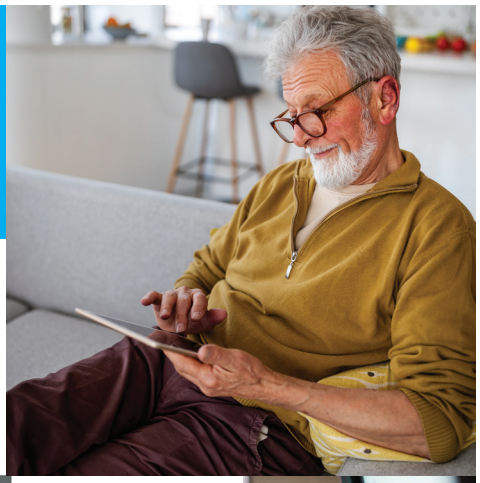
Durham University

Inspiring the extraordinary

Digital Strategy 2020-2027



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Foreword

As a leading University, with an ambitious plan for growth and excellence, it is vitally important that we underpin our research and engagement, education, wider student experience, organisational effectiveness, and global outreach by the appropriate use of digital technology.

Digital technology has revolutionised practically every facet of our lives. It is increasingly mobile and ubiquitous. Approximately 50% of the world's population have a mobile phone and the modern smartphone is several thousand times more powerful than the computer used to put a man on the moon. Quantum computing, which provides a step-change in processing power, is also not far away.

Unparalleled knowledge is available to us through the Internet, accessed through speech, type and swipe. Google process 3.5 billion searches a day, Instagram users upload over 100 million photos and videos every day and we should not forget 'YouTube man'. This is the story of Kenya's Julius Yego who taught himself the Javelin by watching YouTube videos, becoming the African and Commonwealth record holder, and 2015 World Champion.

Our own institution has also played a part in the digital revolution through our research across the Faculties. For example, our research in High Performance Computing underpins key research across the Sciences. Our research on devices and materials has led to breakthroughs in display technology. Our research on image processing and computer vision has led to industry applications in automotive and security. Our work on Artificial Intelligence and its uses and misuses is leading us to look into the ethics of computing, and our work in data science and visualization is leading to new avenues of research in the humanities and social sciences. Research also continues into cleaner energy to support the expansion of digital technologies.

The pursuit of knowledge, entertainment and achievement, accessed through multiple digital platforms, appears never ending and Durham University has a role to play in adopting these new possibilities, but also in shaping them.

The opportunities available to us today through digital technology are perhaps more limited by our imaginations and historical ways of working than by technology. As a consequence of the COVID-19 pandemic working practices and education delivery went online in a way which, perhaps, no-one could have previously foreseen. Alongside such immense digital opportunity there are ethical dimensions that must be addressed such as Artificial Intelligence bots being able to write assignments that can be difficult to detect, or some individuals not having access to technology that others take for granted. Cyber security and the protection of data is also an ever-growing responsibility that, as a University, we must deliver upon.

The considerable opportunities and flexibilities offered by digital technology must be balanced with individual responsibility and organisational oversight.

Overall the Digital Strategy seeks to be:

- **an institution wide strategy:** Put simply, this is not an IT department strategy. Digital technology has too many touch points with students, staff, alumni and society at large to be treated in isolation. Instead, this strategy embraces the totality of opportunities that are available to Durham University.
- **focused on delivering benefit not just technology:** Delivering technology is not the focus of this strategy, rather focus is given to delivering tangible and measurable benefit to stakeholders, fairly and equitably; providing benefit for all. Consequently, it will challenge the organisation to work differently, to embrace new ways of working and to deliver organisational efficiencies.
- **experience focused:** Benefits must be delivered in a way that values the experience and interactions of all stakeholders. This is more than a good natured and respectful conversation, but includes how processes can be defined to ensure stakeholders are at the centre of decision-making.
- **agile and flexible:** A collaborative approach is required with staff, students and stakeholders to align to changing priorities, business needs and evolving technologies. Flexibility is required in a changing world and this strategy will be reviewed annually and priorities amended to ensure effective, co-designed solutions meet stakeholder and business requirements in a responsible and ethical manner.
- **grounded:** Attention will be given to the quality of the necessary digital foundations and foundational technology services of today, as well as the digital innovation of tomorrow.

Delivering this strategy is not a trivial undertaking. It will require a change in mind-set as to how we approach Digital technology, how we work, and how we deliver transformation within our organisation. It will also require significant funding, so will challenge the organisation as to how difficult prioritisation decisions are made.

Durham University is a world leading organisation and therefore it must have an equally performant digital environment, one which embraces the opportunities afforded by digital technology and which underpins the institutional strategy. There is pent up demand, and genuine excitement over what could be delivered and it is vital that we work collaboratively to provide a step-change in digital capability to maintain and enhance our great institution.

Executive summary

Introduction

However *Digital* is defined, it is, and will increasingly be core to how the University works, how we interact with students, how we undertake our research, how we deliver the wider student experience, and how we interact with people throughout the world.

This Digital Strategy outlines how we, as a University, will maximise the opportunities afforded by digital technology to add visible value through a co-ordinated and managed approach of ever increasing digital maturity. The Digital Strategy is for the whole organisation, it is not an IT department's technical strategy, but rather it is focused on delivering benefit, on delivering a valuable stakeholder experience, on delivering transformation, and delivering opportunity to all. Focus is given to the foundational technical elements required to deliver a robust backbone but greater attention is placed on effective user experience and the transformational opportunities afforded by embracing digital technology. Requirements change over time and the Digital Strategy will be agile, re-setting at least annually, and responding as circumstances change and new requirements emerge.

Vision

To deliver this Digital Strategy a change in mind-set will be required as to how we approach digital technology and how transformation is delivered within our organisation. This is not a unique challenge to Durham University and is aligned to the UK Research and Innovation Digital Economy theme led by the EPSRC. Supporting the aspirations of the overarching University strategy, the ambition for this Digital Strategy is that we are "***A leading University offering a digital environment that enables and empowers people towards the extraordinary.***" Aligned to the University pillars, table A provides greater granularity of the aspiration and the core components required to deliver the digital vision.

Table A: *Digital vision and core components of delivery*

Pillar	Digital vision	Core components
People	To have digital services that attract and retain global talent with an eco-system that supports digital skills development to exploit the opportunities afforded by digital technology. Thus increasing administrative, education and research effectiveness and efficiency.	• Digital access and capabilities development (workforce and local community offer). • Talent management and data analytics. • Digital recruitment enhancement.
Research and Engagement	To provide an agile and responsive digital environment that facilitates world class research, attracts leading academics in line with the University research strategy, supports collaboration, and which enables research impact and the effective dissemination of research outputs.	• Research facilitation – technical infrastructure. • Research facilitation – support. • Research administration. • Research dissemination.
Education	To provide student access at any time, on any device, to increasingly personalised education material on a par with other organisations in UK and comparable institutions world-wide. Additionally facilitate greater exposure to digital technologies used in the workplace and increase the digital skills competence of every student.	• Student management and data analytics. • Digital education support. • Student feedback. • Digital skills for students.
Wider Student Experience	To support the aspirations of the Wider Student Experience with the required digital environment for health and wellbeing, entertainment, experience and eSports.	• E-sports. • Service/financial opportunities (WSE online). • Personal development. • Digital careers advice service.
Global Durham	To add societal value and increase awareness, interest, benefit, and affection for the Durham University brand in an international environment by utilising digital technology to showcase the University's opportunities, strengths, and outputs.	• DU external content sharing. • Targeted communications. • Alumni engagement.
Accommodation, Estates and Infrastructure	To provide effective digital infrastructure and services to the physical and virtual estate. Supporting decision making with reliable and robust data, ensuring value for money and sustainability.	• Digitalise campus buildings. • Campus space management. • Underlying digital developments. • Information systems. • Cyber security and Intellectual Property protection. • Technical debt.

Priorities

To deliver the digital vision, table B details the projects that will be delivered and when, balancing achievability with affordability, aligned to the overall University priorities.

Table B: *Digital Strategy projects (timeline indicative of project start times)*

	People	Research & Engagement	Education	Accommodation, Estates & Infrastructure	Wider Student Experience	Global
AY 20/21	Common digital skills training for staff Talent management & staff training portal	HPC Upgrade Research outputs, profiles and contract management	Banner9 Digital learning environment improvements Attendance management Equipment for online education	E-Community (Web) Complete Big3 network upgrade Reduction of Technical Debt Digital aided business process efficiency E-commerce (Web) Assistive Technology service expansion Increased Cyber security coverage CIS DevOps & process automation Finance/Procurement Infrastructure improvements	Student Relationship Management System WSE Online channel E-Sports platform Wi-Fi Device Tracking	Virtual campus tours CMS Digital open day service
AY 21/22 - 23/24	Specialist digital skills training for staff	Digital Preservation REF module Secure research data environments Digital support for research High speed research connection RDM Service Single ethics system Big Data processing service	Digital Student feedback Digital skills for students Digital Assessment Innovation mainstream Pilot Lecture capture enhancements LMS improvements Unified curriculum reform Timetabling simplification	Next generation Web Digital Signage Legacy Data Archive Estate Security enhancements Mobile App Master Data Management Integrated Information Environment Identity and Access Management Remote Access Improvement IPv6 network Disaster recovery Analytics & Reporting platform Real-time digital infrastructure monitoring Smart car parking Access control Smart utilities Campus Analytics AI platform Smart Vehicle fleet CAFM (Computer Aided Facilities Management)	Personalised AI coaching Digitise Durham Award Commercial partnerships	Enhanced digital content and training for Alumni Social Listening/ Media monitoring
AY 24/25+	Role based access Digital skills for local community AI enhanced recruitment	VR / AR AI Fund matching AI research contracts Experimentation Automation		Data centre upgrade Wi-Fi city partnership Robotic automation	AI digital careers	Digital school outreach Personalised content

Alongside these projects, the following structural changes will be implemented:

- **Cyber security observance**
  An agreed level of protection, applied throughout the University which balances the need for organisational protection with local academic freedoms.
- **University wide digital operating model**
  Multiple internal IT providers will deliver digital capability throughout the University, adhering to digital architectural principles and working in collaboration to provide a seamless digital service, irrespective of individual service provider.
- **IT department operating model**
  Consistently applied and transparent processes will drive the department with published levels of performance expected. Cultural change will be required within the department through an evolution that starts from technology provision, through systems, into customer service and ultimately full stakeholder experience into a true partnership model.
- **Multi-tiered digital service**
  Different service tiers will offer varying service levels and capabilities based on user need and affordability as opposed to a 'one-size fits all' approach.
- **Digital architecture**
  A prioritised investment decision-making approach will be implemented to optimise delivery aligned to University goals; including the balancing of new functionality, Business as Usual and the sustainability of infrastructure through the removal of technical debt.
- **Digital Enhancement Fund**
  Departmental expenditure on software will be phased out (excluding research funding) from AY 21/22 in preference of a centralised fund to support local priorities and smaller scale initiatives. Departments will bid for funding and investment will be prioritised.
- **Digital Innovation Fund**
  Innovative solutions to business problems will be explored and, where appropriate, shared across the University.

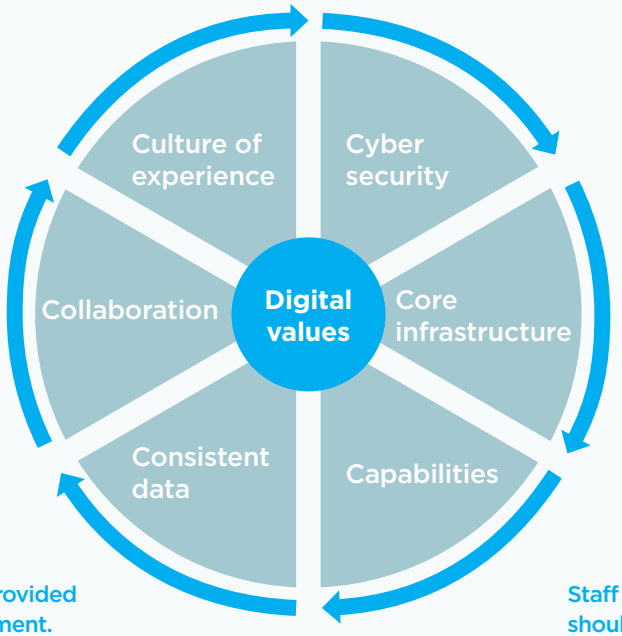
Digital values and principles

Delivering the digital ambition will be through a number of core values and guiding principles as outlined in figure B (see Appendix F for definitions). These will be used to drive decision-making and priorities, increasing digital maturity throughout the University.

Figure B: *Digital Strategy core values and principles*

All digital interactions should be considered from the end users' perspective, i.e. more than a service orientated culture. Delivering visible outcomes, within agreed costs

Infrastructure and data should be protected from malicious cyber attack through technical means, working practices and individual actions



Through joint working, agree University positions on issues such as operating models (agility verses control), project prioritisation, user requirements, and process redesign

The underlying technology must be fit-for-purpose, adaptable and flexible to changing business requirements

A single source of truth should be provided within defined Master Data Management. Ensuring the value of data capture exceeds the cost of data management

Staff and students, across the University, should have the digital capabilities to maximise the opportunities afforded by Digital technology

Principles		
Governing	**Technical**	**Operating**
Cyber security is the responsibility of everyone	Accessible from anywhere	Balance demand against available IT resource capacity
Digital by default	Best of suites	Deliver a multi-tiered service
Digital architecture led	Cloud first	Deliver operations within the service catalogue
Green credentials	Guided by architectural principles	Digital Strategy projects prioritised
Inclusive, useable, accessible and ethical	Identify and monitor problem areas	Embrace a dispersed operating model
Service adoption is locally owned	Out of the box by default	Innovate (Digital Innovation Fund)
Timely feedback loops	Reduce localised Information Systems	Operate clear project governance gateways
Transparent	Zero trust environment	Operate a swarming support model
University strategy aligned		Perform to stated KPIs
User requirements must relate to benefit		Strengthen vendor management
		Support flexible recruitment models
		Support self-service
		Support 'small' scale improvements (Digital Enhancement Fund)

What does this mean to me?

In simple terms, this Digital Strategy will be successful if, as a University, digital technology is not particularly mentioned. Rather we focus on how we work, how we engage with staff, students, alumni and other stakeholders, with the technology largely invisible. The focus should be on the user experience and University processes underpinning such an experience. This will require noticeable business change in digitising manual or paper based processes but also in rethinking whole business processes and challenging ourselves to do things differently enabled by digital technology. The optimal goal being to add value to user experience whilst contributing to, and supporting, financial and other sustainability considerations.

Digital technology may be the enabler, but it is the user experience that dictates the true value of success and therefore digital solutions must be accessible to all. This includes access to devices for students who experience genuine digital poverty, but also access to devices for staff who may not currently have regular opportunity to use a device. Everyone requiring access to a device should be able to access an appropriate device and possess the appropriate skills to make the most of digital opportunities. This means that opportunity to use devices must be matched with a programme of skills development to perhaps even further enhance the skills of the experienced, whilst providing support for those who may not have had the same digital skills opportunities in the past. Additionally, online material must be accessible for students, staff, alumni and the wider society. For students studying online the wider student experience must be equally accessible, engaging and support personal growth.

Tangibly for specific stakeholder groups the Digital Strategy means:

YEAR 1 | YEARS 2-4 | YEAR 5+

Student Journey

1. CONTACT TO ENROLMENT

- Website redesign providing accessible information
- Virtual tours of some campus buildings
- Virtual open days
- Digital buddy system with current Durham University students
- App enabled personal information presentation
- AI chatbot answering queries 24/7
- Virtual tours of campus and accommodation
- Virtual tours of city and surrounding areas

2. ONBOARDING

- Personalised digital onboarding, inc. for international students
- Virtual freshers fair
- Personalised virtual campus tour
- Wayfinding and indoor navigation using a mobile device

3. EDUCATION

- Digital reading list to access recommended texts
- Online lecture and seminar provision
- Increasing number of video conference enabled rooms
- Self service curriculum portal and selection
- Personalised timetabling mobile App
- Single system to view all student related data (results, planning, finances)
- Enhanced lecture capture recording such as whiteboards
- Greater use of digital assessment, exams and feedback
- Electronic study buddy aid
- Remote access to computer lab functionality

4. STUDENT LIFE

- Assistive Technology service expansion
- Wider Student Experience digital channel of University events and activities
- E-sports competition and venues
- Data analytics for Durham University sports teams
- Wellbeing monitoring supporting early signposting
- Digital signage to support flow and room bookings
- Virtual access key student services
- Mobile phone enable building access control
- University commercial partnerships offering student discounts
- People movement tracking to enable an increasingly accessible smart campus

5. EMPLOYABILITY

- Virtual career fairs
- Self service digital skills development
- E-Portfolio of achievements and Durham Award
- AI enabled careers advice service

6. ALUMNI: LIFE-LONG CONNECTION

- Single alumni platform from enrolment through to life-long connection
- Access to skills development life-long learning
- Access to Wider Student Experience concerts and events
- AI enabled careers advice service

YEAR 1 | YEARS 2-4 | YEAR 5+

All Staff

1. OPERATING MODEL

- Increased cyber security controls and coverage
- Operating model review of increased remote working
- Local business process efficiency gains enabled through collaboration tools
- People movement tracking to enable an increasingly accessible smart campus
- Robotic automation to support health and safety along with increased efficiency
- Software access control enabled through Role Based Access

2. WORKING ENVIRONMENT

- Assistive Technology service expansion
- New finance and procurement system with increased functionality
- Reduce technical debt (legacy) for increased digital reliability and performance
- Physical estate security enhancements enabled through digital services
- Mobile phone enabled building access control
- Digital signage to support flow and room bookings
- Smart car parking to support planning and time efficiency
- Improved remote access to digital services
- Improved decision making through analytics and reporting platform

3. SKILLS

- Common digital skills training for all staff
- Staff training and talent management through a single portal

4. RECRUITMENT AND RETENTION

- Personalised digital staff induction
- Website redesign providing accessible information
- Personalised virtual campus tour
- AI enhanced candidate recruitment

Lecturer

1. EDUCATION ADMINISTRATION

- Increased Student Record System functionality (Banner9) and process efficiency gains
- Full student CRM with student attendance management and full data view
- Timetabling simplification and increased end user communication
- Unified curriculum reform and self-service portal supported by data analytics
- Personalised timetabling mobile App easing administration

2. EDUCATION DELIVERY

- Essential digital equipment provisioning for the delivery of online education
- Digital reading lists to support online education
- Digital Learning Environment infrastructure and functionality improvements (Ultra)
- Increased online lecture and seminar provision through multiple platforms
- Increased number of video conference enabled rooms within the physical estate
- Enhanced lecture capture recording such as whiteboards
- Increased library functionality and access
- Digital examination/marking/assessment solutions
- Pilot to production mainstreaming of digital learning innovation
- Enhanced student feedback system enabled through digital means
- Digital learning and education skills programme for lecturers
- Remote access to computer lab functionality

