the administrative burden on staff.

- 4.15 We will use our new **Student Admin Processes** system to identify which processes are most frequently used, are most laborious and currently provide the worst experience for users. These processes will be redesigned (using a service design methodology) and implemented on our strategic customer engagement platform (the Queen's Service Portal) automating as much of the workflow as possible.
- 4.16 Many of our educational programmes involve **placements** outside the University. Some areas have invested in SaaS solutions (such as InPlace) while others use

spreadsheets and email to manage these placements. We believe significant improvements in student experience and operational efficiency would result from all areas that manage placements adopting a single platform for this. If this initiative is prioritised as a strategic project by the Strategy 2030 Delivery Office then D&IS will support the procurement exercise and integration with the rest of our enterprise architecture, as required.

- 4.17 In partnership with E&SS, acquire and rollout an **assessment/examination management system** with appropriate integration with other relevant systems, such as our Virtual Learning Environment (VLE), room booking and timetabling system.
- 4.18 There is a great deal of interest in faculty for **automating the degree classification rules** to reduce the risk of errors associated with the many manual, labour-intensive, spreadsheet-based solutions currently used within schools. The algorithm would use data extracted from systems, such as our VLE, and upload the results to our student records system (Qsis). This is a large project with many complexities and it has been attempted before, unsuccessfully. If it is prioritised as a strategic project by the Strategy 2030 Delivery Office and E&SS, then D&IS will support the implementation.
- 4.19 Work with our colleagues in Estates to set up an **Assessment Centre that supports invigilated, simultaneous online assessments for large cohorts of students**, e.g. for external examinations of medical and nursing students. Initially this will be in the recently vacated Student Guidance Centre, but finally will reside in the refurbished Elmwood Learning and Teaching Centre or, preferably, a larger venue (considering the growing demand for such space) such as a new build in place of Guthrie House. During periods of the academic year when such assessments are not being run, the centre may be reconfigured for teaching labs and also, possibly, as an additional self/group study resource when not required for assessment or teaching.
- 4.20 Pilot **micro credentials and digital badging** for D&IS, People & Culture (staff training) and Queen's Management School courses with a view to using these more secure and easier to share digital credentials for our main awards (to complement, not replace, traditional degree certificates). Assuming we are not going to abandon traditional certificates, we should invest in a **secure printing solution** for parchments and transcripts.
- 4.21 Review whether the current **platform used to deliver staff training** is optimum, or whether it would be better to use, for example, the Canvas VLE or another solution.

5. Research and Innovation

D&IS will continue to play an integral role in the research lifecycle, partnering with researchers from development to research impact. We will do this by:

- 5.1 Providing support and advocacy for researchers in meeting the open access requirements for the new **Research Excellence Framework (REF) Open Access Policy**.
- 5.2 Considering developments in **Diamond Open Access (OA)** to determine if Queen's should implement local support services for researchers, such as journal hosting or monograph publishing.
- 5.3 Promoting, supporting, and providing training for OA, ensuring that publicly funded research is accessible and accurate. Helping researchers follow public funder mandates for OA and supporting the development of **sustainable models for open access journals**. Offering support for **OA monographs** and implementing an **institutional rights retention policy**.
- 5.4 Supporting openness and transparency throughout the entire research process to ensure that research is reproducible, data is reusable, and ethical approaches to

research assessment are followed. Working towards implementing the FAIR data management principles to share research data that is **Findable, Accessible, Interoperable, and Reusable**.

5.5 Implementing a **Digital Preservation System** to preserve our Special Collections and Archives and research outputs for future generations.

5.6 Collaborating with Research & Enterprise and the Information Compliance Unit to provide **training for all academic staff and PGR (Post Graduate Research) students** covering the complete research cycle, including data management plans, ethics, GDPR, FAIR data, open access publishing, and digital preservation.

