

Digital Transformation Strategy

University of Leeds

DRAFT

Version 3.0 (Updated 26/02/21)

Executive summary

1. The purpose of this strategy is to provide an over-arching view of the university’s vision and aspiration in relation to digital transformation of the university’s core activities, student education, research and innovation, and internationalisation, and to describe how we will embrace use of digital technologies, data and digital approaches to achieve our mission.
2. The strategy describes how we will work with our staff, students, alumni, partners and our local and global community to harness digital technologies and digital approaches to enrich our activities, contribute to global challenges, and reduce inequalities.
3. Through delivery of this strategy, we will recognise and manage the limitations of digital technologies, particularly ensuring that staff and students have equitable access to the required technologies and Internet access, and are supported to get best use out of technology, through digital literacy and digital skills support, and professional development.
4. Our students have high expectations from us about the integration of digital technology in their learning and teaching activities, and as part of their wider student experience, and many students rely on digital technology to access their education. As we evolve our student education strategy, we will incorporate identified good practice from our hybrid delivery model, and embed student-centred, digitally enabled active learning approaches into all aspects of our on-campus student education.
5. Online education increases access to learning opportunities for people all around the world, and is a powerful force to enhance lifelong learning for all. We will grow our research-based online education portfolio, to help to support global lifelong learning, upskilling and reskilling, and to support realisation of the UN’s Sustainable Development Goals.
6. There are many opportunities to make better use of digital technology and data to support our research on global challenges, and to bridge the research-education nexus. In order to achieve this transformation, we will invest in our technology infrastructure and ensure our capabilities in technology and data are of the highest quality to support our vision. We will provide secure, flexible, scalable, interoperable environments to enable researchers to use existing, and new, technologies, data and programming capabilities to their maximum potential to support research and innovation activities.
7. Use of data and digital approaches can enable us to disseminate our research more effectively to local, regional and global stakeholders, and to realise pathways to impact. We will use digital technologies, online learning and digital approaches to disseminate our research outcomes in multi-media formats, and to reach new audiences, and potential funders, collaborators and policy-makers.
8. Digital technologies, use of data and digital approaches offer significant potential efficiencies for operational activities, and many sectors are engaged in transforming their operations through culture change, development of skills, changing processes and providing appropriate technology. As a university built on large, complex operational processes in education, research and business operations, there are many opportunities for us to improve our effectiveness, operate in a more agile, outcome-focused manner, and realise efficiencies, through digital transformation.
9. Our sustainability goals and net zero commitments are also a powerful driver for increased digital transformation, and should encourage us to consider all ways in which digital technologies can help us to preserve our natural resources and reduce our carbon emissions.
10. Our campus facilities are increasingly digital enabled, and the growth of Internet connectivity, and the internet of things will provide many opportunities for us to use of physical estate more effectively and efficiently, and to operate a smart campus. Through continued investment, we will continue to enhance the facilities we provide in our education spaces, libraries, research laboratories, offices and other campus spaces, to enable effective learning, working, collaboration and to make our campus a safe, appealing and sustainable location.
11. The vision for the new digital transformation strategy is as follows: Our effective, creative and research-informed use of digital technologies, data and digital approaches will enhance student learning and experience, enrich our research activity, and improve our infrastructure and ways of working. Through our digital transformation activities, we will be a leading digitally-enabled university having a global impact through education, training and research.
12. The digital transformation strategy is organised under the following three over-arching objectives: (i) Enhance ways of working, campus facilities and operational activity; (ii) Improve our capabilities to conduct high-quality, collaborative and globally impactful challenge-based research & innovation; (iii) Enhance our educational provision and grow our fully online education portfolio.
13. To realise the strategy, we will deliver a range of foundational projects that fall into a number of areas: (i) People; (ii) Technology and data infrastructure; (iii) cybersecurity; (iv) campus changes for multi-mode and new ways of working; (v) online and digital education and student experience; and (vi) digital research.
14. We will also pursue a range of transformational activities that will differentiate us in education and research, and help us to achieve our university strategy. Transformational projects will be in the research, education and campus facilities areas. For example, investments in our extended reality (i.e. VR, AR etc.) capabilities will transform our research in this area and enable student learning to be greatly enhanced. Other projects will be required to initiate research and education initiatives that will help us to realise the over-arching university aim to have global impact e.g. the Global University Network and the Institute of Digital Futures.