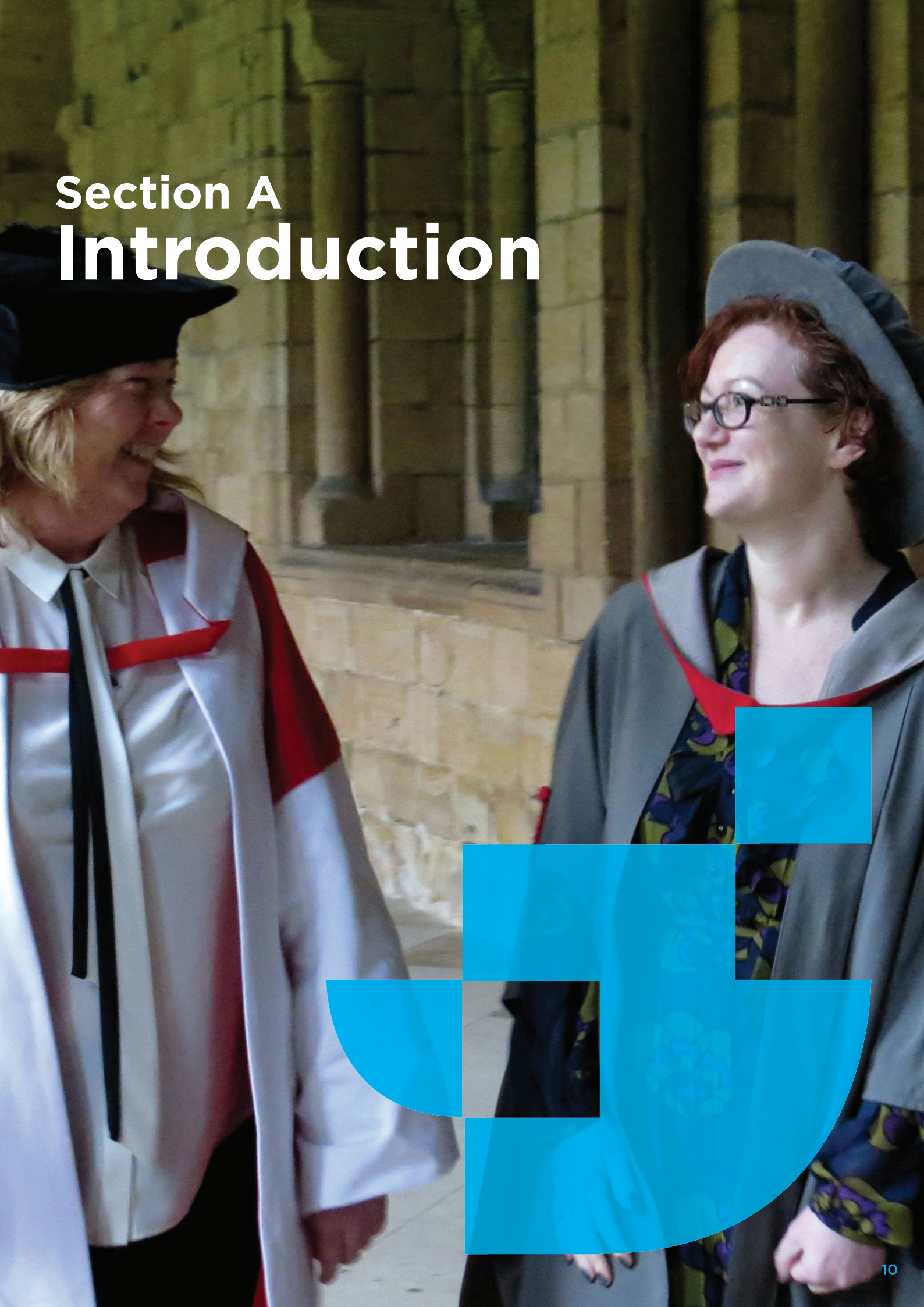
Researcher

1. DIGITAL RESOURCES

- High Performance Computing (HPC) capability investment
- Big Data processing service
- High speed research network connection
- Increased cyber protection of Intellectual Property
- IPv6 data network upgrade
- Increased remote access and experiment automation
- VR and AR applied to research to increase research outputs and new avenues of research

2. RESEARCH FACILITATION

- Single research outputs, profiles and contracts management approach
- Research Data Management service overseeing and sharing research data
- Secure research data environment service to quickly and securely support research
- Single digital research ethics review system applied throughout the University
- Research Excellence Framework module to support REF exercise and planning
- Increased digital expertise available to support researchers
- Specialist digital skills training available for research specific activities
- AI analysis of research contracts to supplement understanding and increase efficiency
- AI enhanced data searching and matching of possible research funding to academic expertise



Section A
Introduction

1. Digital vision

Digital technology is about opportunity and how students, staff, alumni and the wider society are empowered to deliver increasing value, enabled and underpinned by user centred technology. This Digital Strategy does not forget the need for the basics to be in place. There must be an effective, reliable and fast data network, large volume data storage, appropriate end user devices, high availability of applications, whilst operating in a flexible, yet secure manner. Alongside digital functionality must be a complementary investment in skills so everyone has access and can use the digital functionality available. Skills investment must be provisioned in a supportive way that celebrates the diversity and different life skills of everyone. The Digital Strategy does not shy away from the need to increase the service delivery maturity through the central IT department, or for this to be more user focused, accessible, responsive, consistent and transparent. However, the vision is that, we do not necessarily talk about IT, what it does well or does not, or even who delivers it, rather our conversations centre on how digital technology is enabling the University strategy to be delivered through new and exciting capabilities and services.

As an organisation, we have the opportunity to move to an environment where virtual reality and augmented reality can bring the outside inside. For example, to 'walk the streets of ancient Greece' or to visualise a technical design that originates on a computer screen as it is meant to appear in the real world. Learning is increasingly 24/7 and accessible from anywhere in the world. Artificial Intelligence and chat bots have the capability to answer questions around study related issues, facilitating one-to-one learning with intelligent tutor support systems, or streamlining services such as service-desk support.

International collaboration and the sharing of data enables our education and research to be truly global with the greatest minds and scholars able to work together on common goals. Greater computing power enables simulations and investigations to be undertaken providing new insights into the world around us, before then applying that learning for the benefit of our students and humanity.

Digital transformation also impacts professional services. More and better quality data can inform organisational decision making whilst streamlining administrative functions. These areas have been the stalwarts of many digital strategies over the last decade or so. However, digital technology can go further for example increasing accessibility of health and wellbeing services or increasing remote working and flexible work spaces which could reduce the need for office space and support the repurposing of it for education or research needs. Increased remote working has already started in response to COVID-19 and there is evidence that remote working provides a better staff quality of life, increases productivity and could lessen the requirement for new buildings; with the associated financial and environmental benefits this would facilitate. Digital technology can also provide effective communication and dissemination of the world leading education and research produced at the University while enhancing the reputation of the institution through raising the University's profile in current and emerging markets.

The overarching University strategy highlights that our core asset is our people and the Digital Strategy will ensure that all staff and students have the required skills, not just to participate in, but to maximise the opportunities afforded by digital technology. This should cover the full spectrum of skills from those who shy away from technology or who have in the past had little need to use digital services, to those who can further increase already well defined digital skills to apply them to world leading education and research.

This is an organisational strategy, not an IT department's strategy. It seeks to unite the organisation behind a single digital vision with a clear roadmap setting out when new functionality will be delivered. It links to existing University strategies, but it must also adapt to forthcoming strategies to deliver one institutional digital vision. The Digital Strategy must deliver tangible benefit for students, staff, alumni, and the wider society rather than focusing on the number of devices deployed or petabytes of storage available. It is a strategy that will continue to evolve and adapt, acknowledging that 'change is the new constant' and the opportunities afforded to us today maybe somewhat different to the opportunities of the future. It is also a strategy that is grounded in reality, acknowledging the need for the digital foundations to be in place, expanding on software applications, maturing in digital service delivery and appreciating the need to innovate, and then spreading that innovation throughout everything we do. Digital technology is a great enabler and this strategy challenges, and empowers, us all to deliver the extraordinary. Such a challenge can also be applied to internal digital providers regarding how to increase income generation and contribute to financial sustainability.

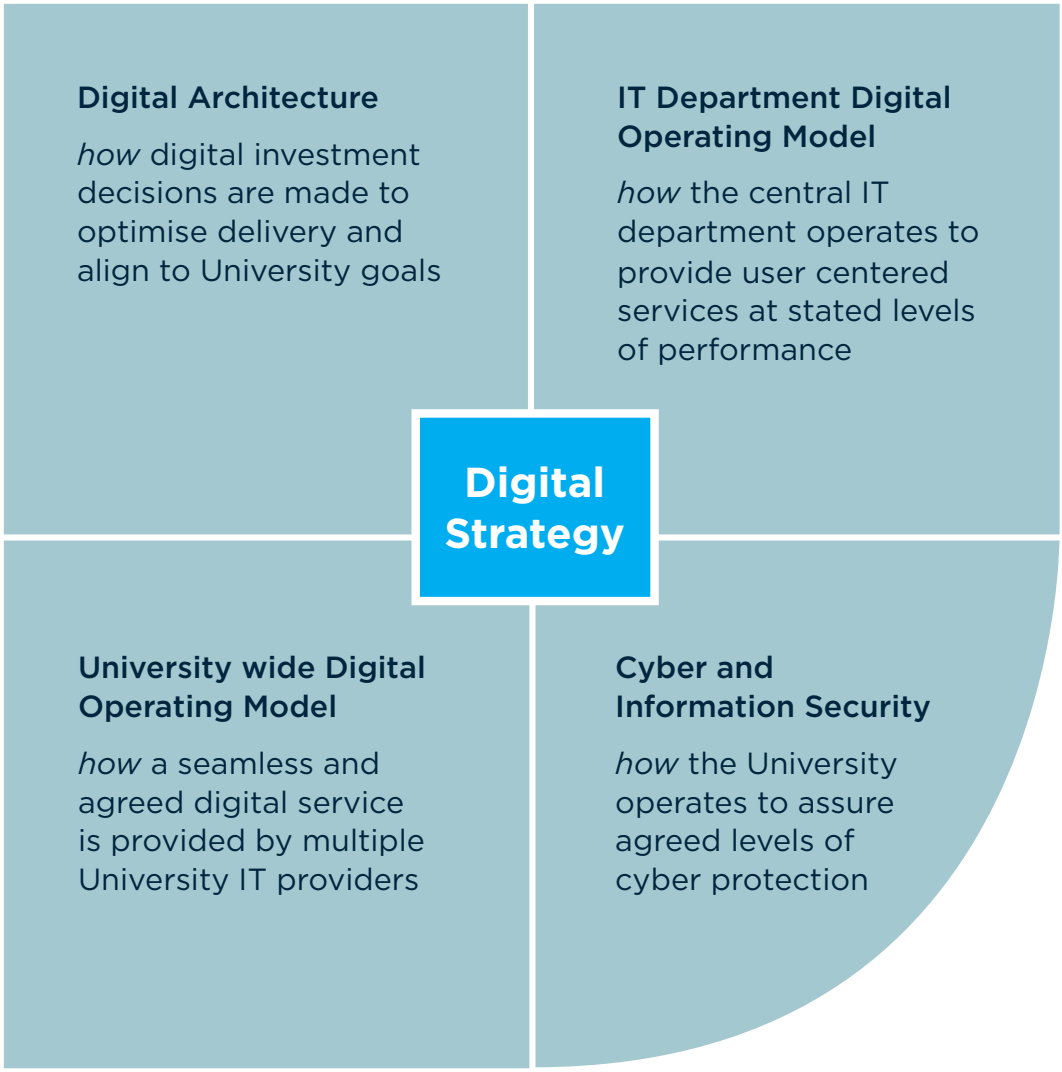
2. Strategy development

2.1 Strategic fit

The Digital Strategy is an underpinning and enabling strategy to the over-arching University Strategy 2017-27. It provides a vision and roadmap as to what *digital* can offer to support the delivery of the 2027 vision and stated goals of:

- Produce world-leading and world-changing research across all core academic units;
- Deliver an education that is challenging, enabling, research-led and transformative;
- Provide our students with a wider experience that is as good as any in the world, through our colleges, Experience Durham activities and the Durham Students' Union.

Figure 1: *Complementary documentation underpinning 'how' this strategy will be delivered*



2.2 Scope

Increasingly, digital technology is viewed as being considerably more than just hardware or software, as the following quotes highlight:

> *Information technology is at the core of how you do your business and how your business model itself evolves.*
>
> Satya Nadella

> *The first rule of any technology used in a business is that automation applied to an efficient operation will magnify the efficiency. The second is that automation applied to an inefficient operation will magnify the inefficiency.*
>
> Bill Gates

In an increasingly competitive and international Higher Education sector where effective digital technology provision is consistently viewed as important by students and staff a Digital Strategy must be more than a simple timeline of when new systems will be replaced or added. Rather the Digital Strategy should establish a clear and prioritised list of initiatives that balance affordability with achievability and deliver focused, tangible and measurable outcomes through a costed programme of business change enabled by digital technology. The traditional 'IT elements', the hardware and software, of a digital roadmap are therefore just one component of a much larger programme of strategic business delivery, underpinned and facilitated by digital technology.

Theories such as the Socio-technical theory[1] (see figure 2) have at their core the notion that the design and performance of an organisation can only be understood and improved if both 'social' and 'technical' aspects are aligned and treated as interdependent components. Throughout the world, numerous projects and organisational change programmes have failed to deliver the expected benefits because they have focused on one aspect of the system, commonly technology, at the detriment of other components of success. In digital transformation, the complex interdependencies and multiple facets of change need to be understood, balanced and managed in totality.

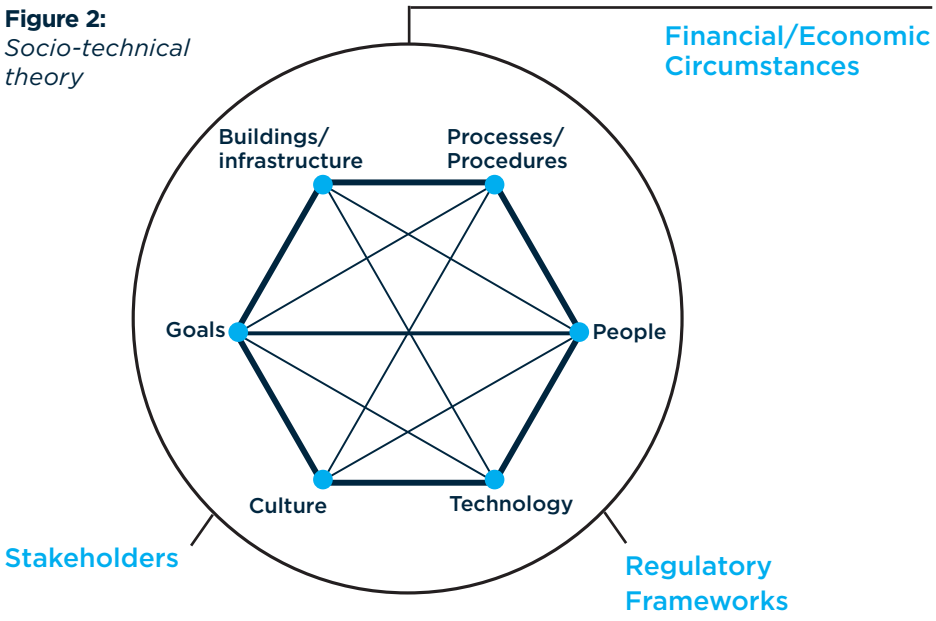
Regarding the size of activities within the Digital Strategy scope, focus is given to medium and larger scale initiatives rather than smaller scale changes. This does not belittle the value such smaller changes deliver, but recognises the need to focus on establishing and agreeing the larger elements which have a more significant impact on the investment required and the scale of change anticipated across the University.

As such, initiatives within the scope of the Digital Strategy are defined as having at least one of the following over a 3-year time horizon:

- Capital investment only: >£100k
- Operating expense only: >£100k
- Capital investment and Operating expense: >£125k
- Resource requirement from inception to closure[2]: > 50 days

To ease comprehension, current software systems and technology that may be replaced with similar functionality and cost are typically considered Business As Usual and are excluded from this Digital Strategy. However, such BAU activities should still align to this Digital Strategy rather than just being a 'technology replacement'. Additionally technology refresh is not explicitly highlighted, but the importance of this should not be underestimated in order to ensure the robustness and reliability of the core infrastructure.

Figure 2: *Socio-technical theory*



1. Davis, M.C., Challenger, R., Jayewardene, D.N.W. & Clegg, C.W. (2014). Advancing socio-technical systems thinking: A call for bravery. *Applied Ergonomics*, 45(2A), 171-180. doi:10.1016/j.apergo.2013.02.009*
2. Including procurement, department / area affected, IT resource, institutional resource (where there is an opportunity cost) and external support, along with training and business change.

2.3 Methodology

Figure 3 provides an overview of the Digital Strategy approach and how it has been developed. In summary:

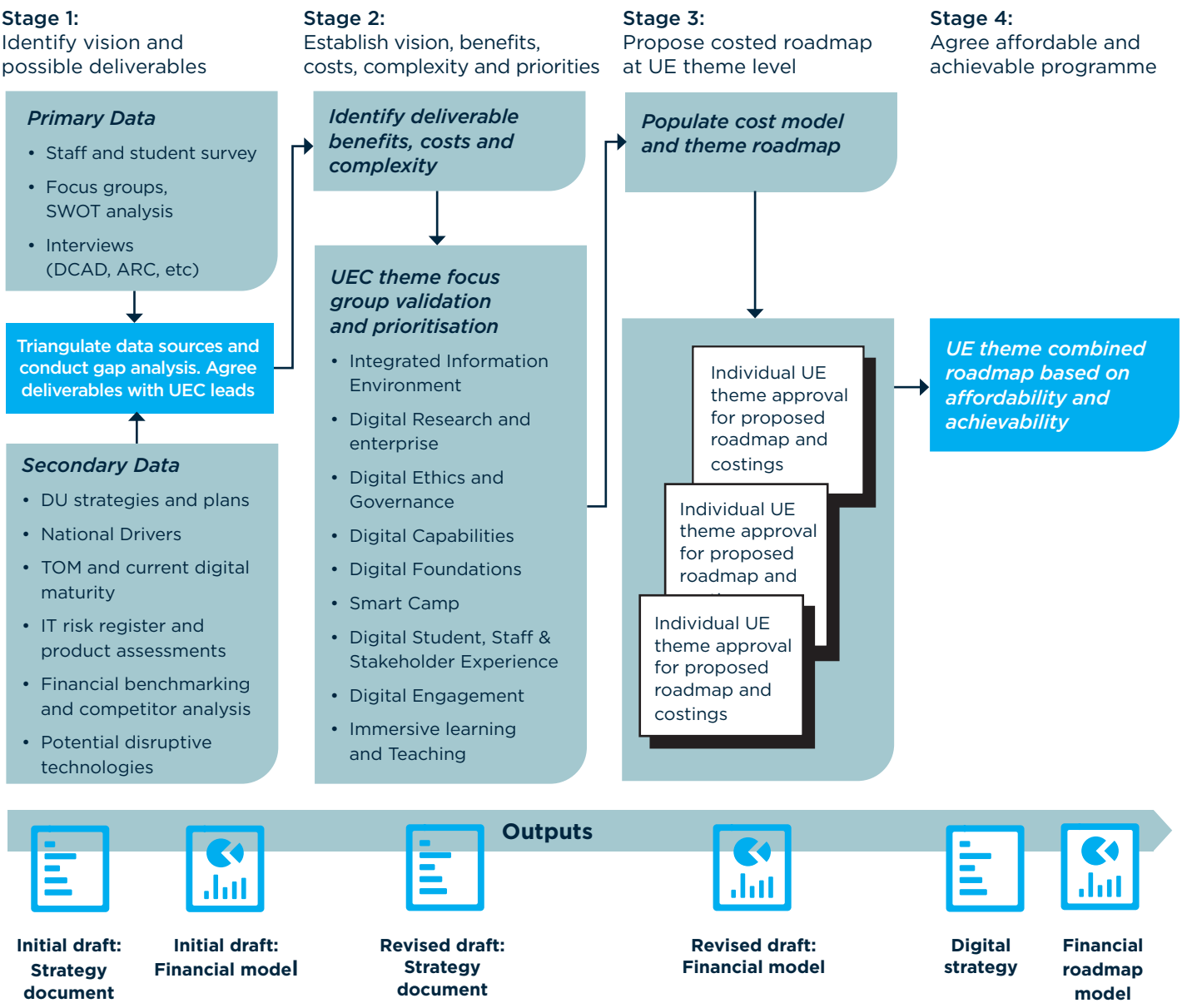
Stage 1: Review available secondary data and undertake a digital staff satisfaction survey of IT services. Interpretation of the survey results to be conducted through 3 focus groups with representation from across the organisation. This will evidence the baseline position and identify potential projects, and corresponding costs, for discussion.