5.7 Supporting the University in adopting the highest standards in **research data management** throughout each stage of the data lifecycle by advising on Data Management Plans, promoting research data management best practices, and validating datasets in Pure to ensure they are made available open access.

5.8 **Digitising print theses** to increase their visibility and continuing to provide advice and support for PGR students on electronic theses, copyright, and getting published.

5.9 Increasing the exposure and impact of **non-textual research outputs** (e.g. video and digital exhibitions) through a pilot project archiving Queen's podcasts in Pure.

We will collaborate with Research & Enterprise colleagues and academics, through our recently established Open Research Group and Research Systems & Processes Board, to deliver the following improvements:

5.10 Collaborating with academics and researchers in AHSS to develop a **Digital Scholarship hub** to enable Queen's scholars to share resources, training, events, and build collaborative networks for digital scholarship.

5.11 Acquire and launch our **next generation High Performance Compute cluster**.

5.12 Acquire an **ethics and data protection management system** and integrate it with our existing Research Journey systems.

5.13 Acquire a new system (which supports Digital Object Identifiers) to act as our **institutional data repository** and integrate it with existing systems, such as Pure and Preservica. Implement the **OA Roadmap** (which includes advocating for the introduction of an **institutional Open Research Statement** and institutional membership of the UK Reproducibility Network (UKRN)).

6. Global Reputation and Partnerships

We will continue working with the Ranking 175 (R175) group to enhance our global reputation and build excellent partnerships. In particular, we will:

6.1 Build a **strategic partnership with the Irish High-End Computing (ICHEC) Centre** to provide shared, data-centric, high-performance computing platform supporting Research & Innovation across the island of Ireland.

6.2 Make sure **visitors to our campus**, e.g. for conferences, have **easy access to high performance Wi-Fi networks**.

6.3 Provide **visitor profiles on our new mobile app** which provide easy access to the services that will be most useful to them during their visit (e.g. way finding between and inside buildings, using 3D models), and after their visit (e.g. to reach out to new contacts they have made at Queen's).

6.4 Extend our new engagement platform (the **Queen's Portal**, based on Microsoft's Dynamics, Dataverse and Power Platform) to **keep track of all our interactions**

with third parties (individuals and organisations) so that we can leverage existing relationships to forge new ones.

- 6.5 Upgrade the **search function** on our internet web site, to make sure visitors will find the content for which they are looking. This will complement our University-wide, Large Language Model (LLM) enabled, chatbot.

- 6.6 Our Alumni are critical to our global reputation and partnership aspirations and to that end we need, as far as possible, to retain a perpetual link with them. However, the current practice of providing them with QUB accounts poses significant cyber security risks. We will acquire a **market-leading Alumni platform** which will provide the services they expect without the risks. We will also make sure that they are able to access relevant services (through an Alumnus role) on our new mobile-first Queen's Portal through their own third-party identity or a QUB dedicated Alumnus profile.

- 6.7 Build out more application types (such as Clearing and Study Abroad) on our new **Applicant Management System**.

- 6.8 Our distinctive **collections and archives** are a unique and irreplaceable resource for researchers. We will continue to explore new opportunities to digitise the collections, making them available globally.

- 6.9 Increase **visibility of resources and collections**. Collaborate with National University and Research Libraries in Ireland to produce a union catalogue of the holdings of national collections. Work with partners such as OCLC and JSTOR to increase reach through the use of linked data.

- 6.10 Exploit discovery tools to extend the reach of collections held in Special Collections and Archives. We will work with our strategic partners, including Microsoft, to take advantage of recent developments in Large Language Models (LLMs) to **make our collections more accessible to researchers and other interested parties, through easy-to-use interfaces (similar to ChatGPT)**.

- 6.11 Exploit LLM technology to **make our research outputs, including e-theses, more accessible** (with appropriate controls, for example, to protect embargoed work).