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**Consultation**

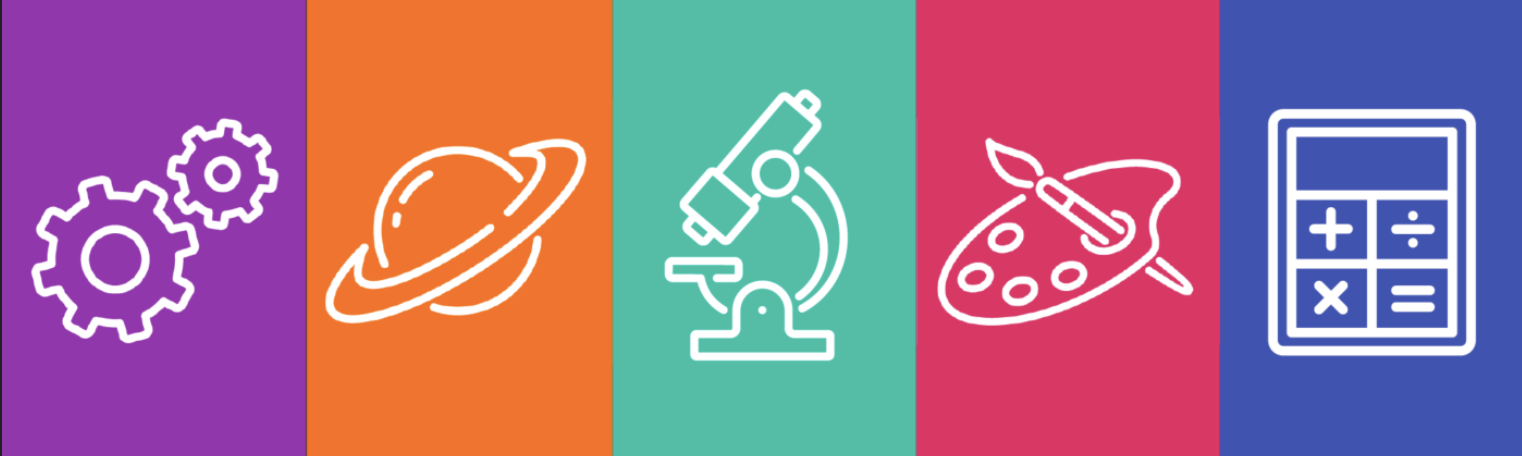
*Earlier versions of this document have received comments from staff, students and a number of university committees (e.g. Faculty Taught Student Education Committees, Taught Student Education Board, Research & Innovation Board, International Strategy Board, Heads of Professional Services, Digital Education Committee, Digital Transformation Strategy Board), and has been discussed by the University Executive Group, the Senate and the University Council. The Strategic Delivery Plan within this document has been endorsed by the University Executive Group.*

*Staff and students have commented on the objectives, provided case studies and examples, and provided written feedback on the document. All of this feedback has been incorporated.*

*The personas and case studies act as summaries or reflections of feedback received from staff and students as part of the consultation process. They provide a high level summary of future expectations and needs from different perspectives.*

*Updates to the strategy will be endorsed by the Digital Transformation Strategy Board.*

# **Section 1**: Purpose, Context and Definition



## Purpose

The purpose of this strategy is to provide an over-arching view of the university’s vision and aspiration in relation to digital transformation of the university’s core activities, student education, research and innovation, and internationalization, and to describe how we will embrace use of digital technologies, data and digital approaches to achieve our mission. It describes how we will work with our staff, students, alumni, partners and our local and global community to harness digital technologies and digital approaches to enrich our activities, contribute to global challenges, and reduce inequalities.

The digital transformation strategy will also support the university’s activities to make more effective use of data, digital processes, digital systems and technologies and digital approaches to enhance and transform the way we work, through digitisation and automation, to free up time for high-value activities. This strategy acknowledges our starting position, and includes objectives that are required to provide a strong foundational underpinning for future transformation, as well as some objectives that will help us to differentiate ourselves through transformation in the short- to medium-term.