Stage 2: Categorise potential projects into 9 UE themes and refine with UE theme leads. Thereafter undertake theme workshops in order to identify any gaps, add further project detail and prioritise into a roadmap. Individual project details to be added working with project sponsors to a defined template. External partner to undertake interviews with University IT providers to support the identification of an agreed University operating model.

Stage 3: Publish a draft strategy for consultation and input from various stakeholders and committees, including Council. Concurrently populate a cost model and propose an affordable and achievable portfolio in-line with organisational priorities and benefits, with a subset of UE. Present to individual UE theme leads and refine.

Stage 4: Agree a finalised strategy and roadmap at UE and through the University's governance structures. Transition into implementation.

Figure 3: *Digital strategy approach*



The final elements of stage 3 were being completed when the impact of the COVID-19 pandemic began to take hold and as a consequence the aforementioned methodology was refined. The consequences of the global pandemic were stark, with the sad loss of life and practically everyone around the world having been impacted to some extent. Within the University, the impact has been felt in student recruitment, education delivery, the research and engagement that can be undertaken, whilst the core business processes of the University and the overall financial envelope within which it must operate were all challenged. Digital services experienced a seismic shift in just a handful of months with an accelerated transition to 'online' that was both considerable in scope and rapid in delivery. As attitudes, priorities, user requirements and available funding were yet to stabilise, impacting on long-term decision making, the methodology was refined such that a further organisational questionnaire was undertaken. This data would supplement understanding and a one-year roadmap would be agreed for 20/21 with a longer-term roadmap ready for Academic Year 21/22. Such an approach would allow for greater stability, objectivity, and clarity, post the immediate impact of COVID-19.

2.4 Consultation

In the development of this Digital Strategy, consultation has been a key feature with approaching 2,000 touchpoints during its development. This includes 803 and 874 responses to the two staff surveys, 30 attendees at focus groups, 48 stakeholder interviews, 56 attendees at UE sponsored workshops and comments from the IT Users Group, IT Advisory Group, Operations Board, Provost Board, Finance Committee, University Executive, Senate and Council on a draft version of the Digital Strategy.

2,000
touchpoints during its development

30
attendees at focus groups

48
stakeholder interviews

1,677
responses to the two staff surveys

3. Baseline

In order to deliver an effective Digital Strategy, the vision must be rooted in reality. The following appraises the digital landscape as of September 2020.

3.1 Broader context

The wider perspective is one of noticeable uncertainty, including:

- **COVID-19:** The COVID-19 pandemic is a human tragedy, causing tragic loss of life and challenging the very core of societal norms and values. It has constrained people's ability to travel, interact with one another and had a noticeable destabilising impact upon many.
- **Brexit:** Political changes following Brexit are yet to be manifested, but could have a destabilising impact.
- **User expectations:** Today's students have been immersed in technology from an early age and their expectations are increasing, including being taught remotely during the COVID-19 pandemic or accessing health and wellbeing support through apps and digital technology.
- **Staff recruitment:** Staff recruitment and retention is likely to be a growing challenge due to increased uncertainty and/or restrictions, along with raised expectations from staff as to what digital solutions can deliver.
- **Variable digital competency:** Some students and staff have excellent digital skills and can apply them in a variety of situations, others may have more limited expertise and may therefore seek to disengage with digital opportunities.
- **Increased competition:** International league tables highlight the sector is increasingly competitive and the UK's standing is being challenged.
- **Societal perception:** Sections of the popular press and general public have questioned the purpose, value and contribution of University's to students and the wider society.
- **Cyber threat:** Cyber threat from both criminals, for example ransomware attacks, and nation states seeking to acquire research and other data.
- **Legislative compliance:** Increasing regulation of areas such as the protection of personal data and right to privacy.
- **Technology evolution:** Technology innovation is accelerating. Today technology can be designed by technology and then produced in fully automated factories. Disruptive technologies such as Artificial Intelligence, Virtual Reality, wearable technology and The Internet of Things have been utilised in other sectors but have had less impact within the Higher Education sector to date. Technology predictions for the future have made many look foolish, but it seems likely that the pace of technical innovation will continue to accelerate, challenging every aspect of University operations.
- **Financial:** Financial resources are increasingly restricted due to income from student recruitment declining (internationally due to world-wide uncertainty with student recruitment and within the UK due to Government caps on numbers), alongside a cap on student tuition fees. Income from research funding may be harder to obtain whilst operating costs are increasing, including additional pension contributions. Universities are, therefore, required to review their long-term financial sustainability.

Whilst such uncertainty and challenge must be understood, planned for, and addressed, Durham University is well placed to continue to thrive. The University is consistently ranked as one of the world's leading University's as shown by the QS World University and Times Higher Education World University Rankings. The University has an ambitious plan for growth and continued excellence as set out in its strategy 2017-27. This Digital Strategy seeks to underpin and support the over-arching organisational strategy at a time of much change, yet also, noticeable opportunity.

3.2 Key baseline digital metrics

Figure 4 provides an overview of the digital services consumed and the infrastructure enabling it at the time of defining the baseline.

3.3 Technical debt

The digital foundations used to support core business processes and student-facing services are in continual need of refresh to ensure appropriate functionality, reliability, capacity, security and legal compliance. A minimum of a 5-year, £27M programme to address known risks and ensure the building blocks are in place for future business led IT projects commenced in 2018/19. Early efforts have focused on delivering new user facing storage, a reliable data network and fit-for-purpose hosting environment, often referred to as the BIG3. Removal of technical debt that exposes operational risk and reduces agility, along with a proactive refresh programme to ensure further technical debt is not added to the environment requires continual focus.

3.4 Digital capacity

The number, breadth and complexity of business led IT projects over recent years has led to a position where genuine demand has outstripped the available capacity to deliver them. This has led to a number of business led IT projects being delivered late or not as envisaged, technical debt being further increased as resource is switched to business led IT projects, Business as Usual suffering and ultimately, organisational benefits delayed or diminished. Working with the Strategic Delivery Unit, efforts continue to refine the project lifecycle and better size the portfolio of demand to available resource.

Figure 4: *Durham University IT landscape*

Service delivery

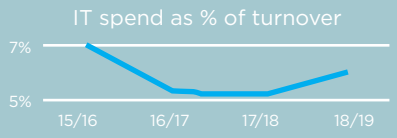
14,626 undergraduate students
4,514 postgraduate students
4,365 staff

CIS support per month

8,136 service desk calls
1,033 calls to the field teams
2,621 calls to 2nd & 3rd line support
255 change requests

CIS resources

150 staff
£18.2M operating budget
£15M project spend
5.88% IT spend as a % of turnover in 18/19



Devices

5,542 managed desktops
1,259 managed laptops
5,500 desktop phones
280 AV projectors/screens

Storage

300TB application storage
7PB of user facing storage
1TB (minimum) of cloud storage per user; student and staff

Infrastructure

2THz of CPU and **14.5TB** RAM virtualisation capacity
700 managed virtual servers
136km singlemode fibre
3,500 access points

HPC

4,640 Hamilton cores
28,288 Cosma cores
11,040 cores
20TB memory
2PB storage
400+TB/month

Online per month

3,689,403 website hits
5,758,735 emails received
1,224,826 emails sent
26,038 phishing emails detected
1,733 emails blocked due to malware

35,000 devices on the network (average)

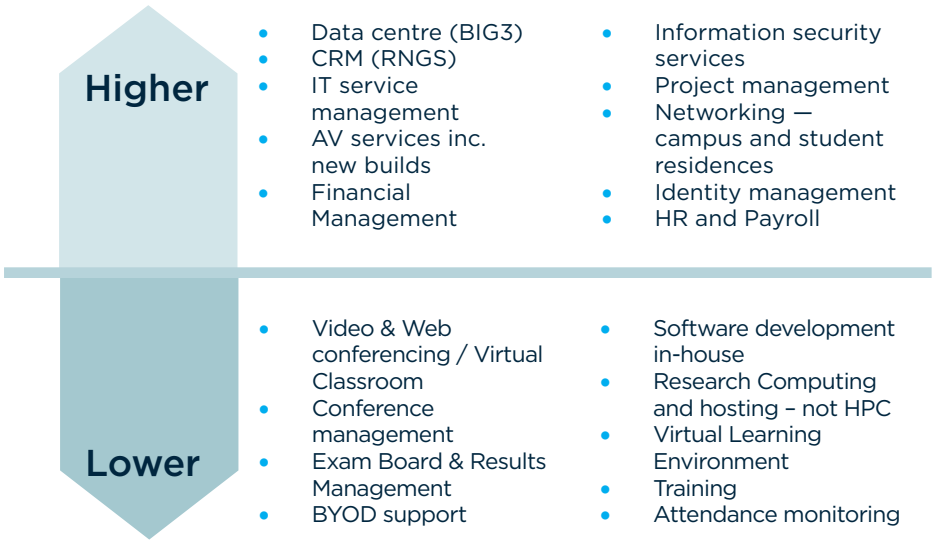
3.5 IT department culture

Within the core IT department the culture tends to be one of technology provision with a view towards detailing technology services. Customer service is variable across the department, although there are examples of a true user experience perspective. Skills and opportunities are also somewhat inconsistent with highly skilled and well known members of the IT department at times shouldering more of the workload as they are more visible than other members of staff. The culture between the central IT department and wider University tends to be aligned to a supplier, customer model where requests are made for IT to deliver a specific solution as opposed to a strategic planning partner. This can leave end users, especially some academic colleagues more reliant on digital technology, somewhat isolated from the main IT department.

3.6 Financial x-ray

In 19/20 an independent financial x-ray was undertaken by JISC revealing that on average the University spends a similar amount on IT as a percentage of turnover compared to its peers. However, the number of beneficiaries per IT Staff FTE is above average, 133 compared to an average of 129. Figure 5 highlights the JISC defined services costing more or less than the comparator group. Compared to the comparator group training, and attendance monitoring were identified as services largely missing.

Figure 5: *Financial benchmarking*



3.7 Digital survey

3.7.1 Digital services survey

During the summer of 2019, a staff survey was undertaken to measure the level of IT service satisfaction. Some 803 responses were received, 334 from research and lecturing staff and 469 from professional services staff.

Key themes reported as areas of satisfaction include:

- The attitude and knowledge of the IT department staff, along with the resolution of issues.
- Network (wired and Wi-Fi) coverage and performance.
- The size and performance of file storage. Audio Visual equipment in classrooms.
- Several Information Systems including: DUO, Instant messaging (Skype), K2, Millennium, People+, and Worktribe, ZendTo / DU Box.

Key themes reported as dissatisfied include:

- Access to University systems when off-site.
- Availability and quality of Assistive Technology.
- Large volume printing / photocopying devices.
- Visibility of work the IT department plan to undertake.
- Several Information Systems including: Banner, Web Content Management System (CMS) / Staff Profile System, DU mobile app (MyDurham App), DU Website, Lecture Capture (Encore), Meeting room booking, Oracle e-business suite, Raisers Edge, Timetabling, and Voice / Video conferencing (Skype).

It should be noted that even the areas reported as the most dissatisfied, overall, are classified as ‘somewhat dissatisfied’ with a range spanning the extremes of satisfaction. Appendix A summarises the overall findings.

3.7.2 Digital remote working survey

874 responses to the survey were received

A complementary staff survey was conducted in the summer of 2020 to gauge changing user expectations in-light of the COVID-19 pandemic which resulted in a rapid switch to online delivery, for education, research and professional services. A total of 874 responses were received with a number of themes emerging, Appendix B provides further insight.

- **77%** said that they would be the same or **more productive** in a 'new norm' (defined as schools having returned and the University predominantly teaching students on-campus).
- **77%** said that remote working would have no impact or a positive impact on **work-life balance**.
- **69%** said that **communication with their team/colleagues** had remained the same or improved.
- **69%** said that the effectiveness of **managing staff remotely** had remained the same or improved.
- **74%** said that **online meetings were somewhat or very effective**.
- The average **percentage of roles that could be undertaken remotely was believed to be 76%** with a **preference to work remotely for 57%** of the time.**68%** said a **hybrid operating model would be effective,** where some staff are on site and others working remotely.
- **59%** said **online student interaction** was good or very good.
- **56%** said their r**esearch productivity had declined**.
- **50%** said they were **not confident using Collaborate Ultra, 12% Teams** and **5% Zoom** as an education tool.
- **15%** said they were **not confident delivering high quality remote lectures**.
- **25%** said they were **not confident delivering high quality seminars remotely**.
- **56%** said they were **not confident delivering high quality practical classes remotely**.

3.8 COVID-19 lessons learnt

The pandemic required a significant University response as teaching and operations went online within a handful of weeks. As a consequence, some things will never be the same again, for example the use of printing or the scale of investment in desktop computing in favour of more flexible mobile devices. Significant service changes were delivered in a short space of time and barriers that once delayed or constrained decision making were rapidly removed. There was a single purpose which enabled a comprehensive response, enabling the University to work remotely whilst continuing to deliver its core operations. New solutions were introduced in a handful of days, such as Teams and Zoom, yet testing and a gated process remained which supported service introduction within articulated risk profiles. To deliver such change required joint working from across the University aligned to IT staff with the required sills and attitude to provide an effective response. Appendix C presents a SWOT analysis which has supported the shaping of this Digital Strategy.

Section B
Ambition

4. Digital Strategy ambition

Following the indicated methodology (see Section 2.3), possible projects addressing business problems, financial sustainability challenges, or potential opportunities were identified by stakeholders (see Appendix D). These digital initiatives were validated against the inclusion criteria, duplicates were removed, and some projects merged. They were then attributed to the six University pillars, defined in the University strategy and 2019 annual report, as follows (see Appendix E for definitions). It should be noted that timescales are indicative of a start date and individual projects could take several years.

4.1 Digital ambition aligned to University pillars

4.1.1 People

> *The world of work is changing, and we need to ensure our people are supported in developing the necessary digital skills to embrace these changes. The scale and pace of change is only set to increase and new technologies will play an increasingly important role in how we educate our students and provide our services. Increased digital capacity will not just result in more efficient ways of working, but just as importantly allow us to accelerate the introduction of more agile and flexible ways of working.*
>
> **Joanne Race, Director of Human Resources and Organisational Development**

Vision	**University Goal:** *To have across all of our Departments, Research Institutes/ Centres and Colleges faculty members of great distinction who will inspire students, contribute to the public good though their world-leading research and public engagement, and firmly position us as a world-class centre of academic excellence.*
	Digital Goal: *To have digital services that attract and retain global talent with an eco-system that supports digital skills development to exploit the opportunities afforded by digital technology. Thus increasing administrative, education and research effectiveness and efficiency.*

What and when	Core components	AY 20/21	AY 21/22 – 23/24	AY 24/25+
	Digital access and capabilities development (workforce and local community offer).	• Common digital skills training for all staff	• Specialist digital skills training for research staff	• Digital skills training for the local community • Role Based Access
	Talent management and data analytics.	• Talent management and staff training portal		
	Digital recruitment enhancement.			• AI enhanced candidate recruitment

Success measures	Proxy measures	University Strategy Performance Indicators
	• % of staff with digital competence targets in their annual reviews. • % of roles where a digital competence measure is used in the recruitment process. • % of staff with access to individual talent management dashboards and access to online training material. • % of workforce who have the opportunity to input into digital planning decisions and priority setting. • % of workforce satisfied with their digital provision (hardware and software). • % of workforce satisfied that digital services are meeting their requirements.	• % of staff who are satisfied with their job. • % of staff feeling engaged with the University's activities. • Measure of satisfaction with professional services effectiveness. • Support staff costs. • Ratio of Professional Services to academic staff.

4.1.2 Research and engagement

Digital technology has a valuable contribution to make across the full research cycle. Durham University researches the technology itself, but digital technology is also a tool to facilitate research and to solve real world challenges. It is vitally important that the research the University undertakes is aligned to digital investment to ensure the very best tools are in place for the world-leading research Durham University undertakes.

Professor Colin Bain, Vice-Provost (Research)

Vision	**University Goal:** *To strengthen Durham as an institution in which world-leading and world-changing research and engagement is created and sustained across all core units in the Arts and Humanities, Sciences, Social Sciences and Business School.*
	Digital Goal: *To provide an agile and responsive digital environment that facilitates world class research, attracts leading academics in line with the University research strategy, supports collaboration, and which enables research impact and the effective dissemination of research outputs.*

What and when

Core components	AY 20/21	AY 21/22 – 23/24	AY 24/25+
Research facilitation – technical infrastructure.	• High Performance Computing (HPC) Upgrade	• Big Data processing service • High speed research network connection • Secure research data environments	• Experimental automation
Research facilitation – support.		• Research Data Management service • Digital support for research	• AI analysis of research contracts • VR and AR for research • AI enhanced matching of research funds to academic expertise
Research administration.		• Single digital research ethics review system • Research Excellence Framework module to support REF exercise	
Research dissemination.	• Research outputs, profiles and contracts management	• Digital Preservation so digital information is accessible	

Success measures

Proxy measures

- % of research staff who score digital resources as 'good' or better in satisfaction surveys.
- % of digital storage requests that cannot be met within 2 weeks.
- % of research staff who have to wait more than 1 week for access to HPC.
- % of research projects with a full data set available in the research data management system.
- % of collections digitised and accessible.

University Strategy Performance Indicators

- Citations analysis.
- Number and percentage of Units of Assessments in the top third of Russell Group University's.
- Research income per core academic staff member.
- PhD student numbers per core academic staff FTE.

4.1.3 Education

Durham University seeks to deliver a premium educational experience for all students. Digital technology supports the introduction and transition to University life, the delivery of educational material, the learning experience, diversification, individualised learning and the ability to access educational material at any time, from almost anywhere in the world. Digital technology is therefore a vital component of education and how we prepare Durham University graduates with the skills to support them throughout their careers.

Professor Alan Houston, Vice-Provost (Education)

Vision

University Goal: *To provide outstanding educational opportunities for undergraduates, postgraduates and research students, producing critically and socially engaged graduates of the highest calibre who enrich society through their employability and role as global citizens.*

Digital Goal: *To provide student access at any time, on any device, to increasingly personalised education material on a par with other organisations in UK and comparable institutions world-wide. Additionally facilitate greater exposure to digital technologies used in the workplace and increase the digital skills competence of every student.*

What and when

Core components	AY 20/21	AY 21/22 – 23/24
Student management and data analytics.	• Increased Student Record System functionality (Banner 9) • Student attendance management	• Timetabling simplification and increased end user communication
Digital education support.	• Digital Learning Environment infrastructure and functionality improvements (Ultra) • Equipment for online education	• Unified curriculum reform and self-service portal • Lecture capture enhancements (e.g. white board capture) • Library Management System (LMS) infrastructure and functionality improvements • Digital examination/marking/assessment solutions • Pilot to production mainstreaming of digital learning innovation
Student feedback.		• Digital student feedback system
Digital skills for students.		• Digital learning and education skills programme (inc skills for students)

Success measures

Proxy measures

- % of students with incomplete data in the records management system.
- % of students with personalised timetabling.
- % of students who rate personalised timetabling as 'good' or better in satisfaction surveys.
- % of lectures digitally captured.
- % of lectures transcribed.
- % of lecturing staff who rate software provision for education as 'good' and or better in satisfaction surveys.
- Improvement in NSS scores, specifically (a) "*the IT resources and facilities provided have supported my learning well*", (b) "*I have had the right opportunities to provide feedback on my course*", (c) "*Good advice was available when I needed to make study choices on my course*" and (d) "*I have been able to access course-specific resources (e.g. equipment, facilities, software, collections) when I needed to.*"
- Availability of the Virtual Learning Environment, Lecture capture and Library Management System during term time.
- % of students undertaking digital competence training.
- % of learning spaces with digital provision being classified as 'good' or above based on industry standards.

University Strategy Performance Indicators

- Percentage of students satisfied with overall course (NSS Q27).
- Percentage of graduates in graduate-level employment.
- Percentage of undergraduate students studying/working abroad as part of their degree.