7. Social and Civic Responsibility, and Economic Prosperity

D&IS is a significant consumer of energy. Sustainability and low carbon technologies were central to the design development of the McClay and the data centre hosted there. Even though the Library has been the recipient of many accolades, including a BREEAM rating of "Very Good", we realise we have much to do to achieve our net-zero goals.

- 7.1 When we are changing existing services or rolling out new services, we will give due consideration to **widening participation and the cost-of-living crisis**, e.g. making sure students who may not have access to costly resources (such as high performance end-user devices or subscription-based online software/services) will be able to access equipment (physical and virtual) or use services provided free of charge by the University. For example, lending laptops and providing Azure Virtual Desktops.

- 7.2 One of the key benefits of our technology refresh cycle (compute, storage and networks) is that we will **continually select increasingly energy efficient solutions**.

- 7.3 Our new cloud strategy advocates moving workloads to the cloud where energy consumption is using **greener sources** than that available to our own data centres from the Northern Ireland electricity grid, but other factors may outweigh that recommendation.

- 7.4 Our Digital Transformation programme is driving increasing use of digital in every aspect of the University's operations and helping equip our students for the world of work. Our focus on emerging technologies, such as Large Language Models (ChatGPT), will help students bring fresh thinking and competencies in new skills, such as **prompt engineering** (phrasing the question to elicit the best response from a LLM), to our local enterprises and help maintain their **global competitiveness**.
- 7.5 As part of the Belfast Region City Deal (BRCD) we are working with each of the three Queen's projects to maximise collaboration between researchers and outside companies. We will endeavour to agree secure workflows that will anonymise **joined up data sets from various data owners**, such as health trusts, local government and third-sector organisations and host them in safe-haven data repositories. We will carefully control researchers' access to these data sets to allow insights to be gained from the data, e.g. using our High-Performance Compute (HPC) resources.
- 7.6 The McClay Library provides a welcoming environment, open to the community. We will build on the success of the Friel Exhibition to develop **public engagement with our research and collections** through a programme of Exhibitions curated in partnership with our academics and researchers.
- 7.7 The Language Centre will continue to develop our portfolio of **language, culture and communication focussed training opportunities available to the public**. The new British Sign Language (BSL) and Irish Sign Language (ISL) programmes will provide more flexible options than are currently accessible in the region and thus increase opportunities for learners to develop their ability to communicate with those living with hearing loss, cultivating a more inclusive and accessible campus and region.
- 7.8 We will develop a unique and distinctive archive of **modern political collections in Northern Ireland** and will work with relevant people, including academics in the Senator George J. Mitchell Institute and colleagues in Public Engagement to establish Queen's as a hub for material relating to the NI peace process, including the Good Friday Agreement. We will work as partners with the Oxford Quill project to make papers relating to the Good Friday Agreement available on its Writing Peace platform. These collections will reinforce the University's importance as a site for major research on Northern Ireland locally, nationally and internationally.

8. Our People

We are acutely aware of the criticality of Queen's staff in reaching our goals. To attract, retain, motivate and empower our people, we will:

- 8.1 Work with our colleagues in People & Culture to **redesign our recruitment processes and systems** to make them more efficient, more effective and provide a better user experience for all stakeholders, especially the applicant.
- 8.2 Continue to use Crowdicity (or similar platform) to **collate ideas and comments from all stakeholders when developing new plans**. This will mean more buy-in to the plans during implementation and significantly increase the likelihood of those plans delivering the desired objectives.
- 8.3 Explore (with the communications team) promoting the use of **Viva Engage** to encourage communities of interest and alternatives to email for keeping people informed of changes that might be of interest to them.
- 8.4 Promote the use of Microsoft Planner in D&IS to encourage more regular and timely discussions around **personal objectives and personal development**, including training, and making time for upskilling.