**Digital Transformation Persona**

**Students (Undergraduate and Postgraduate)**

Students studying at Leeds have told us that they are keen to leverage the benefits of digital across their university experience, as a prospective student, current student, graduate, and alum. They want to maximise their university experience both academically and through social, community and career connections, and see digital as an enabler. Their current experience can be inconsistent, they are required to navigate through different systems, and they see an opportunity to digitise paper based and manual processes. Their goal is to engage with the University through a seamless digital platform, personalised to their individual needs. They expect that digital will be used to enhance their experience. The challenges of digital equality and accessibility are acknowledged and it is expected that solutions will be put in place by the University.

They are keen to ensure that their own digital literacy and that of staff is of a high quality so that they can maximise their learning experience. They see digital embedded in campus infrastructure improving learning spaces, and driving efficient use of the space for example online booking of computer spaces, library assets, and others, while also ensuring access to the latest digital tools relevant to their subjects (e.g. immersive technologies). There is excitement about the opportunities digital creates and they want to see the Strategy delivered in time for them to see benefits, as well as future students.

Introduction of this strategy will hopefully help everyone in our community through their own individual, and our collective, digital transformation, to be willing and able to embrace digital technology, and to encourage a positive (but critical) mindset about the potential positive impact of digital technology, and the work needed to overcome and manage the challenges associated with digital technology. We will focus our activities around the university’s values, and the following principles: culture, people, community, process, technology and impact.

This strategy will describe what we mean by digital transformation and why we need to ‘transform’, and will set out our planned activities to make most effective use of digital technologies and approaches to support the university’s mission. The strategy is essential at this time of increased focus on digital ways of working, studying and researching, and will support our long-term transition to a digitally enabled university. This strategy should be read in conjunction with the University’s overall strategy.

## Context

The University of Leeds has strong foundations in the use of digital technology to support the core academic activities of student education and research & innovation, but we have not yet realised the value from digital technologies to improve our ways of working. Our students have high expectations from us about the integration of digital technology in their learning and teaching activities, and as part of their wider student experience, and many students rely on digital technology to access their education; we are not currently always able to meet these expectations. Our PGRs and researchers and their funders have increasingly high expectations for the capabilities of our technology infrastructure and our data management that we don’t currently meet, and we need to manage complex challenges to maintain our digital infrastructure.

The global pandemic, and the move to remote working, online learning and reimagined research activities has sharpened the focus on the need to focus our attention and resources on embedding effective digital activities at scale across all aspects of the university. Even without a global pandemic, the world was shifting towards increased use of digital technology to improve work, enhance education and conduct research, and increased automation in many sectors was driving a growing focus on upskilling and reskilling in digital skills. All of these activities have been significantly accelerated since 2020 and we are perfectly positioned to embrace this opportunity, both through incremental improvements in our use of digital technologies, and transformational changes in the way that we approach education and training, research and innovation and our operations. If we are successful in our digital transformation activities, we will be able to demonstrate a strong differentiated proposition to our future students, staff, research funders and partners.

**Digital Transformation Persona**

**Academics/Researchers**

The Academic community sees the opportunity to use digital to enhance the education experience and are keen to take forward the learnings from the changes made as a result of COVID-19. They are passionate about their teaching and see an opportunity to use new and emerging technology but recognise the need to enhance the technology infrastructure, and to upskill and increase their own capability via training and/or collaboration with peers. A focus on enhancing professional learning training and opening up new markets presents an opportunity to engage with new student cohorts, and it is recognised that this requires a change in approach to ensure a positive online experience.

Researchers see an opportunity to benefit from digital through infrastructure and processes to enable improved capture, storage and usage of data, and access to new innovative technology that enables them to undertake high quality research more efficiently. Digital can enhance collaboration with external partners and industry, as well as increase cooperation between Researchers across Faculties and Schools.

Both Academic staff and Researchers see real benefit from improved ways of working with administrative, internal processes improved through digitisation, enhancements made to the technology infrastructure, and changes to ways of working.

## Definition

As with all such broad, thematic terms, there isn’t a universal definition of digital transformation, but there are a number of common facets to the term within sectors that have used it over the past few years. Primarily, digital transformation is about systematic change in an organisation to effectively embed the use of digital technologies in order to improve the likelihood of achieving a vision and strategic goals, and to set new vision and strategy based on the affordances offered by digital technology.