4.1.4 Wider student experience

Our student expectations are continually evolving and increasingly digital technology has an important role to play in both enhancing and enabling student enrichment opportunities and facilitating seamless, pan-University student support. Targeted digital investment, aligned with a user centred approach will support our ambition of ensuring that the wider student experience at Durham University is unsurpassed in Europe and on a par with the very best institutions worldwide.

Jeremy Cook OBE, Pro-Vice-Chancellor (Colleges and Student Experience)

Vision	**University Goal:** *To ensure that Durham students enjoy an unrivalled ethos and environment in which to pursue the highest quality of education and student experience, through which they will further develop qualities of independence, self-expression, intellectual curiosity, critical thinking, creativity, entrepreneurship, teamwork, leadership and a strong sense of social citizenship.*
	Digital Goal: *To support the aspirations of the wider student experience with the required digital environment for health and wellbeing, entertainment, experience and eSports.*

What and when

Core components	AY 20/21	AY 21/22 – 23/24	AY 24/25+
Esports.	• E-sports platform		
Service/financial opportunities.	• Full Student Relationship Management System with Alumni integration • WSE online with Experience Durham broadcasting channel	• Commercial partnerships to provide student benefits	
Personal development.		• Personalised AI student coach • Digitalise Durham Award	
Digital careers advice service.			• AI supported digital careers advice service

Success measures

Proxy measures

- Number of drama and music events recorded or shared.
- League position in UK University Esports.
- Improvement in NSS scores *"I feel part of a community of staff and students."*
- % of students who rate AI supported digital careers advice as 'good' or better in satisfaction surveys.
- % of students who rate digital student welfare as 'good' or better in satisfaction surveys, specifically (a) identification of trends resulting in an intervention, (b) access to online welfare material, and (c) online welfare services).

University Strategy Performance Indicators

- Percentage of students taking the Durham Inspired Award.
- Percentage of students doing at least 6 hours of extra-curricular activity or volunteering.
- Percentage of students agreeing with belonging and community based statements.

4.1.5 Global Durham

Digital technology can increase our footprint in the world, showcase what Durham University has to offer, and even make the world feel smaller as we connect with others nationally and internationally. The Digital Strategy provides an exciting opportunity to increase Durham University's standing in the world and to highlight the very best about who we are and what we achieve together.

Professor Claire O'Malley, Pro-Vice-Chancellor (Global)

Vision	**University Goal:** *To position Durham as a globally networked university that is widely recognised as an outstanding place to study and work and a significant contributor to international research and engagement agendas.*
	Digital Goal: *To add societal value and increase awareness, interest, benefit, and affection for the Durham University brand in an international environment by utilising digital technology to showcase the University's opportunities, strengths, and outputs.*

What and when	Core components	AY 20/21	AY 21/22 – 23/24	AY 24/25+
	DU external content sharing.	• Content Management system with Internet and Intranet	• Social listening / Media monitoring	• Display personalised content based on behaviour characteristics
	Targeted communications.	• Open day digital service • Virtual campus tours		• Digital schools outreach programme
	Alumni engagement.		• Enhanced digital content and training offer for alumni	

Success measures	Proxy measures	University Strategy Performance Indicators
	• Availability of web presence. • % of web publishers marking the Content Management System as 'good' or better in satisfaction surveys. • Number of professional development courses available to Alumni. • % of campus (core education, accommodation and points of interest) mapped for virtual tours/ open days.	• International ranking(s). • Reputation survey ranking. • Percentage of students from non-UK countries. • Number of active volunteers. • Number of events. • Fundraising. • Diversification of income sources.

4.1.6 Accommodation, estates and infrastructure

Digital technology is key to deliver effective estates management and to ensure the physical campus is as user-friendly and accessible as possible. The management of the physical space will change as digital technology and working practices evolve and this Digital Strategy will support a convergence of the University operating model as estates and digital infrastructure underpin the overall direction and strategy of the University.

David Loudon, Director of Estates and Facilities and John Hemingway, Chief Information Officer

Vision

University Goal: *To enable the University to deliver its Strategy through sustainable investments in physical infrastructure and residential accommodation; by so doing, to create an attractive, world-class environment for staff, students and the wider community.*

Digital Goal: *To provide effective digital infrastructure and services to the physical and virtual estate. Supporting decision making with reliable and robust data, ensuring value for money and sustainability.*

What and when

Core components	AY 20/21	AY 21/22 – 23/24	AY 24/25+
Digitalise campus buildings.		• CAFM (Computer Aided Facilities Management) System • Access Control standardisation and upgrade • Campus analytics platform • University physical estate security enhancements enabled through IT • Smart utilities	
Campus space management.	• Wi-Fi device tracking	• Digital signage • Smart car parking • Smart Vehicle Fleet	
Underlying digital developments.	• Complete BIG 3 data network reliability and performance upgrade • Assistive Technology service expansion • IT department DevOps and process automation • Local business process efficiency gains enabled through collaboration tools	• Streamline and define roles within identity and access management • Integrated information environment platform • IPv6 data network upgrade • Real-time digital infrastructure reporting • Disaster recovery service • Data archive service for legacy data • Improved remote access performance and scope	• Upgrade data centres • Wi-Fi city partnership • Robotic automation
Information systems.	• Finance and procurement infrastructure and functionality improvements • E Commerce (Web) • E Community (Web)	• Analytics and reporting platform • AI platform to support multiple AI user cases • Master Data Management standardisation • Mobile App infrastructure and functionality improvements • Next generation web environment	
Cyber security and Intellectual Property protection.	• Increased cyber security controls and coverage		
Technical debt.	• Reduction of technical debt (legacy)		

Success measures

Proxy measures

- Student satisfaction scores of on campus Wi-Fi compared to peers.
- Network availability in colleges.
- % of the built estate with energy and usage data.
- % of the estate with automated smart heating controls.
- Number of digital Major Incidents.

University Strategy Performance Indicators

- Education Space Utilisation.
- Environmental sustainability.
- Staff costs as a percentage of income.
- Percentage of students living in College accommodation.
- Operating surplus as a percentage of income.

4.2 Overall programme

Based on the six over-arching University pillars, figure 6 provides a summary of the projects to be delivered over the course of the Digital Strategy. Projects for inclusion and timelines are indicative and are likely to change based on further consultation and taking into account affordability and achievability.

The dates are indicative of project commencement and may be multiple years in duration. This includes the 'Increased cyber security controls and coverage' project lasting the duration of this Digital Strategy, supported by a dedicated Cyber Strategy that will seek to balance the need for organisational protection with local academic freedoms.

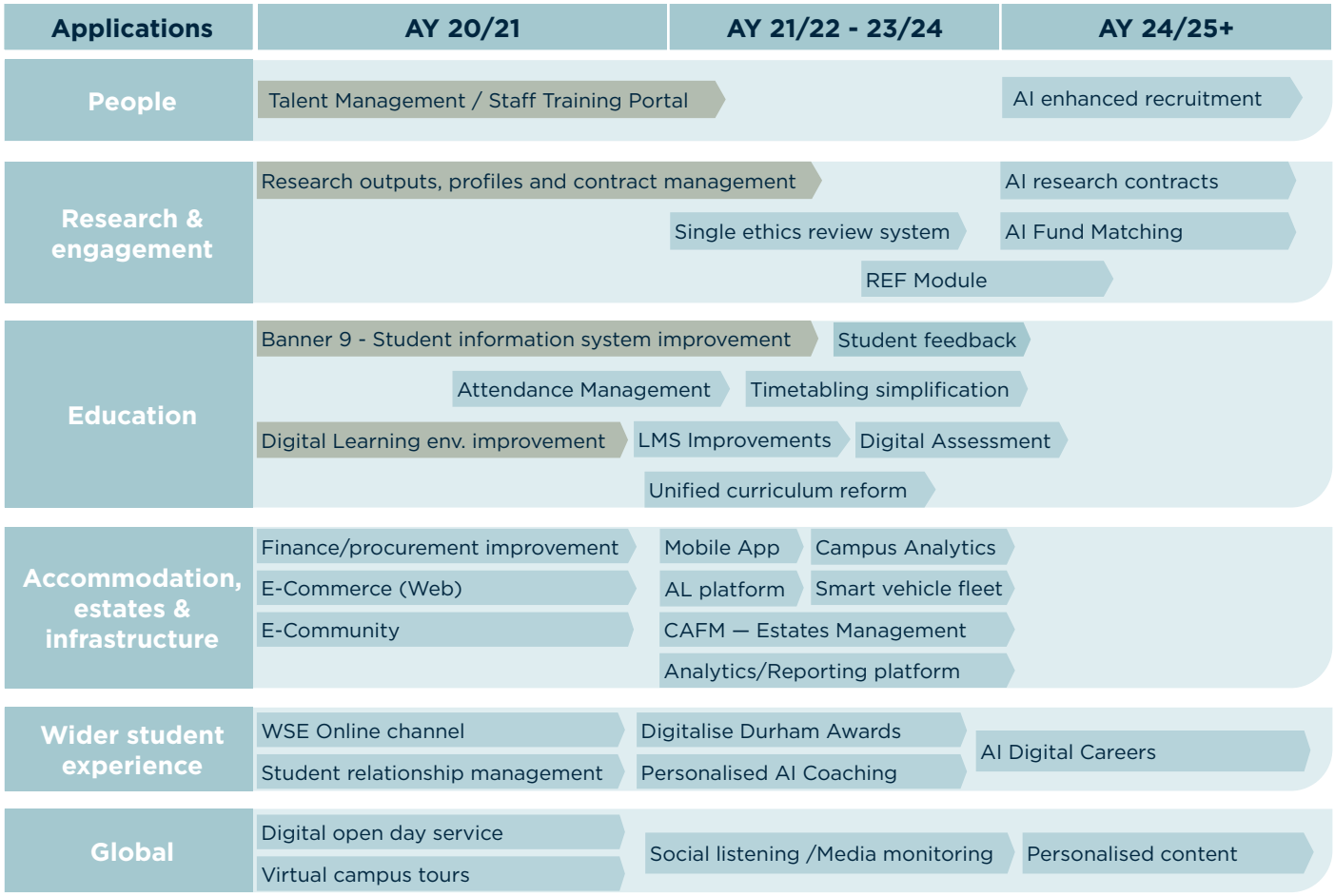
Figures 7 to 9 provide a further view based on the focus of the projects relating to applications, infrastructure and other areas. This view is particularly in reference to the digital staff survey that highlighted a greater emphasis was needed within software applications.

Figure 6: *Digital Strategy projects (timeline of indicative project start times)*

	People	Research & Engagement	Education	Accommodation, Estates & Infrastructure	Wider Student Experience	Global
AY 20/21	Common digital skills training for staff Talent management & staff training portal	HPC Upgrade Research outputs, profiles and contract management	Banner9 Digital learning environment improvements Attendance management Equipment for online education	E-Community (Web) Complete Big3 network upgrade Reduction of Technical Debt Digital aided business process efficiency E-commerce (Web) Assistive Technology service expansion Increased Cyber security coverage CIS DevOps & process automation Finance/ Procurement Infrastructure improvements	Student Relationship Management System WSE Online channel E-Sports platform Wi-Fi Device Tracking	Virtual campus tours CMS Digital open day service
AY 21/22 - 23/24	Specialist digital skills training for staff	Digital Preservation REF module Secure research data environments Digital support for research High speed research connection RDM Service Single ethics system Big Data processing service	Digital Student feedback Digital skills for students Digital Assessment Innovation mainstream Pilot Lecture capture enhancements LMS improvements Unified curriculum reform Timetabling simplification	Next generation Web Digital Signage Legacy Data Archive Estate Security enhancements Mobile App Master Data Management Integrated Information Environment Identify Access Management Remote Access Improvement IPv6 network Disaster recovery Analytics & Reporting platform Real time digital infrastructure monitoring Smart car parking Access control Smart utilities Campus Analytics AI platform Smart Vehicle fleet CAFM (Computer Aided Facilities Management)	Personalised AI coaching Digitise Durham Award Commercial partnerships	Enhanced digital content and training for Alumni Social Listening/ Media monitoring
AY 24/25+	Role based access Digital skills for local community AI enhanced recruitment	VR / AR AI Fund matching AI research contracts Experimentation Automation		Data centre upgrade Wi-Fi city partnership Robotic automation	AI digital careers	Digital school outreach Personalised content

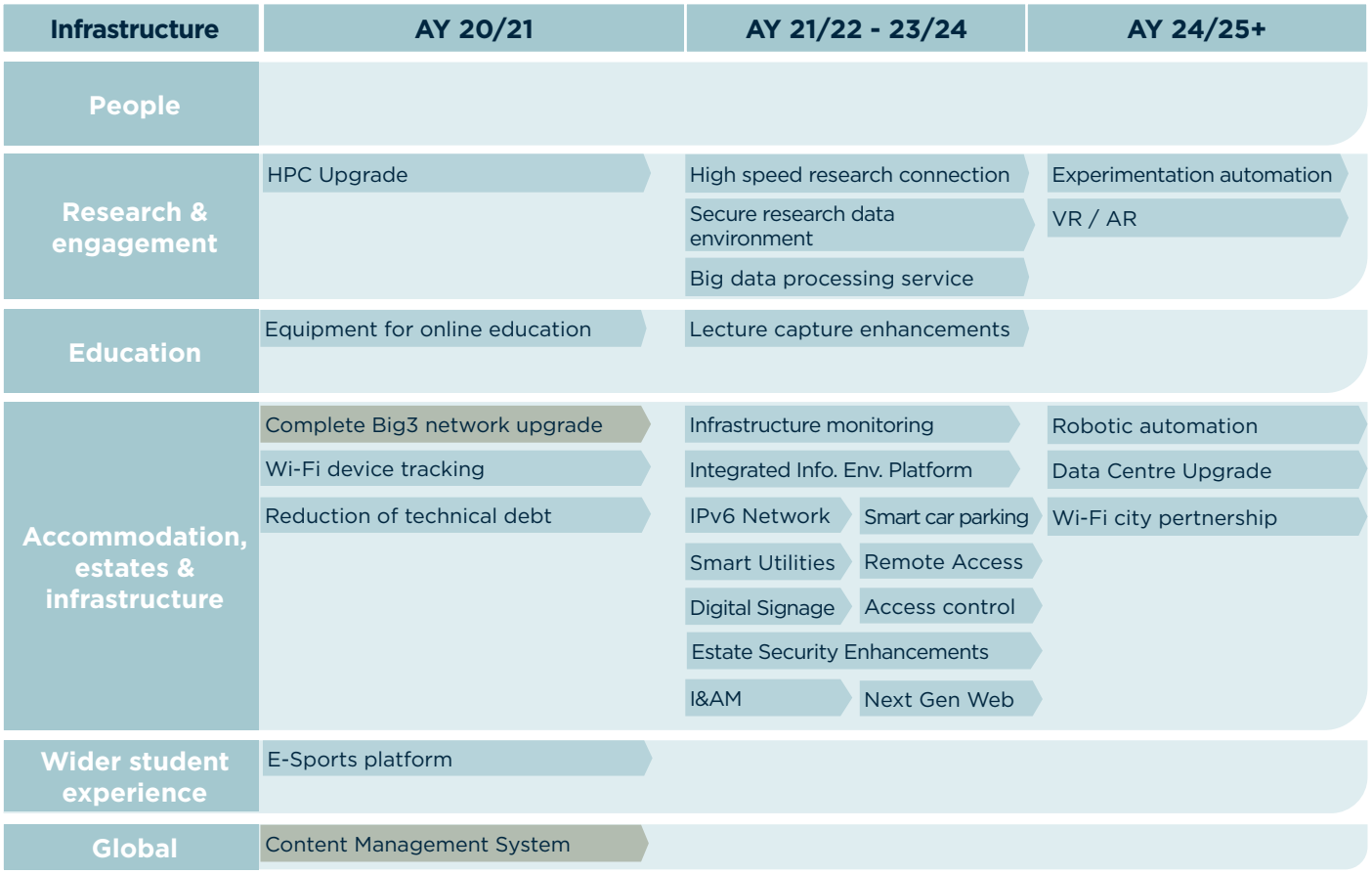
Highlights an existing project

Figure 7: *Application roadmap based on current understanding of organisational expectations*



Highlights an existing project

Figure 8: *Infrastructure roadmap based on current understanding of organisational expectations*



Highlights an existing project

Figure 9: *Other roadmap based on current understanding of organisational expectations*

Other	AY 20/21	AY 21/22 - 23/24	AY 24/25+
People	Common digital skills training for staff	Specialist digital skills training for staff	Digital skills for community Role Based Access
Research & engagement		RDM service Digital support for research Digital preservation	
Education		Mainstreaming innovation pilot Digital skills for students	
Accommodation, estates & infrastructure	Increased cyber security coverage Assistive technology expansion CIS DevOPS / Process automation Digital aided process efficiency	Legacy data archive Disaster recovery Master data management	
Wider student experience		Commercial partnerships	
Global		Enhanced digital content and training for Alumni	Digital school outreach

4.3 Smaller digital initiatives and innovation

The focus within the strategy is naturally upon larger projects and initiatives, as defined in Section 2.2. Nevertheless, smaller initiatives, changes and software requests, have significant opportunity to provide new functionality and efficiencies at pace. Whilst such smaller scale initiatives can yield significant returns, a balance is needed to ensure delivery of strategic projects is not compromised, or if they are, the consequences are understood and agreed. To facilitate co-ordinated and prioritised digital delivery the following steps will be introduced from AY 21/22 aligned to University wide financial planning and resource allocation practices:

- The ability for departments and groups to purchase software, including new modules, revisions to existing agreements or cloud services (excluding purchases through research funds) will be phased out.
- A new **Digital Enhancement Fund** will be established. Departments and groups will be able to bid to this fund for finance and resource. Projects taken forward will be agreed by a cross-section of University stakeholders, reporting to the Chief Information Officer. Decisions will be based on balancing strategic fit, complexity, cost, benefit, available IT / procurement and legal capacity, along with local change capacity and conflicting priorities in areas of the University.
- By prioritising resource in strategic projects and initiatives agreed within the Digital Enhancement Fund, there could be occasions where localised need is not being met and may not be prioritised for some time. In such circumstances local initiatives are encouraged within the operating principles of the wider digital estate and predominantly based on expanding usage of existing solutions. Once delivered, opportunities to spread solutions more widely will be sought.

Following the same principles and governance of the Digital Enhancement Fund, a **Digital Innovation Fund** will be established so that new, innovative solutions to business problems, can be explored and, where appropriate, shared across the University.

It is often observed that the technology takes centre stage in digital innovation however, as socio-technical theory highlighted in Section 2.2, innovation should be viewed more widely and not in isolation from a range of other considerations. Further, the translation of digital innovation into every working practice is not undertaken by technology, it is delivered by people. Staff, students, alumni and other stakeholders are fundamental to innovation, both as the drivers of innovation and as the recipients of its benefits. As such, the Digital Innovation Fund will focus not just on innovation discovery, but also innovation spread, that is taking known innovations and making them more widely used across the University. A key element of the innovation theme will be the concept of 'failing fast' namely trying something new, having clear metrics for success, and if these are not being met establishing why before closing the project.

Annually, the finance available for these two funds will be agreed through the University planning round.

5. Digital stakeholder communities

Durham University is a diverse organisation comprised of overlapping communities. Many staff are also students or alumni and many academic staff are both researchers and educators. This section illustrates how implementation of the Digital Strategy can empower and enable members of the various University communities over time. These are aligned to the operating principles of Figure 11 which include the need for devices and solutions to be accessible to all with everyone having the appropriate skills to make the most of every opportunity. Additionally, online material must be accessible whilst for online students the wider student experience must be equally accessible, engaging and support personal growth.