- 8.5 Continue to expand our **apprenticeship, intern and graduate programmes**, including acquisition of formal qualifications and rotation through a variety of functions to build appreciation of our whole operation. We will also explore opportunities to give other staff a change of role, if they wish to broaden their experience, where that fits with business priorities.
- 8.6 Automate, as far as possible, our **joiner, mover and leaver processes** to minimise delays in updating our records (e.g. access permissions and ownership records), including interaction with line management when there are delays in filling posts.
- 8.7 Implement a **central roles database** that will be used by our automated workflows to determine who is responsible for, or should have access to, what (and is automatically updated by our joiners, movers and leavers process).
- 8.8 Enhance our **welcome and onboarding procedures** for new joiners and make sure they are applied consistently across the directorate.
- 8.9 D&IS Line managers will conduct **annual reviews of staffing levels, job descriptions and contingency plans (including succession planning)**, especially for roles that are covered by a single person. Plans will be agreed to address any major risks that are identified through these reviews.
- 8.10 Support **Racial Equality Charter (REC)** and **Equality, Diversity and Inclusion (EDI)** initiatives by developing an action plan to provide our staff with the knowledge and skills to confidently engage in these initiatives as they apply to both interactions with colleagues and users of our services.
- 8.11 Pursue **Athena Swan** accreditation as part of the wider roll out across Professional Services.
- 8.12 We have found that the focus on improving our scores for **Customer Service Excellence (CSE)** and **Service Desk Institute (SDI)** accreditations has enhanced our services, and so we will aim to maintain our Compliance Plus count in CSE (that means we need to improve at the same rate as last year) and pursue a higher score in the SDI assessment.
- 8.13 Continue to **provide flexibility to D&IS staff to work remotely where it does not adversely affect our service delivery or team working**. We will review our estate to provide **hot desks** (rather than personally assigned desks) to staff who are not on campus four days per week, which may allow us to accommodate increased staff numbers or make more space available to students as group study rooms. In support of this, the default device for all staff will be a laptop, rather than a desktop.
- 8.14 Our **“Additional Persons Database”** (an in-house development) has a reduced scope now that QWork has been rolled-out. We will review whether moving the remaining people currently managed by this system to another one of our systems, or a new database on our strategic PowerApps platform would be justified, taking into account the costs of doing so.
- 8.15 Roll out **automated, self-serve annual leave and sickness absence processes** across the university.
- 8.16 As we standardise on our new **strategic technology stack** we will form a **user group** with a Teams repository of best practice guidance, case studies, re-useable components and API catalogue (including documentation) to support developers in D&IS and in other parts of the University.

9. Financial Sustainability

Many of the projects in the other sections of this document will result in **efficiency savings**, but often their primary benefit is improving student or staff experience rather than reducing costs. One of the reasons for this is that the efficiencies often result in savings of less than a full-time equivalent person and these saved minutes/hours are targeted at other activities that improve student/staff experience. In some cases, e.g. the Applicant Management System for GMRA (Global Marketing, Recruitment and Admissions), the **savings will allow us to cope with our planned growth** (which should contribute to our longer-term financial sustainability) and avoid having to recruit more staff.

- 9.1 One example of a project that should deliver significant savings, although the primary driver is improved student and staff experience, is the **single university-wide service desk** (this is described further in the Technology section). It will remove the confusion about where to go for help and potentially allow us to provide a **24/7 service desk** cost effectively. The staff on this desk will be selected for their customer service skills, rather than their domain knowledge; their empathy, willingness to take ownership of the customer's issue and tenacity in finding a satisfactory solution.

This approach will reduce the volume of simple queries having to be dealt with by our subject matter experts and give them more time to **provide excellent service to students and staff who have more challenging issues**.

The service desk team will be **supported by systems (e.g. chatbot and “student on a page”)** to help them deal efficiently with the wide range of requests that will come through to them.

However, bearing in mind that enquiry management is one of the most time-consuming activities in higher education, the most significant benefit of this change will be having a team encouraging customers to **self-serve** using the same digital channels that the service desk staff are using (e.g. our chatbot, Queen's Service Portal or Queen's Service Desk, which are described later in this document) and thereby **reducing the volume of queries having to be dealt with manually**.

- 9.2 We will also integrate journal expenditure with expenditure on Open Access (OA), shift from subscription to OA collections, and establish an institutional OA fund for both journal articles and monographs.

- 9.3 Key to our financial sustainability is good **business intelligence** on our income and expenditure being readily accessible to the people who make decisions. We will continue to develop our data strategy, build out our reporting dashboards on Power BI and take advantage of new emerging technologies such as Microsoft Fabric, an end-to-end analytics solution with full-service capabilities including data movement, data lakes, data engineering, data integration, data science, real-time analytics, and business intelligence.

10. Infrastructure

We have ambitious plans to further develop our enviable, physical campus. Now, more than ever before, we need to make sure our physical campus is equipped with the technology to make it as effective as it can be. To this end, we will:

- 10.1 Provide secure **Internet of Things (IoT) segmented networks** to enable remote monitoring and intervention in support of our sustainability agenda. This will require an increase in hub room capacities.
- 10.2 Our next generation High Performance Compute (HPC) cluster will have power and cooling requirements that cannot be provided by our current data centres. We will explore options for a **new data centre** (on-campus or further afield) and designs to reuse the heat that is generated.

11. Technology

D&IS have a particular responsibility to make sure we build the right foundations and platforms to deliver the technology we need today and in the future. The solutions we provide, either directly or in partnership with faculty, other directorates or external organisations, need to be **secure, scalable, fit for purpose, cost effective and provide an excellent user experience**. Within the next three years, we will:

11.1 Agree our **cloud strategy**. Currently, we are recommending a case-by-case analysis of the various factors, including carbon-footprint, security, data privacy concerns and recurring costs, before migrating any particular service from on premise hosting to vendor/public cloud.

11.2 Ensure all staff and students have access to **OpenAI services** (e.g. based on LLMs) to help them explore the opportunities this new disruptive technology brings and how best to use it. By using Microsoft's enterprise grade service, we will make sure prompt data (the questions posed to the chat interface, which may contain sensitive data) does not leak into the public domain.

11.3 Develop formal **Operational Level Agreements (OLAs)** and **Underpinning Contracts (UCs)** for all our services so that our internal customers know what to expect from our service delivery teams.

11.4 We currently have several document management platforms in use across the university, including SharePoint, Q-Drive, Repstor and Perceptive Content. We will explore the opportunity to rationalise this area into **one (or, at most, two) institution-wide document management solutions** with improved user interface, better integration with our enterprise architecture and labelling capability (to facilitate sensitivity marking, etc.).

11.5 Implement a **University-wide Queen's Service Desk solution** that will provide a single platform for **Enterprise Service Management (ESM)**. It will include an inventory system (which will replace our current Equipment Register). This system will replace the plethora of solutions currently used across the University (such as SiteHelpDesk and many SharePoint, Excel and email-based solutions), but it will be integrated with PlanOn rather than replace it (since a generic ESM solution will not provide the Estates-specific functionality PlanOn provides). We will automate support processes (starting with the highest-volume processes that will have greatest impact on cost to deliver and staff/student experience). For example, to raise a ticket for a particular asset or service, the user will be able to scan the attached QR code, select the relevant action and provide additional detail (if required). The ticket will be automatically routed to the correct team for resolution/fulfilment and dashboards will show performance against OLAs based on documented Standard Operating Procedures.

11.6 **Remove all speed caps from Wi-Fi networks** and then, based on Wi-Fi survey results, reconfigure access points to give optimal performance based on their location and usage requirements.

11.7 Make Eduroam the preferred **student campus Wi-Fi solution**, with onboarding that does not require service desk support and works seamlessly on non-Windows devices. It will be treated as an untrusted network, which will terminate outside the core QUB internal network. This will increase security and useability.