Tangibly, for specific stakeholder groups, the Digital Strategy means:

Student Journey

YEAR 1 | YEARS 2-4 | YEAR 5+

1. CONTACT TO ENROLMENT

- Website redesign providing accessible information
- Virtual tours of some campus buildings
- Virtual open days
- Digital buddy system with current Durham University students
- App enabled personal information presentation
- AI chatbot answering queries 24/7
- Virtual tours of campus and accommodation
- Virtual tours of city and surrounding areas

2. ONBOARDING

- Personalised digital onboarding, inc. for international students
- Virtual freshers fair
- Personalised virtual campus tour
- Wayfinding and indoor navigation using a mobile device

3. EDUCATION

- Digital reading list to access recommended texts
- Online lecture and seminar provision
- Increasing number of video conference enabled rooms
- Self service curriculum portal and selection
- Personalised timetabling mobile App
- Single system to view all student related data (results, planning, finances)
- Enhanced lecture capture recording such as whiteboards
- Greater use of digital assessment, exams and feedback
- Electronic study buddy aid
- Remote access to computer lab functionality

4. STUDENT LIFE

- Assistive Technology service expansion
- Wider Student Experience digital channel of University events and activities
- E-sports competition and venues
- Data analytics for Durham University sports teams
- Wellbeing monitoring supporting early signposting
- Digital signage to support flow and room bookings
- Virtual access key student services
- Mobile phone enable building access control
- University commercial partnerships offering student discounts
- People movement tracking to enable an increasingly accessible smart campus

5. EMPLOYABILITY

- Virtual career fairs
- Self service digital skills development
- E-Portfolio of achievements and Durham Award
- AI enabled careers advice service

6. ALUMNI: LIFE-LONG CONNECTION

- Single alumni platform from enrolment through to life-long connection
- Access to skills development life-long learning
- Access to Wider Student Experience concerts and events
- AI enabled careers advice service

All Staff

YEAR 1 | YEARS 2-4 | YEAR 5+

1. OPERATING MODEL

- Increased cyber security controls and coverage
- Operating model review of increased remote working
- Local business process efficiency gains enabled through collaboration tools
- People movement tracking to enable an increasingly accessible smart campus
- Robotic automation to support health and safety along with increased efficiency
- Software access control enabled through Role Based Access

2. WORKING ENVIRONMENT

- Assistive Technology service expansion
- New finance and procurement system with increased functionality
- Reduce technical debt (legacy) for increased digital reliability and performance
- Physical estate security enhancements enabled through digital services
- Mobile phone enabled building access control
- Digital signage to support flow and room bookings
- Smart car parking to support planning and time efficiency
- Improved remote access to digital services
- Improved decision making through analytics and reporting platform

3. SKILLS

- Common digital skills training for all staff
- Staff training and talent management through a single portal

4. RECRUITMENT AND RETENTION

- Personalised digital staff induction
- Website redesign providing accessible information
- Personalised virtual campus tour
- AI enhanced candidate recruitment

Researcher

1. DIGITAL RESOURCES

- High Performance Computing (HPC) capability investment
- Big Data processing service
- High speed research network connection
- Increased cyber protection of Intellectual Property
- IPv6 data network upgrade
- Increased remote access and experiment automation
- VR and AR applied to research to increase research outputs and new avenues of research

2. RESEARCH FACILITATION

- Single research outputs, profiles and contracts management approach
- Research Data Management service overseeing and sharing research data
- Secure research data environment service to quickly and securely support research
- Single digital research ethics review system applied throughout the University
- Research Excellence Framework module to support REF exercise and planning
- Increased digital expertise available to support researchers
- Specialist digital skills training available for research specific activities
- AI analysis of research contracts to supplement understanding and increase efficiency
- AI enhanced data searching and matching of possible research funding to academic expertise

Lecturer

1. EDUCATION ADMINISTRATION

- Increased Student Record System functionality (Banner9) and process efficiency gains
- Full student CRM with student attendance management and full data view
- Timetabling simplification and increased end user communication
- Unified curriculum reform and self-service portal supported by data analytics
- Personalised timetabling mobile App easing administration

2. EDUCATION DELIVERY

- Essential digital equipment provisioning for the delivery of online education
- Digital reading lists to support online education
- Digital Learning Environment infrastructure and functionality improvements (Ultra)
- Increased online lecture and seminar provision through multiple platforms
- Increased number of video conference enabled rooms within the physical estate
- Enhanced lecture capture recording such as whiteboards
- Increased library functionality and access
- Digital examination/marking/assessment solutions
- Pilot to production mainstreaming of digital learning innovation
- Enhanced student feedback system enabled through digital means
- Digital learning and education skills programme for lecturers
- Remote access to computer lab functionality

Evidently, multiple benefits and enhanced experiences will be delivered. However, benefits will also be delivered to other stakeholder groups as individual projects deliver throughout this Digital Strategy.

Section C
Delivery

6. Digital values

The proceeding section details the digital ambition and projects that will deliver specific benefits to defined areas of the University. Supporting these predominantly, discrete projects, figure 10 establishes six digital values that will be consistently applied throughout digital Business as Usual operations, project prioritisation and project delivery. Over time, this will increase the digital maturity and service level of the central IT department and provide a closer alignment between digital services and wider University activities. They complement and are aligned to the University's stated values.

Figure 10: *Digital values to deliver sustainable success*

Central component	Cyber security	Core infrastructure	Capabilities	Consistent data	Collaboration	Culture of experience
Description	Infrastructure and data should be protected from malicious cyber attack through technical means, working practices and individual actions	The underlying technology must be fit-for-purpose, adaptable and flexible to changing business requirements	Staff and students, across the University, should have the digital capabilities to maximise the opportunities afforded by digital technology	A single source of truth within defined Master Data Management. The value of data must exceed the cost of data management	Through joint working agree University positions on issues such as operating models (agility verses control), project prioritisation, user requirements, and process redesign	All Digital interactions should be considered from the end users' perspective, i.e. more than a service orientated culture. Delivering visible outcomes, within agreed costs
AS-IS	Predominantly technically focused within the main IT department	Technical debt exists in a number of core areas	Varying digital skills across the university	Multiple localised systems used and several corporate systems do not meet all user needs	Noticeable variability in digital operations across the University	Emphasis is more on technology provision than end user experience
TO-BE	University wide prevention and assurance	Removal of all red risks and most amber risks with a clear refresh programme to avoid future technical debt	Multiple opportunities to support capability development with wide-scale adoption	Single source of truth within corporate systems meeting the required functionality. Rationalisation of the software estate over time	Single vision with consistent digital processes across the University aligned to local agility	Clear experience culture with stated KPIs, digital projects delivering service transformation and a clear understanding of value for money
Benefits	Reduced cyber risk	Reliable and effective digital operations	Maximise the opportunities afforded by digital technologies	Efficient operations with data driven decision making	Effective use of resource meeting the needs of all stake holders	Customer focus and visible benefit delivery
	Digital success is measured by the business benefits delivered					

A further level of granularity is detailed in figure 11 and Appendix F that establish the principles by which the values articulated in this Digital Strategy will be delivered.

Figure 11: *Underpinning principles to support delivery against the digital values*

Principles

Governing

- Cyber security is the responsibility of everyone
- Digital by default
- Digital architecture led
- Green credentials
- Inclusive, useable, accessible and ethical
- Service adoption is locally owned
- Timely feedback loops
- Transparent
- University strategy aligned
- User requirements must relate to benefit

Technical

- Accessible from anywhere
- Best of Suite applications
- Cloud first
- Guided by architectural principles
- Identify and monitor problem areas
- Out of the box by default
- Reduce localised Information Systems
- Zero trust environment

Operating

- Balance demand against available IT resource capacity
- Deliver a multi-tiered service
- Deliver operations within the service catalogue
- Digital Strategy projects prioritised
- Embrace a dispersed operating model
- Innovate (Digital Innovation Fund)
- Operate clear project governance gateways
- Operate a swarming support model
- Perform to stated KPIs
- Strengthen vendor management
- Support flexible recruitment models
- Support self-service
- Support ‘small’ scale improvements (Digital Enhancement Fund)

7. Governance

7.1 Project delivery

Individual projects identified for possible funding will be agreed through the University planning round with the Digital Strategy being one of the sources of data supporting annual decision making. Thereafter, individual projects will be managed through the existing University structures, be that at a local level or through the central Project Management Office (PMO). Thus ensuring appropriate business case quality, review, due diligence, a consistent approach to decision making through a gated process, and adherence to University processes such as Equality Impact Assessments on a project by project basis.

7.2 Resource balancing

Previous University IT strategies have sought to centralise resources. Central IT skills are important to ensure a consistent level of digital performance and strategic alignment. It is equally important to develop, retain and build contextual knowledge of how the University works within the central IT department to ensure digital intellectual capability for the long term. This strategy acknowledges the strengths and weaknesses of centrally managed IT but places more emphasis on a dispersed digital delivery model. This means:

- There will be multiple 'IT providers' throughout the University, allowing local flexibility, however such providers will need to adhere to defined architectural and cyber security principles. This acknowledges the need for local flexibility whilst managing the corporate and legal responsibilities the University must function within.
- A multi-tiered service will be implemented acknowledging that some departments, or research groups, have different digital requirements to others and a 'one-size fits all' approach is not sufficiently responsive in such circumstances. The different service tiers will have defined service levels and differing capabilities based on user need and an affordable distribution of resources.

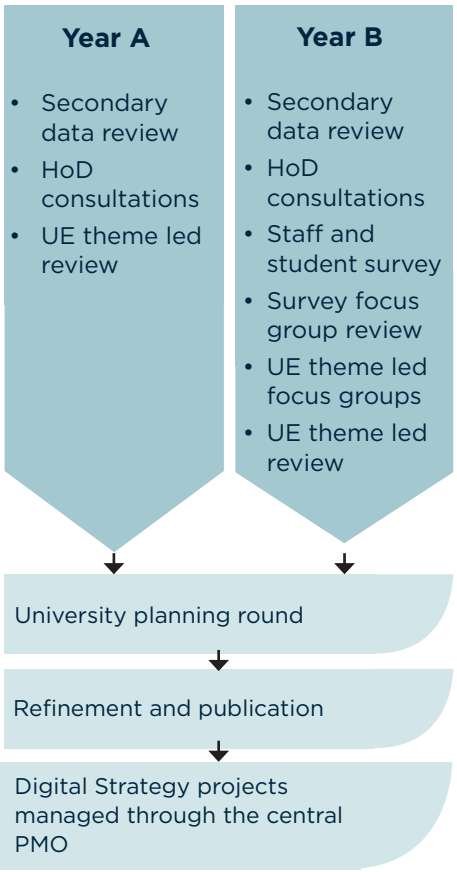
IT departments need to balance the competing demands of Business as Usual, change requests, and projects (both business led and technical) along with changes occurring elsewhere in the organisation and the access/capacity of local Subject Matter Experts. Whilst a principle of priority may be agreed, granularity is required so that comparisons can be made between different demands. The supporting 'Digital operating model' documentation will elaborate on these points further.

Delivering such an ambitious programme of change will also require flexibility in resourcing options, blending internal resource with partners and outside agencies. This may be particularly pertinent in areas such as business change and operating models/procedures. Such an approach should seek to yield the maximum return on investment and ensure sustainable benefit delivery. It will also require us to understand and assess our capabilities across the organisation to ensure we have the right skills and resources in the right places in the organisation. A good example of this is the introduction of a wider range of online, interactive content, where we will need to have an integrated capability across Faculties, Departments and professional service areas.

7.3 Portfolio refinement

This Digital Strategy sets a direction of travel and it should be viewed as a living document that requires regular refinement and amendment. Priorities will change, the environment within which we operate will move, external influences will materialise and new technologies will provide different opportunities. Change is constant. Additionally, comments have been received through the consultation that the digital focus is on the '*here and now*', and a long-term perspective will need to come later. Over time this will increase the breadth of this Digital Strategy to increasingly be a catalyst for business change throughout the University. Therefore, this strategy proposes formal mechanisms to regularly review what should be delivered and when. Figure 12 highlights the approach will vary based on alternating years, unless there are significant contextual changes, in which case the 'Year B' approach will be followed.

Figure 12: *Digital Strategy refinement approach*



8. Assumptions

There are a number of important assumptions that have defined the scope of this strategy and are explicitly highlighted in table 1. Should these assumptions be challenged in the future then, as part of the annual governance review, changes to the Digital Strategy may be required.

Table 1: *Digital Strategy assumptions that define the overall strategic direction*

Assumption	Consequence
Business transformation to maximise the opportunities afforded by digital technology will predominately rest with individual projects and departments supported by additional resource to supplement local expertise.	If additional resource is not available to support local expertise then the learning will not be shared across initiatives and local Business as Usual could be impacted, project costs may be higher than necessary, or project benefits delayed or reduced.
The organisation will increasingly move to a standardised way of working with repeatable business processes and corporate information systems meeting business need. In so doing, it is appreciated that there is a need for some local flexibility and that corporate systems must be effective, however, this is ultimately the direction of travel and will result in less localised IT systems and an overall rationalisation of the software estate.	The effectiveness of corporate information systems, business continuity and economies of scale will not be realised if there are multiple business processes and corresponding localised systems. The benefits of enhanced decision making through a single point of truth and the better availability of reliable data will also not be realised.
An appropriate level of resource (funding and personnel) will be available to deliver the Digital Strategy.	Without sufficient resource the Digital Strategy will not be delivered as expected, raised expectations will fail to be met and the corresponding business benefits will be compromised or delayed.
As the Digital Strategy is considerably more than delivering 'kit', rather it seeks to enable organisational transformation, there is a requirement on departments, colleges and institutes to have sufficient availability and expertise to support, drive and own transformation alongside other competing agendas.	Without local expertise and resource projects could become technology led rather than transformative resulting in missed opportunities to deliver business benefit.

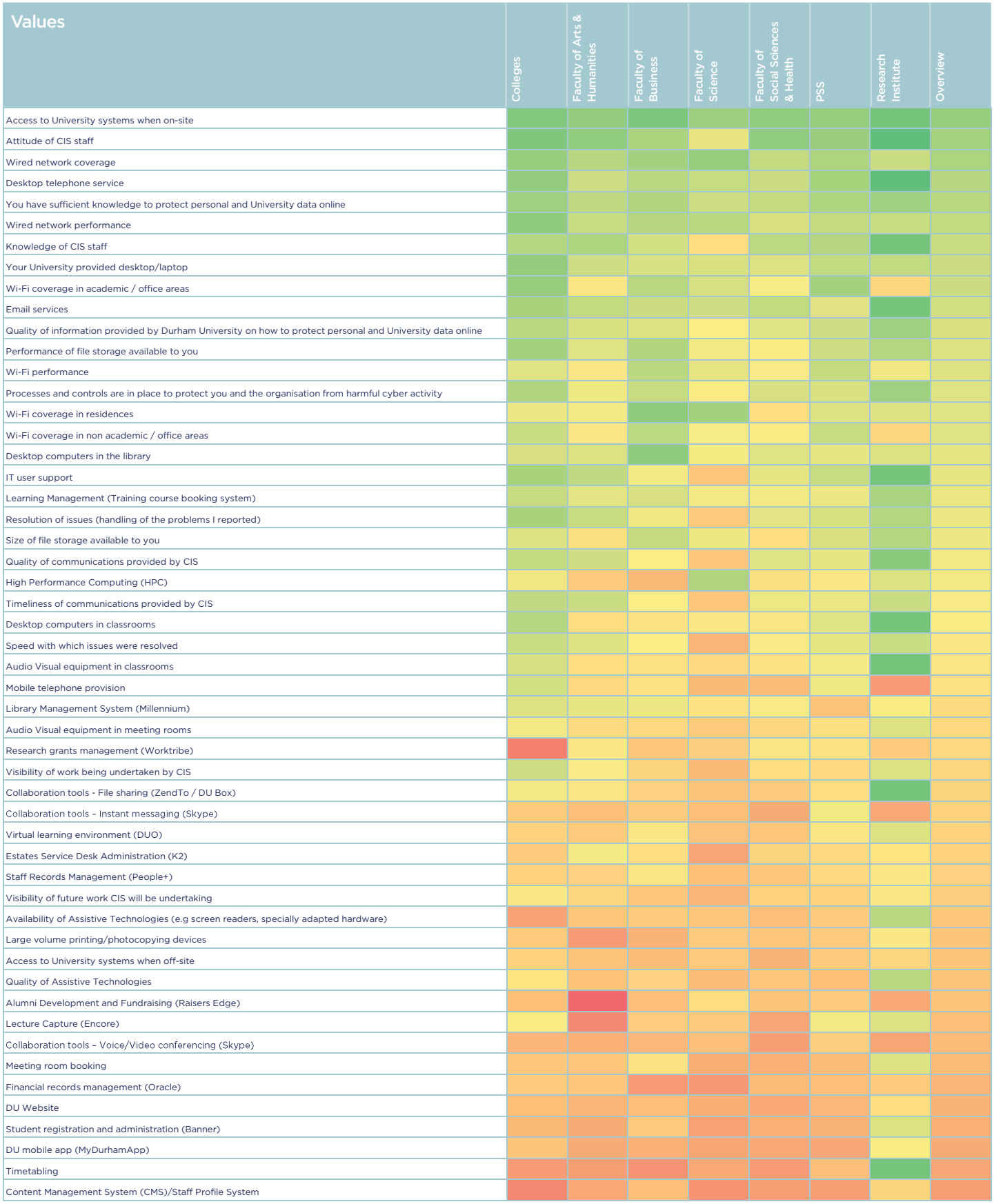
9. Strategy risks

There are a number of key risks in delivering this strategy as a consequence of the broader context (see section 3.1) and the overall implementation of the digital vision. These are detailed as follows, with further detail provided in Appendix G:

- Limited business change support to accompany the implementation of digital technology will lead to 'IT' being delivered as part of an IT department strategy rather than the benefits enabled through the use of digital technologies delivered as part of a University wide Digital Strategy.
- If digital projects occur outside of the strategy, then resource will be siphoned away from delivering the Digital Strategy, which could result in a more complex technology estate with system duplication and complex data integrations.
- If there is no agreement on what digital resource should be expended on (balance between Business as Usual activity, business led projects and technical debt), then changing emphasis in one area could have significant impacts in others.
- If there is inadequate consultation and agreement across the University to work to the same goals and timelines, then the Digital Strategy will not be adhered to and the overall effectiveness of the long-term benefits will be diminished.
- If subject matter experts do not have a strong understanding of their audience, then there may be a false level of assurance that the strategy is appropriate, impacting on investment decisions.
- If the Digital Strategy is not appropriately funded, University aspirations and corresponding benefits will not materialise.
- If the prioritisation of resource is focused on delivering new functionality at the expense of the foundational building blocks (technical debt) then long-term success will be compromised.
- If the projects identified in the Digital Strategy run independently, then links and dependencies between projects will not be managed leading to implementation and technical complexities.
- If there are significant competing initiatives taking place at the same time then the ability to deliver multiple projects across the university will be impacted.

Appendices

Appendix A: Digital services heat map and subgroup analysis



Key **Very Satisfied** **Very Dissatisfied**

Appendix B: Remote working surveys — Summer 2020

This survey was conducted in June/July 2020 after the immediate response to the COVID-19 pandemic. Large proportions of the University's practices had rapidly switched to online and the majority of staff were working remotely.

General

- **77%** said that they would be the same or **more productive** in a 'new norm' (defined as schools having returned and the University predominantly teaching students on-campus), 26% a lot more productive. There was a variance based on role type where these figures change from 84% of those in professional service roles to between 65-70% for those involved in research or teaching.
- **77%** said that remote working would have no impact or a positive impact on **work-life balance** (39% very positive). There was variance between role type where 49% of professional service roles responded with very positive but this same positive response ranged between 21% and 33% for the other role types.
- **69%** said that **communication with their team/colleagues** had remained the same or improved (14% a lot better).
- **69%** said that the effectiveness of **managing staff remotely** had remained the same or improved (5% a lot better).
- The **biggest challenge** to remote working was the **social aspect** such as the ability to talk to colleagues, followed by **IT issues** and lack of **physical space**.
- **88%** said they have access to a **reliable and efficient internet connection for the majority of the time**.
- **74%** said that **online meetings were somewhat or very effective** with 14% indicating that they were ineffective.
- Across all role types the average **percentage of the role that could be undertaken remotely was believed to be 76%** with a **preference to work remotely for 57%** of the time. This is highest for professional service roles 82% and 61%, respectively and lowest for teaching 63% and 44%.
- **65%** said they **have the IT equipment they need** to undertake their everyday activities. This is highest for professional service roles at 74% and between 50-56% for other roles. The most common items required were a printer/scanner and peripherals.
- **57%** said they have an **appropriate physical space** to work remotely.
- **68%** said a **hybrid operating model would be effective**, where some staff are on site and others working remotely.
- **59%** said **online student interaction** was good or very good.
- There is a **correlation between commute time and preference for remote working**. When the commute is <15minutes remote working time is 42%, 46-60minutes is 60% and >90minutes commute is 69%.
- There is likely to be a **reduction in the use of public transport** to commute to work (29%, 207 to 146) and **increase in cycling** (53%, 89 to 136).

Research

- **56%** said their **research productivity had declined** and 17% it had improved.
- Access to lab equipment means certain research cannot be undertaken remotely, but **increased access to some research software** would help.

Teaching

- **33%** would choose to **record lectures on site** and 67% remotely, if physical lectures could not be undertaken.
- A number of technologies were identified to **support teaching**, specifically around **headsets**, **tablets** with a writing stylus and a **second monitor**.
- **60%** said they had a preference to undertake **seminars online** when responding to the question ***'Ensuring social distancing is respected for students on campus, are you more likely to undertake seminars online or require an appropriately sized bookable space?'***
- **50%** said they were **not confident using Collaborate Ultra**, **12% Teams** and **5% Zoom**.
- **15%** said they were **not confident delivering high quality remote lectures**, **25%** said they were **not confident delivering high quality seminars**, **56%** said they were **not confident delivering high quality practical classes**. Comments indicated this was wider than just addressing any gaps in current technology provision.

Appendix C: IT department COVID-19 lessons learnt

Strengths
(What we can do better)

- A more remote and flexible working environment
- Greater use of performance information – monitoring, data – leading to data driven decision making
- Communication – weekly briefing / Team calls
- Engagement of business in defining solutions and testing them
- Availability of staff – flexibility through Teams
- Accountability of staff – learning on pieces of work
- Staff coming together to sort issues on Teams
- Making time for people to focus without changing priorities

Weaknesses
(What we need to improve on)

- Highlighted Single Points of Dependency withing the staff base
- Known technical debt caused problems
- The need to be on site to physically maintain equipment
- The CIS website is not where it needs to be
- Lack of single University operating modes
- Lack of a fully integrated approach – e.g. furlough of staff in other areas
- Increased level of demand with people working remotely – resource imbalances
- Home office environment
- Some lack of co-ordination / changes at University level cause re-work

S W O T

Opportunities
(What external options we have)

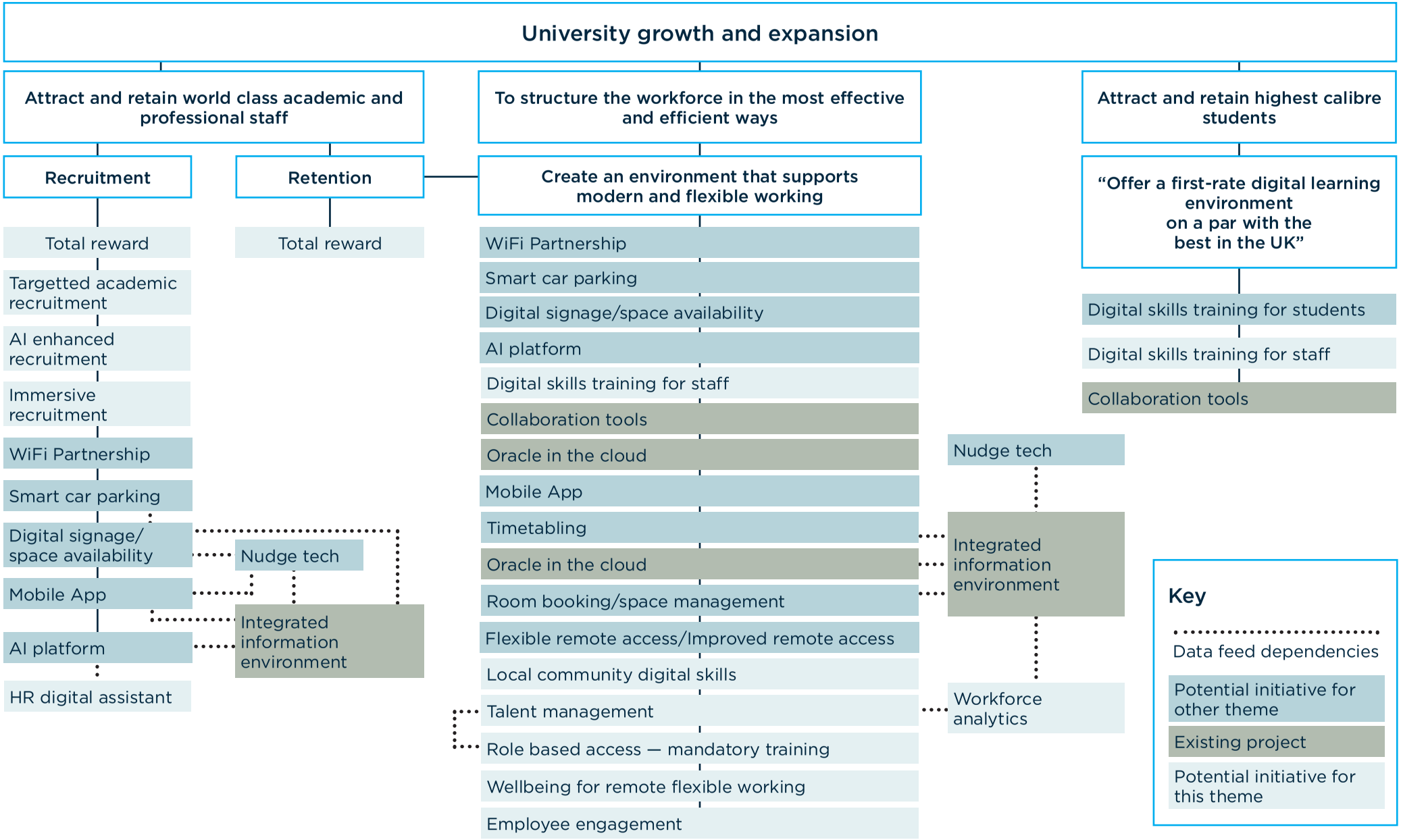
- Plan work outside of standard downtime windows
- A different working model moving forward – on-campus / off campus
- Increase use of self-service
- Surgery orientate service model – O365
- Leveraging other colleagues skill sets – Field Teams – "Secondary Duty"
- Drive Data Centre / Cloud services across the University
- Reward people who consistently step up and provide appropriate support for those that do not
- Clarify service definitions – service owner / manager role
- Service adoption – Enterprise Architecture view – clarity across multiple internal IT providers
- Streamline and improve governance / processes

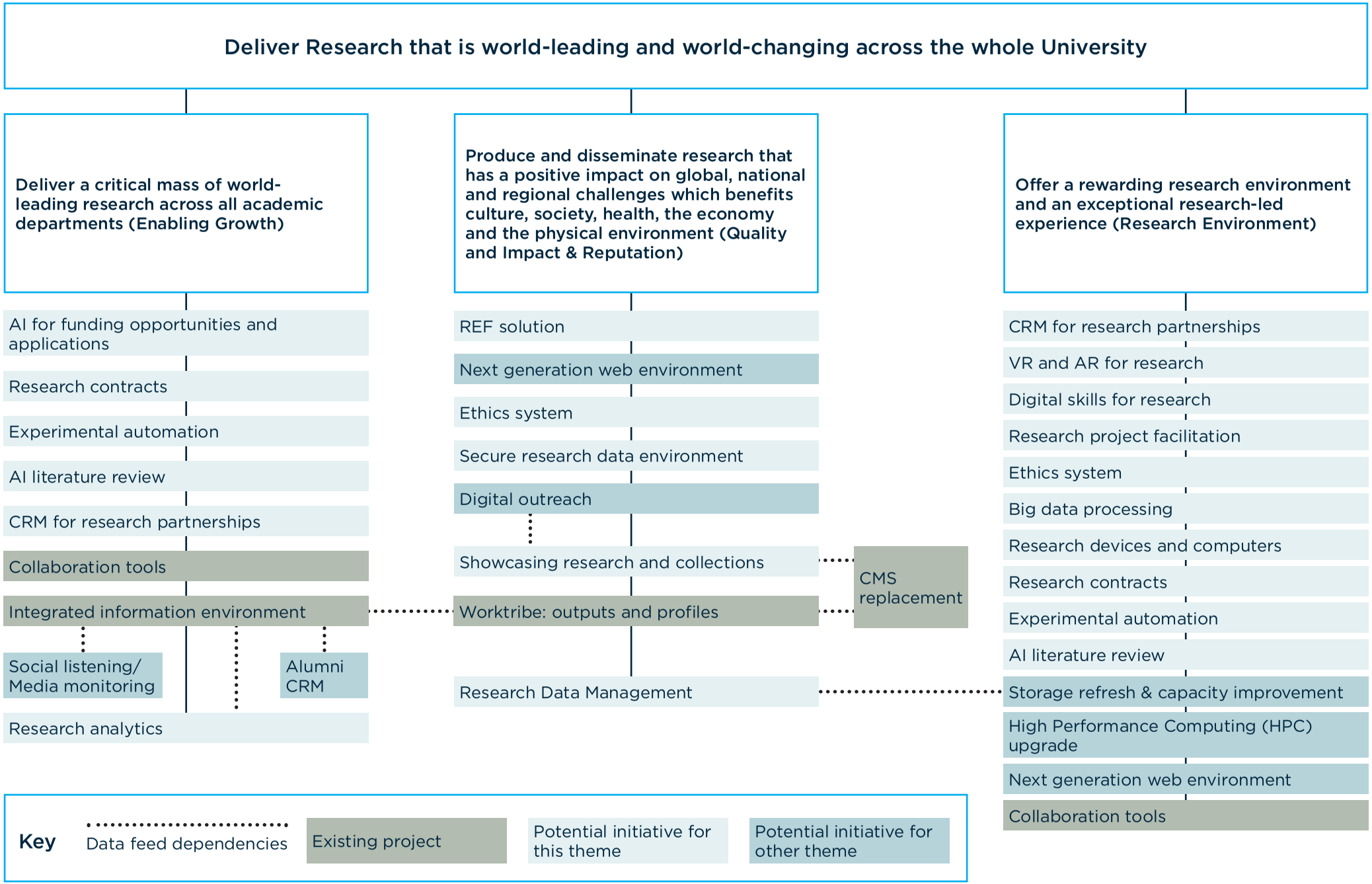
Threat
(What external factors could influence)

- Potential impact of mixed economy – equipment on campus and off campus
- Dependence on certain key people
- Impact of second peak – ability to cope with a cohort of new students
- Financial situation risks staff moving on
- Cyber security risk is increasing
- Demand on CIS – sustaining effort and impact on staff
- Retirement / VSS – skills lost and recruitment challenge – ability to attract

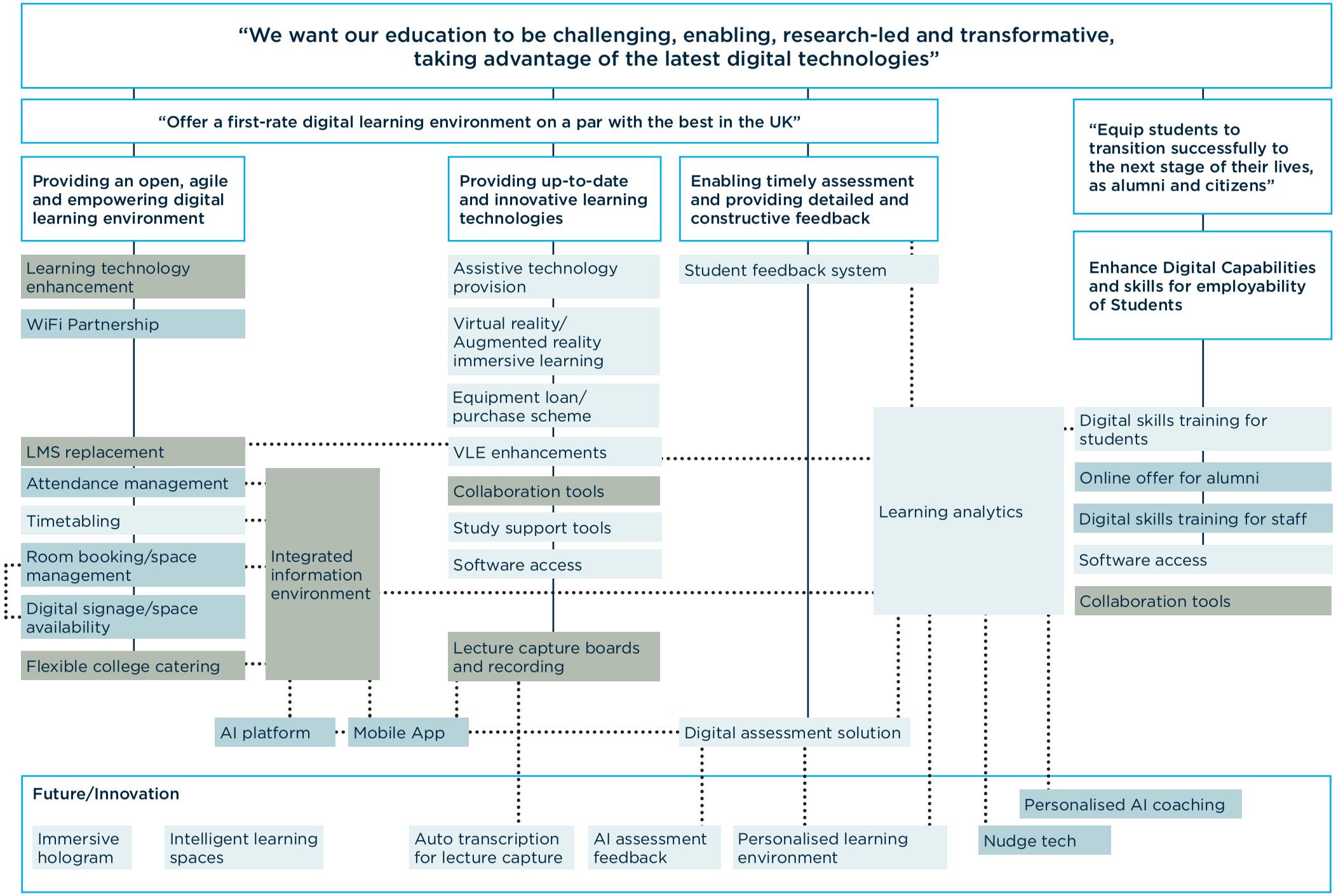
Appendix D: Digital Strategy projects established through workshops