11.8 Provide the same access to internal resources through **QUB Wi-Fi** (e.g. by using certificated secured hardware) as is currently available through wired connections.

11.9 Use **cloud-hosted management systems for both our wired and Wi-Fi networks** (rather than the existing on-prem solutions, ExtremeCloud IQ and Cisco Meraki).

- 11.10 Expand availability of **IPv6** (which is more future proof than IPv4) across the campus. Some schools (such as Electronics, Electrical Engineering & Computer Science and Maths & Physics) would benefit from being able to connect to global IPv6 networks and IPv6 provides additional security for IoT devices.
- 11.11 Simplify our **Domain Name System (DNS) infrastructure**. DNS records will be updated in a single location, depending on the domain used. This will reduce the likelihood of conflicting or missing DNS records, which can cause connectivity problems for users connecting to servers or applications. As part of this project, we will also take the opportunity to remove inactive, stale and duplicated records.
- 11.12 Provide a **private cloud infrastructure** (with appropriate security and governance) that will allow system administrators to spin up required compute resources onsite or in the cloud, as required.

11.13 Migrate our current Voice-over-Internet-Protocol (VoIP) **external telephony solution to MS Teams**. This will give a more seamless experience to staff and increase the resilience of our telephony system. As part of this change, we will only provide external calling capability and handsets (rather than headsets) where they are needed.

- 11.14 Retire KACE **endpoint management** in favour of Microsoft equivalents.
- 11.15 Port legacy, in-house applications, such as the following, to our **strategic low-code technology stack**.
 - a. Car Parking Permits
 - b. Telephony Database
 - c. IP (Internet Protocol) Address and Firewall Rules Requests
- 11.16 Eliminate our reliance on **Citrix remote access** (which is not a cost-effective solution), by using Azure Proxy for services that are currently only available internationally through Citrix because of Always On Virtual Private Network (AOVPN) geo-restrictions. For services that cannot be easily accessed through Azure Proxy, we will provide a VPN (Virtual Private Network) solution for Apple and Linux users.
- 11.17 Rollout more **user-friendly passwordless authentication** and, for privileged access users, more secure hardware keys.
- 11.18 **Streamline initial configuration of new staff's pcs** (to improve user experience), automate patching and control application installs (especially through administrator access) to reduce cyber risk. We will also automate patching of servers.
- 11.19 Manage staff access to installed applications and cloud apps to **minimise cyber security risk associated with scripts and third-party software**.
- 11.20 Roll-out **privileged access management for non-Windows** (e.g. Linux) servers.

11.21 Pursue **cyber security standard ISO27001 accreditation** with full institution scope. We will begin with a gap analysis.

- 11.22 With our shifting work patterns, it has become necessary to manage *ALL* QUB devices such as Windows Laptops, Apple and Android devices. D&IS have successfully completed the pilot phase of deploying Microsoft Intune to 150+ Windows Laptops. Microsoft Intune provides a **single unified portal where devices can be centrally managed**; this includes patching, device compliance, remote wipe and software deployment. Intune provides the ability for devices to be self-enrolled (Autopilot); for example, Windows laptops can be shipped directly from the manufacturer allowing the devices to be self-provisioned – removing the requirement of coming on-campus to have a device 're-imaged'. D&IS staff have been working in

conjunction with 'IT Officers' in providing access to these services to aid the wider adoption and rollout of the Microsoft Intune service.

12. Operating model

D&IS will support the setup of the **new strategy 2030 delivery office** and make sure the project classification (e.g. "Strategic", "Operational" or "Tactical"), governance and reporting structures introduced by that unit are applied appropriately in the projects/programmes managed by D&IS.

We will continue to employ **agile delivery approaches** to ensure benefits are realised as soon as possible and user experience meets or exceeds expectations.

When the final list of projects has been agreed and prioritising of the strategic projects has been carried out by the strategy 2030 delivery office, we will include **a graphic of the sequencing and interdependencies of the key projects** in the final version of this plan.