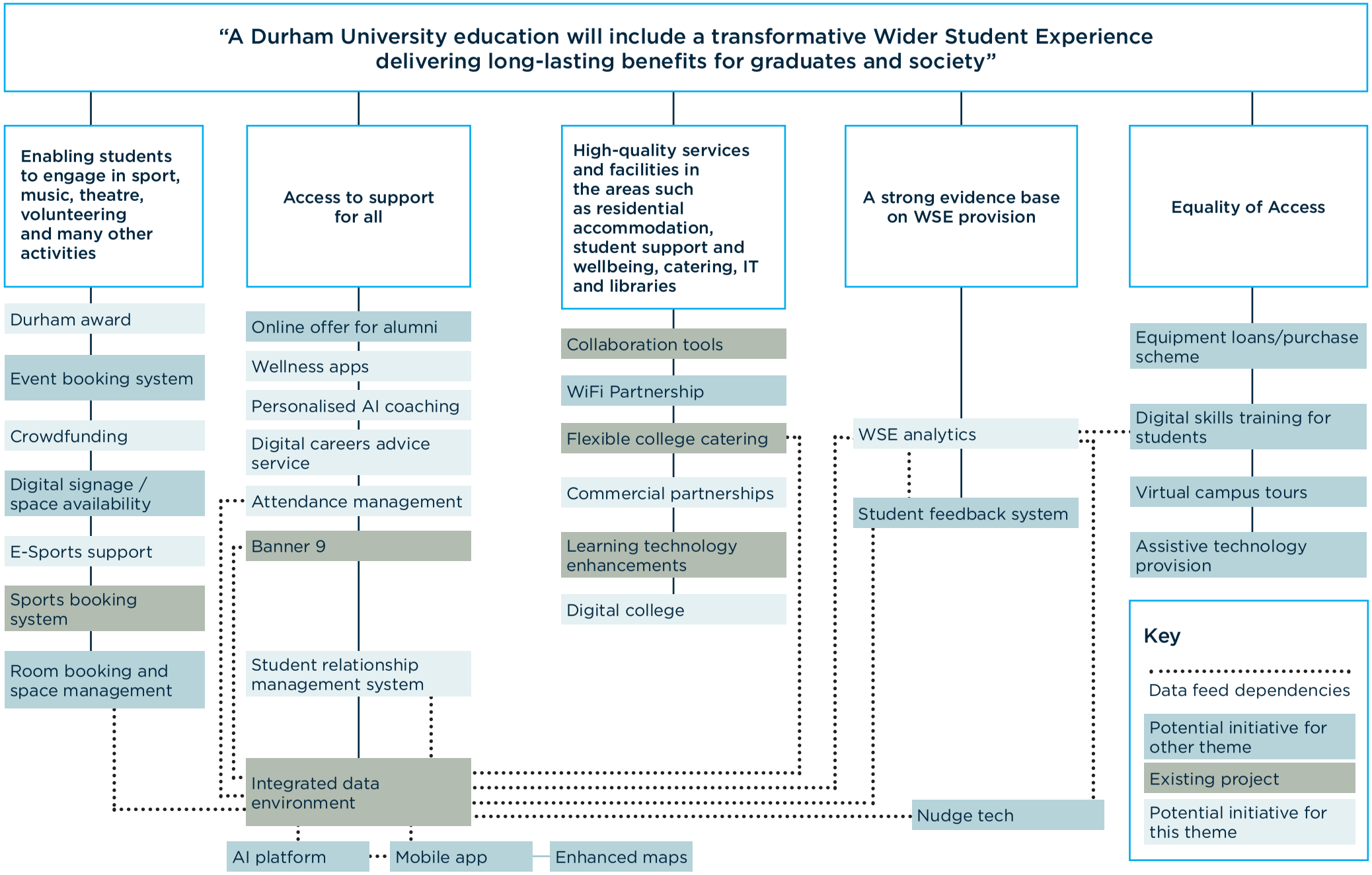
People



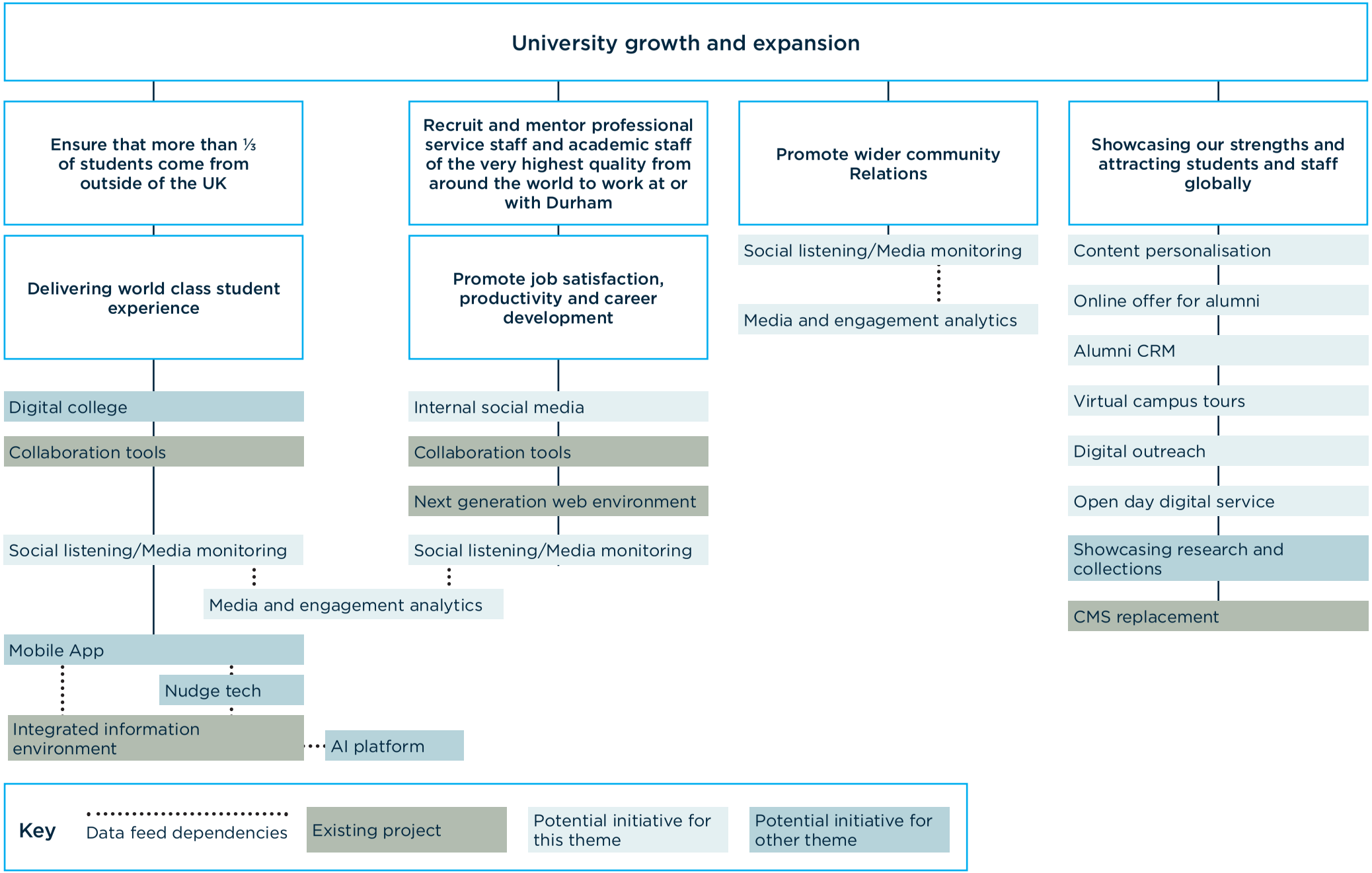

Deliver Research that is world-leading and world-changing across the whole University
Deliver a critical mass of world-leading research across all academic departments (Enabling Growth)
Produce and disseminate research that has a positive impact on global, national and regional challenges which benefits culture, society, health, the economy and the physical environment (Quality and Impact & Reputation)
Offer a rewarding research environment and an exceptional research-led experience (Research Environment)
AI for funding opportunities and applications
Research contracts
Experimental automation
AI literature review
CRM for research partnerships
Collaboration tools
Integrated information environment
Social listening/ Media monitoring
Alumni CRM
Research analytics
REF solution
Next generation web environment
Ethics system
Secure research data environment
Digital outreach
Showcasing research and collections
Worktribe: outputs and profiles
CMS replacement
Research Data Management
CRM for research partnerships
VR and AR for research
Digital skills for research
Research project facilitation
Ethics system
Big data processing
Research devices and computers
Research contracts
Experimental automation
AI literature review
Storage refresh & capacity improvement
High Performance Computing (HPC) upgrade
Next generation web environment
Collaboration tools
Key
Data feed dependencies
Existing project
Potential initiative for this theme
Potential initiative for other theme

Education

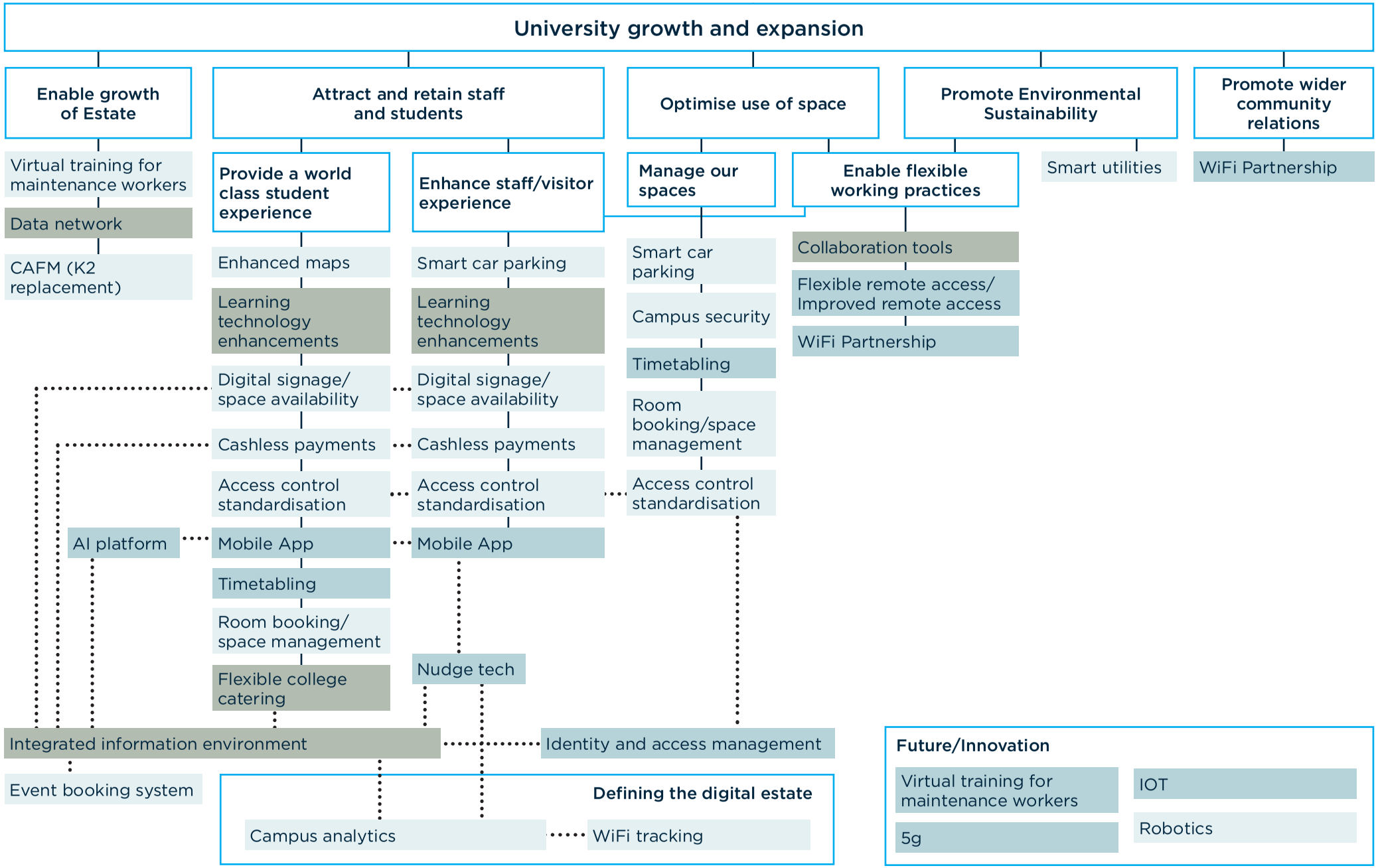

"We want our education to be challenging, enabling, research-led and transformative, taking advantage of the latest digital technologies"
"Offer a first-rate digital learning environment on a par with the best in the UK"
"Equip students to transition successfully to the next stage of their lives, as alumni and citizens"
Providing an open, agile and empowering digital learning environment
Providing up-to-date and innovative learning technologies
Enabling timely assessment and providing detailed and constructive feedback
Enhance Digital Capabilities and skills for employability of Students
Learning technology enhancement
WiFi Partnership
Assistive technology provision
Virtual reality/ Augmented reality immersive learning
Equipment loan/ purchase scheme
Student feedback system
LMS replacement
Attendance management
Timetabling
Room booking/space management
Digital signage/space availability
Flexible college catering
Integrated information environment
VLE enhancements
Collaboration tools
Study support tools
Software access
Lecture capture boards and recording
Learning analytics
Digital skills training for students
Online offer for alumni
Digital skills training for staff
Software access
Collaboration tools
AI platform
Mobile App
Digital assessment solution
Future/Innovation
Immersive hologram
Intelligent learning spaces
Auto transcription for lecture capture
AI assessment feedback
Personalised learning environment
Nudge tech
Personalised AI coaching


"A Durham University education will include a transformative Wider Student Experience delivering long-lasting benefits for graduates and society"
Enabling students to engage in sport, music, theatre, volunteering and many other activities
Access to support for all
High-quality services and facilities in the areas such as residential accommodation, student support and wellbeing, catering, IT and libraries
A strong evidence base on WSE provision
Equality of Access
Durham award
Event booking system
Crowdfunding
Digital signage / space availability
E-Sports support
Sports booking system
Room booking and space management
Online offer for alumni
Wellness apps
Personalised AI coaching
Digital careers advice service
Attendance management
Banner 9
Student relationship management system
Collaboration tools
WiFi Partnership
Flexible college catering
Commercial partnerships
Learning technology enhancements
Digital college
WSE analytics
Student feedback system
Equipment loans/purchase scheme
Digital skills training for students
Virtual campus tours
Assistive technology provision
Integrated data environment
Nudge tech
AI platform
Mobile app
Enhanced maps
Key
Data feed dependencies
Potential initiative for other theme
Existing project
Potential initiative for this theme

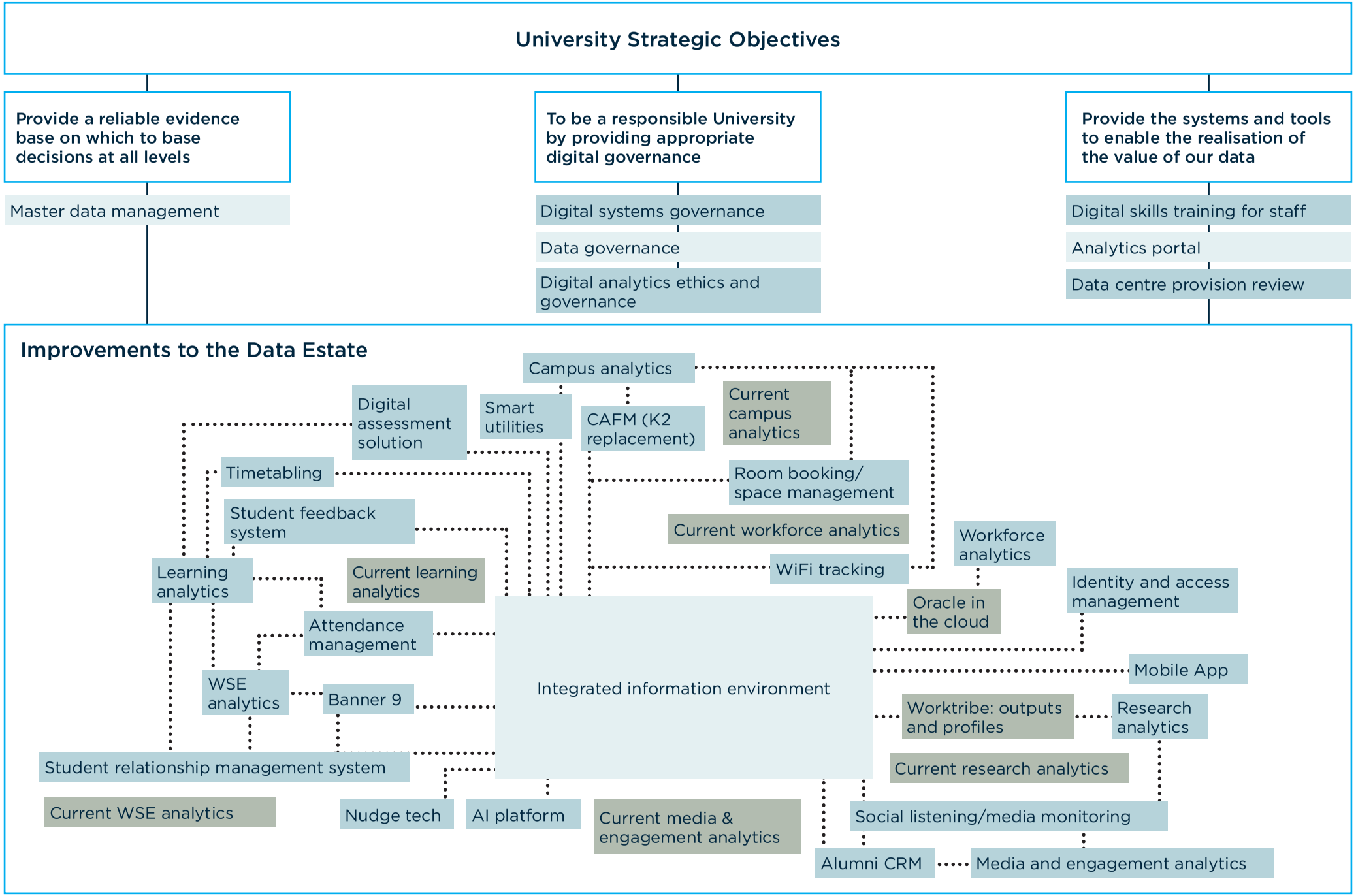
Global

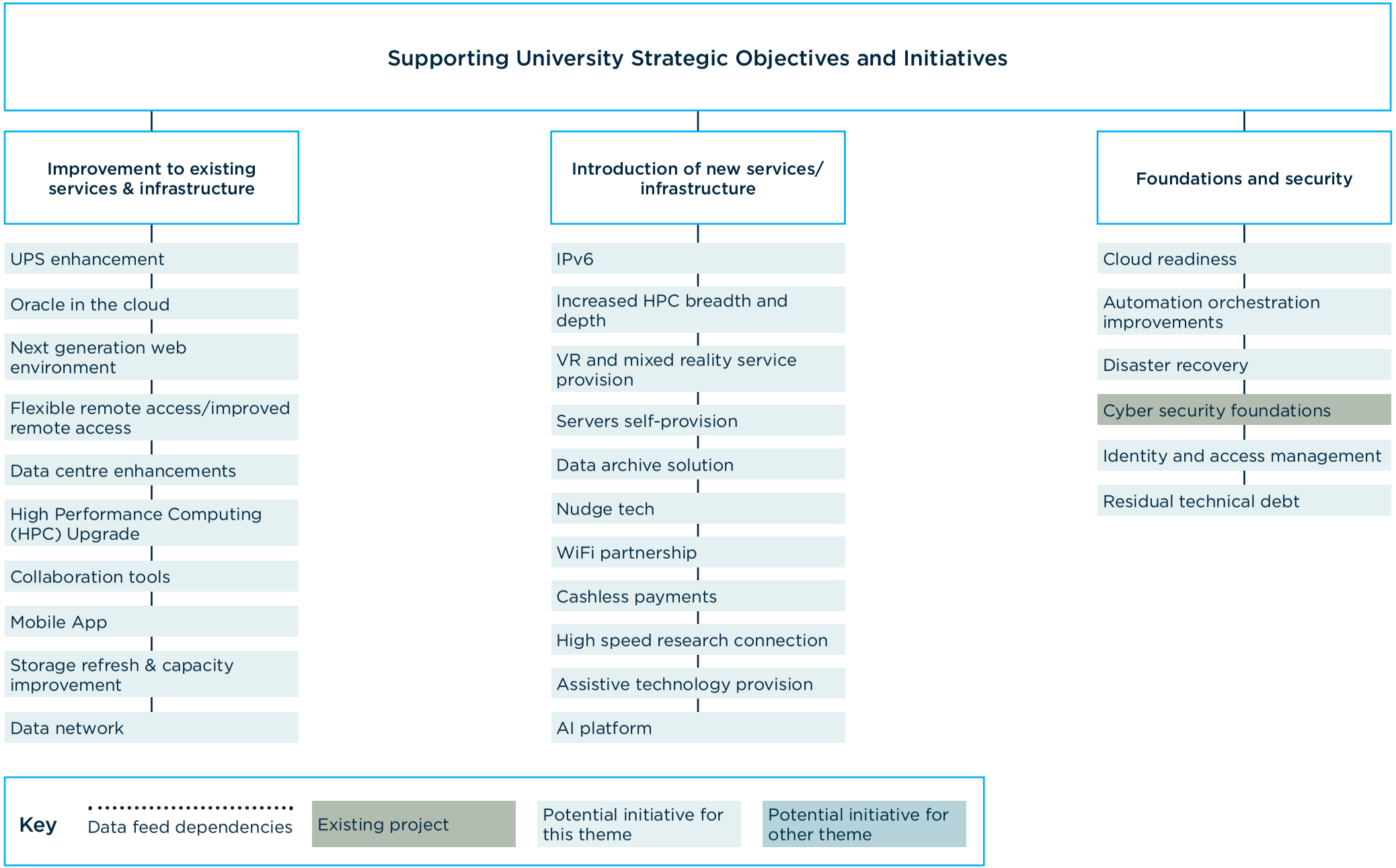

University growth and expansion
Ensure that more than ⅓ of students come from outside of the UK
Recruit and mentor professional service staff and academic staff of the very highest quality from around the world to work at or with Durham
Promote wider community Relations
Showcasing our strengths and attracting students and staff globally
Delivering world class student experience
Promote job satisfaction, productivity and career development
Social listening/Media monitoring
Media and engagement analytics
Content personalisation
Online offer for alumni
Alumni CRM
Virtual campus tours
Digital outreach
Open day digital service
Showcasing research and collections
CMS replacement
Digital college
Collaboration tools
Social listening/Media monitoring
Mobile App
Nudge tech
Integrated information environment
AI platform
Internal social media
Collaboration tools
Next generation web environment
Social listening/Media monitoring
Media and engagement analytics
Key
Data feed dependencies
Existing project
Potential initiative for this theme
Potential initiative for other theme

Smart Campus

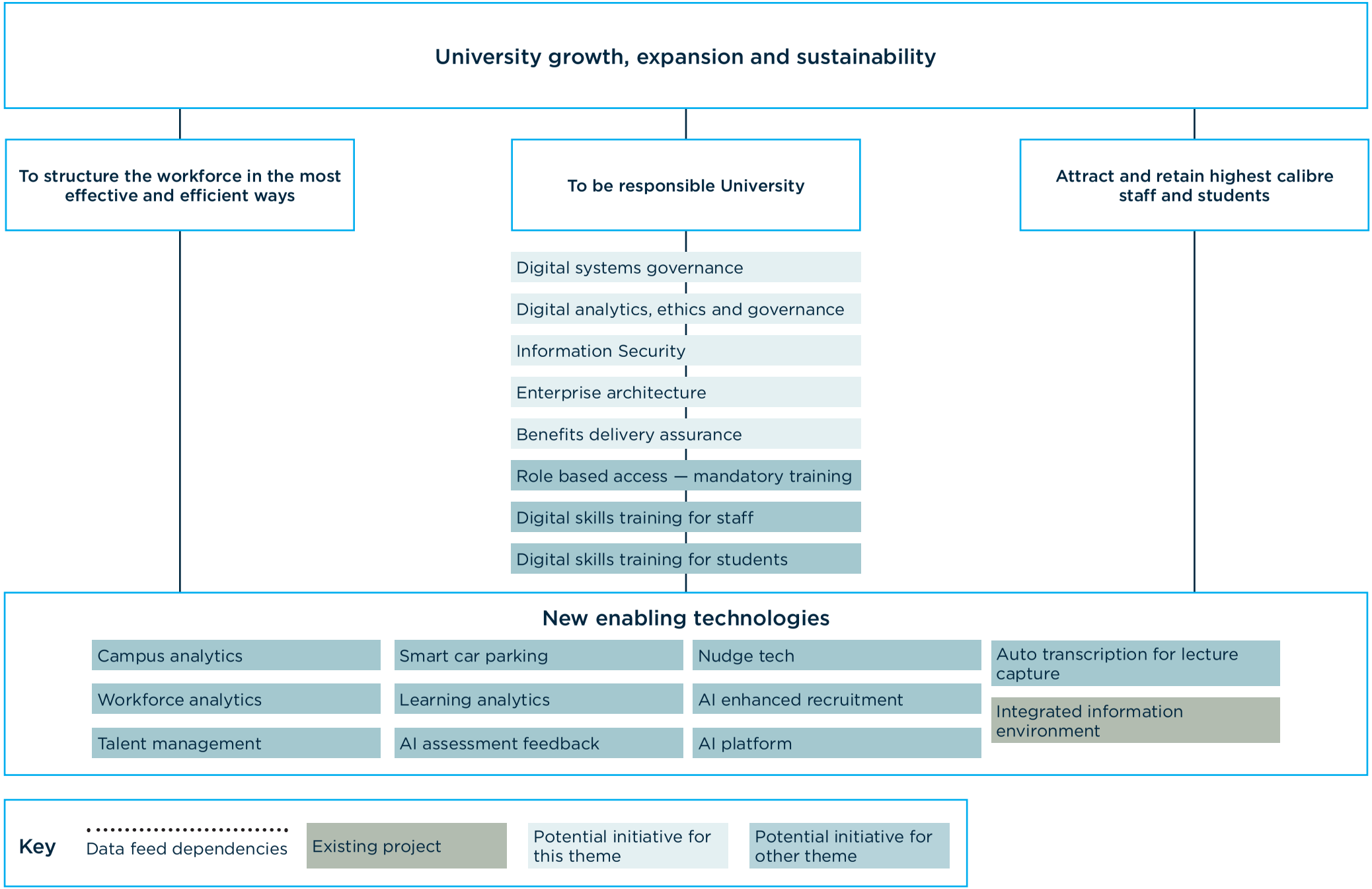


Integrated Information Environment




Supporting University Strategic Objectives and Initiatives
Improvement to existing services & infrastructure
UPS enhancement
Oracle in the cloud
Next generation web environment
Flexible remote access/improved remote access
Data centre enhancements
High Performance Computing (HPC) Upgrade
Collaboration tools
Mobile App
Storage refresh & capacity improvement
Data network
Introduction of new services/ infrastructure
IPv6
Increased HPC breadth and depth
VR and mixed reality service provision
Servers self-provision
Data archive solution
Nudge tech
WiFi partnership
Cashless payments
High speed research connection
Assistive technology provision
AI platform
Foundations and security
Cloud readiness
Automation orchestration improvements
Disaster recovery
Cyber security foundations
Identity and access management
Residual technical debt
Key
Data feed dependencies
Existing project
Potential initiative for this theme
Potential initiative for other theme

Digital Ethics and Governance



Appendix E: Digital Strategy project definitions

People

Title	Description
AI enhanced candidate recruitment	Use of AI to improve candidate selection.
Common digital skills training for all staff	Training to ensure all staff are offered the opportunity to understand how technology can support in the day-to-day operations of their role (where relevant), and linked to career progression frameworks - excluding lecturing.
Digital skills training for the local community	Offer digital skills development opportunities to local people to support the region and enhance employability - potentially to Durham University.
Role Based Access	Automate provision of accesses appropriate to roles.
Talent management and staff training portal	Facilitate online training, support career development, succession planning and overall workforce management.
Specialist digital skills training for research staff	Ensure research staff have the appropriate skills to maximise the opportunities afforded by technology, including new and emerging systems and techniques.

Research and engagement

Title	Description
AI enhanced matching of research funds to academic expertise	Use of AI to identify research fund opportunities and match them to researcher profiles and expertise.
AI analysis of research contracts	Use of AI to assess research contracts to highlight any problematic terms or conditions.
Big Data processing service	Increase availability of Big Data processing as required throughout the University.
Digital preservation so digital information is accessible	The provision of systems to preserve and therefore ensure access to digital information for as long as is necessary.
Digital support for research	Support the research community with greater technical expertise along with access to common digital services such as web sites.
Experimental automation	Implement solutions for automation, and remote access, in research environments through the introduction of robotics / Internet of things / data processing automation.
High Performance Computing (HPC) upgrade	Increase performance and capabilities of HPC in line with research requirements.
High speed research network connection	External network infrastructure is sized based on user requirements and value for money.
Research Excellence Framework module to support (REF) exercise	Replace the inbuilt system with a more sustainable and scalable product.
Research Data Management service	Establish a long-lasting research data storage, curation, preservation and dissemination service that exceeds funder requirements.
Research outputs, profiles and contracts management	Store research outputs and make them discoverable in line with open access compliance, researcher profile management and contracts management.
Secure research data environments	Provide self-service, secure digital environments, which enable researchers access to secure and certified environments when working with sensitive data.
Single digital research ethics review system	Capture and management of ethics submissions and approvals.
VR and AR for research	Solutions to enable creation and consumption of AR/VR content for use in a research setting (e.g. microscopic 3D imagery).

Education

Title	Description
Digital examination/marking/ assessment solutions	Identify solutions for efficient submission, marking, feedback, recording of student work and delivery of examinations.
Digital student feedback system	Provide a single mechanism to capture timely input on lectures and a number of student facing services.
Digital Learning Environment infrastructure and functionality improvements (Ultra)	Move the existing VLE to the latest cloud version and embed the use of new functionality into practice.
Digital learning and education skills programme (inc skills for students)	Develop digital learning and education skills built on a clear digital capability framework.
Equipment for online education	Additional equipment provision and refresh of bookable spaces to support the rapid transition to online education, including supporting hybrid education where some students are onsite and some remote.
Increased Student Record System functionality (Banner 9)	Upgrade to Banner 9 to improve student facing services and embed new functionality into business processes.
Lecture capture enhancements (e.g. white board capture)	Extend Phase 1 capabilities to enable capture of whiteboard content and video.
Library Management System (LMS) infrastructure and functionality improvements	Replace the current LMS with a more reliable and functionally rich system; with associated business change.
Pilot to production mainstreaming of digital learning innovation	A process of taking successful innovations from the Education Lab and embedding them institutionally.
Student attendance management	Track student attendance for compliance purposes and to feed into broader analytics within an ethically approved and governed process.
Timetabling simplification and increased end user communication	Timetabling simplification to increase communication/personalisation, share data with other systems (such as signage) and make near real-time changes.
Unified curriculum reform and self-service portal	Updating content, delivery mode and structure of curriculums across all departments and degrees.

The Wider Student Experience

Title	Description
AI supported digital careers advice service	Automate and personalise careers advice, drawing on anonymised analytics and AI technology.
Commercial partnerships to provide student benefits	Implement commercial partnerships to bring student benefits (e.g. in-app advertising, broadband partnerships etc.).
Digitalise Durham Award	Capture material and support students in the pursuit of the Durham Award.
E-sports platform	Provide facilities and enable the growth of e-sport activities for students.
Full Student Relationship Management system with alumni integration	Have a single point of truth for all student facing data from initial contact through to alumni.
WSE online with Experience Durham broadcasting channel	A platform to present either live or recorded material of events, shows and sporting events to DU staff, students and alumni; offering internal and external facing elements.
Personalised AI student coach	Implement a system to offer coaching / prompting to students tailored to their individual needs.

Global Durham

Title	Description
Content Management system with Internet and Intranet	Implement a new Content Management System with increased functionality and efficiencies.
Digital schools outreach programme	Implement digital solutions to enable engagement with schools beyond the local area, both nationally and globally.
Display personalised content based on behaviour characteristics	Implement solutions which will enable digital content to be tailored to audience types (visitor, student, international prospective student, etc.).
Enhanced digital content and training offer for alumni	Offer enhanced services, training and content to alumni.
Open day digital service	Develop smart campus and VR solutions to enhance the Open Day experience for visitors, before and during their time on campus and within the city.
Social listening / media monitoring	Automated monitoring of media sources to inform strategic direction, identify items of research interest and flag opportunities for targeted interventions.
Virtual campus tours	Virtual reality media of the campus and surrounding area.

Accommodation, estates and infrastructure

Title	Description
Access Control standardisation and upgrade	Refresh or replace current access controls, introducing a common standard using the latest technology.
AI platform to support multiple AI user cases	Implement the appropriate infrastructure and platforms to deliver the range of AI applications prominent across the strategy, including chatbots.
Analytics and reporting platform	Provide a consistent presentation medium for all analytics. This should include a detailed review of the information required in the organisation and how it can be shared and accessed as a single point of truth (in parallel with 'Master Data Management standardisation').
Assistive technology service expansion	Implement improvements to current assistive technologies available to staff, students and visitors to the University.
CAFM (Computer Aided Facilities Management) System	Replace the existing K2 solution and Introduce Computer Aided Facilities Management to ensure efficient and compliant use of the DU estate.
Campus analytics platform	A platform for data from multiple sources, to enable data-driven decisions about the physical estate and potential improvements to the on-site experience.
IT department DevOps and process automation	Implementation of further process automation and streamlining within CIS.
Complete BIG 3 data network reliability and performance upgrade	Complete data network enhancements and cutovers to the new network as part of the BIG 3.
Data archive service for legacy data	Provide a data archiving capability to enable smooth transition between data systems in the future, enabling legacy data to be archived for regulatory purposes.
Digital signage	The provision of real-time information and material, such as space availability (rooms, parking etc.) across campus.

Title	Description
Disaster recovery service	Formalise disaster recovery with a detailed agreement of scope and recovery times.
E Commerce (Web)	Remediation work on the University's E-Commerce and Events Booking applications.
E Community (web)	Service used for education, research and dissemination. Including hosting web sites where there is a legal duty to maintain.
Finance and procurement infrastructure and functionality improvements	Implement phase 2 of the Oracle project related to a cloud instance of finance and procurement, undertaking business change as required to maximise opportunities.
Increased cyber security controls and coverage	Implement a series of technical and organisational controls to support the cyber security posture.
Integrated information environment platform	Implement a central data management service providing a hub for managed system integrations.
IPv6 data network upgrade	Plan and implement required changes to the University network to ensure ongoing compatibility with internet communications for the future.
Improved remote access performance and scope	Increase in reliability, speed and systems/capabilities that can be conducted remotely.
Local business process efficiency gains enabled through collaboration tools	Implement a standard set of collaboration tools (MS Office 365, with extensions / additional tools where necessary) to enable smoother interactions for all and with the potential to support efficiency measures.
Master Data Management standardisation	Implement master data management so data is uniform, accurate, consistent and there is a single point of truth.
Mobile App infrastructure and functionality improvements	Enhance the App to provide more information and user cases in an accessible way.
Next generation web environment	Replace web infrastructure in line with web architecture design (Excludes CMS replacement).
Reduction of technical debt (legacy)	Remediation of technical debt to allow technical advance.
Real time digital infrastructure reporting	Solutions to enable real-time monitoring to support prevention, capacity planning and infrastructure intelligence.
Robotic automation	Explore the potential for robotics technology in new buildings and refurbishments with the implementation of solutions where required.
Streamline and define roles within identity and access management	Refine policies, processes and systems which support binding an individual (or in some cases a system) to a set of permissions and access.
Smart car parking	Monitor parking space use, with digital signage to inform would-be parkers.
Smart utilities	Improve the data capture of utility usage to support better decision making and improve efficiency.
Smart vehicle fleet	Vehicle management across the whole estate with an integrated single resource, tracking and booking system.
University physical estate security enhancements enabled through IT	Student security, building security and asset tracking to support an increased security position.
Upgrade data centres	Review and implement measures to ensure that the data centres continue to meet DU's needs.
Wi-Fi city partnership	Extend Wi-Fi provision across the City, potentially including access to the public.
Wi-Fi device tracking	Explore how tracking data can be used to inform space and usage decisions across the DU estate.

Appendix F: Digital Strategy principles

Governing principles

Title	Description
Cyber security is the responsibility of everyone	Everyone in the University has a role to play in ensuring the protection of the digital estate, tailored to their specific requirements and job role.
Digital by default	Digital systems and processes should be so simple to use that they are the default way of working and that paper processes are increasingly removed.
Digital architecture led	Digital investment decisions are made to optimise delivery and align to business goals. This includes the balancing of new functionality, Business as Usual and the sustainability of infrastructure through the removal of technical debt.
Green credentials	Digital delivery should be in a way that minimises the environmental impact, both in operations and recycling.
Inclusive, useable, accessible and ethical	Services and digital technologies should be accessible, inclusive and represent the values of the University. This includes undertaking Equality Impact Assessments on a project by project basis, supporting students with loan devices who are in genuine digital hardship, and ensuring staff also have the appropriate access to computers.
Service adoption is locally owned	Transformation is locally owned working to standardised University processes and a consistent implementation methodology.
Timely feedback loops	Across services data should be used to support continual service improvement in a timely fashion.
Transparent	Decisions should be transparent and open to scrutiny, including the visibility and acceptance of various operational and projects risks.
University strategy aligned	All investment and operating decisions should be aligned to the strategic direction of the University as stated in the over-arching University Strategy and Annual Reports.
User requirements must relate to benefit	User requirements must be matched against clear benefit(s). Not all requirements are equal and ‘perfection can be the enemy of good’.

Operating principles

Title	Description
Balance demand against available IT resource capacity	Resource capacity measurement and project scheduling should be common place to ensure projects can be appropriately managed with a high degree of confidence over their delivery.
Deliver a multi-tiered service	Acknowledging a 'one-size fits all' approach is not sufficiently responsive move towards delivering a multi-tiered service with defined service levels and differing capabilities based on user need and an affordable distribution of resources.
Deliver operations within the service catalogue	A catalogue should define what digital services are available within the University with a clear understanding of their cost and value. Thus, driving down costs whilst operating within an agreed scope of services.
Digital Strategy projects prioritised	Projects prioritised through the Digital Strategy and corresponding governance will be delivered ahead of other requests.
Embrace a dispersed operating model	Localised support should be provided in a flexible manner acknowledging the valuable role of multiple internal IT providers. Clarity should be given to roles and responsibilities to ensure robustness and alignment to architectural principles and corporate responsibilities such as cyber controls.
Innovate (Digital Innovation Fund)	Technical innovations that provide clear benefit within the University should be highlighted to challenge the art of the possible.
Operate clear project governance gateways	All projects should follow a robust, clear and repeatable process that oversees the commencement and ongoing management (changes) of a project.
Operate a swarming support model	Increasingly move towards a model which is more dynamic and cross-functional in structure. Facilitating conversations between different areas of the IT service as opposed to job reassignments between siloed teams.
Perform to stated KPIs	Key performance indicators will be published to ensure clarity of the level and consistency of service users can expect.
Strengthen vendor management	Increase the partnering/relations with external providers to ensure value for money through a formal vendor management approach including engaging with regional start-ups.
Support flexible recruitment models	Recruitment models will be explored that require limited, or in certain circumstances, no physical time on site.
Support self-service	Support user knowledge acquisition which is accessible 24/7 and is personalised to different learning styles and backgrounds.
Support 'small' scale improvements (Digital Enhancement Fund)	Smaller scale IT spend across the University, excluding research, should be centralised and departments should bid for funds and resource, aligned to the overall Digital Strategy roadmap.

Technical principles

Title	Description
Accessible from anywhere	University systems should be accessible from any device, anywhere, at any time, including access through Bring Your Own Device (BYOD).
Best of suites	A small number of key suppliers should be used to meet operational and strategic needs as appropriate. Bridging the benefits and deficiencies of both best of breed (best single product to meet a specific requirement) and a single supplier approach (multiple products from one supplier).
Cloud first	Where viable and cost-effective cloud should be considered before any other option.
Guided by architectural principles	Function within clearly defined principles that allow flexibility, integration and interoperability in a cost effective manner.
Identify and monitor problem areas	All core technical components of the digital estate should be monitored along with automated detection/alerts to support both preventative interventions and diagnosis when service interruptions occur.
Out of the box by default	Business processes and requirements should align to standardised operating procedures rather than multiple localised configurations. This includes using tried and tested approaches elsewhere and applying them to Durham University.
Reduce localised Information Systems	Corporate systems should increasingly meet user requirements and localised information systems then be de-commissioned.
Zero trust environment	Move towards increased flexibility and BYOD in an operating model which assumes no actors, systems or services operating from within the security perimeter should be automatically trusted.

Appendix G: Risk register

		Inherent					Residual		
Ref	Descriptions	Likelihood	Impact	Score	Response	Interventions	Likelihood	Impact	Score
1	If there is limited business change to accompany digital technology then 'IT' will be delivered as part of an IT department strategy rather than the benefits enabled through the use of digital technologies delivered as a University wide Digital Strategy.	4	4	16	Treat	• Manage individual projects through the central PMO with clear project scopes and benefits defined and measured. • Focus more on the adoption of digital services and the corresponding change of process. • Apply the principals (a) 'out of the box by default' with minimal customisation, and (b) best of suite applications. • Ensure regular consultation of the strategy. • Individual projects should identify those resistant to change and ensure appropriate support is provided.	3	3	9
2	If digital projects occur outside of the strategy, then resource will be siphoned away from delivering this Strategy that could result in a more complex estate with system duplication and complex data integrations.	5	3	15	Treat	• Once the strategy is agreed ensure all digital projects are only agreed through the central PMO, with finance and procurement ensuring agreed rules are applied. • Introduce a programme, and funds, for small IT projects. • Review the Digital Strategy annually to ensure appropriateness to user requirements.	1	3	3
3	If there is no agreement on what IT resource should be spent on BAU, business led projects and technical debt, then changing emphasis in one area could have significant impacts on the others.	4	4	12	Treat	• Agree what is achievable and affordable, along with the balance sought (risk vs benefit) between BAU, technical debt; monitoring and adjusting over time. • Identify pressure points in the IT department structure and provide additional capacity.	3	3	3
4	If there is inadequate consultation and University agreement to work to the same goals and timelines then the Digital Strategy will not be adhered to and the overall effectiveness of the long-term benefits will be diminished.	4	4	12	Treat	• UE endorsement. • Regular communications at a project level and overall strategy level, connected to the financial planning round. • Financial gateways to ensure alignment of spend with the strategy or acceptance of deviation.	2	3	6
5	If subject matter experts do not have a strong understanding of their audience then there may be a false level of assurance that the strategy is correct impacting on inappropriate investment decisions.	3	4	12		• Wide consultation to ensure cross fertilisation and validation of proposed projects. • Review of secondary data, surveys and reports to identify themes and project ideas. • External review of the strategy and comparison with the sector.	2	3	6
6	If the Digital Strategy is not appropriately funded then University aspirations and corresponding benefits will not materialise.	3	4	12	Treat	• Ensure financial control through project delivery. • Demonstrate project value through measurable benefits. • Ensure timely annual strategy review aligned to University planning round.	2	4	8
7	If the prioritisation of resource is focused on delivering new functionality at the expense of the foundational building blocks and the removal of technical debt then long-term success will be compromised/inefficient.	3	4	12	Treat	• Ensure clear priority setting with consequences and risks clearly articulated. • Ensure annual planning cycle includes a specific programme on technical debt. • Review the programme annually.	2	2	4
8	If the projects identified in the Digital Strategy run independently then links and dependencies between projects will not be addressed leading to implementation challenges and technical complexities.	3	4	12	Treat	• Overall programme to be technically reviewed and project timelines phased based on technical dependencies. • Overall programme to be managed through the central PMO, ensuring the priority status of projects especially when they cut across different elements of the University. They will be supported by the IT department PMO with specific responsibility for addressing technical digital dependencies.	2	2	4
9	If there are significant initiatives taking place at the same time then the ability to deliver multiple projects will be impacted.	3	3	9	Treat	• Manage competing demands through the annual planning round and central PMO.	2	2	4

Durham University

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