This notion of systematic change is encapsulated well in Brown et al. (2020) definition of digital transformation: “Digital transformation is a series of deep and coordinated culture, workforce, and technology shifts that enable new educational and operating models and transform an institution's business model, strategic directions, and value proposition.[[1]](#footnote-1)” The key here is that digital transformation is absolutely not just about technology or data, but critically encompasses **culture, people, processes and impact**.

For our university, digital transformation will be cross-cutting across our core business of education and research, and our ways of working. In education, it is about understanding and harnessing the potential affordances of digital technologies to enhance and enrich the education and experience we offer to students studying on campus, in hybrid modes and online, and offering learning opportunities to individuals globally, to support lifelong learning and professional learning. In research, it is about ensuring we have best of breed technologies and platforms to support cutting edge activities, provide an environment where we can innovate, co-create and embed new and emerging technologies to address global challenges, build strong bridges between research and education, support research dissemination and impact, and create a research informed evidence-base of the positive and negative impacts of digital technologies.

**Digital Transformation Persona**

**Professional Staff**

Professional Services staff are keen to benefit from an increased use of digital to improve the services offered to staff and students, with a focus on quality, simplicity and efficiency. They want to drive improvements to infrastructure as systems can be complex and difficult to navigate, and changes to ways of working to capitalise on digital technologies including the use of Robotic Process Automation, AI, and other tools. Recognising the time saved from reducing manual and paper-based processes, they would like to focus their time on ‘value add’ activities that maximise benefits for staff, students and the University.

They recognise they can leverage benefits from improved data allowing them to make evidenced based, informed decisions in real time, resulting in greater value add. There is acknowledgement of the change in mindset required, and need for a different way of working to drive rapid change, agility and flexibility, and welcome access to upskill activities including training.

Professional staff are excited by the opportunities that digital presents and are keen to see priorities mapped outlining short, medium and long actions and benefits.

Underpinning this is transformation of our ways of working to ensure that effective use of digital technologies and approaches improves our administrative processes, freeing up as much time as possible for our core business and high-value activities. And beneath all of that is transformation of our culture to embrace digital technologies, and on-going, deep and impactful professional development to support all staff and students to be able to harness the power and potential of digital technology, and manage the challenges they present.

**Digital Transformation Persona**

**University Leaders**

Viewing the Strategy through the eyes of university leaders, they are keen to seize the opportunity digital presents to support the long term academic and financial sustainability of the University, particularly with consideration to the challenges of COVID-19 and net zero commitments. They recognise the need for change and the investment required to successfully deliver on the Strategy, and are keen to enhance the learning experience of students and the impacts of Research, and see digital as a key enabler. The opportunity to reach new markets, increase commercialisation and grow the professional learning portfolio whilst supporting regional, national and international upskilling is important to leaders.

They are keen to see Leeds recognised as an international leader for digital transformation, and are excited and inspired by this aspiration. They want to be bold in their approach to delivering on digital transformation and recognise their role as leaders and role models in order to drive staff engagement and buy in. Recognising that there will need to be a shift in culture and changes to ways of working, they are confident that staff will feel empowered to deliver on high value activities and innovate in their day jobs.

University leaders are proud of the reputation and successes of the University but acknowledge the need to capitalise on the opportunities created through digital technology.

# **Section 2**: Scope, vision and principles



## Scope

The University’s Digital Transformation Strategy will cover all aspects of the university’s core activities, student education, research and innovation, and internationalisation. The strategy will also have implications for all of the enabling activities planned within the university’s strategy. The digital transformation strategy will draw together all elements of the university’s strategy which relate to data, digital systems, digital technologies and digital and online approaches.

## Vision

***Our effective, creative and research-informed use of digital technologies, data and digital approaches will enhance student learning and experience, enrich our research activity, and improve our infrastructure and ways of working.***

***Through our digital transformation activities, we will be a leading digitally-enabled university having a global impact through education, training and research.***

This means that we will:

* Work with our staff, students, partners and organisations to effectively embed digital technologies and digital approaches to address **global challenges**;
* Harness the power of digital technologies and digital / online approaches to make strong, tangible, collaborative **connections** between research and educational activities;
* Continue to **deliver** digital technologies and digital approaches that enhance the quality of the student and staff experience and improve inclusivity, flexibility, well-being, student success and ways of working;
* **Address** digital poverty and inequalities created by digital technology in our staff and student communities, and continue to work to challenge digital and health inequalities locally and globally;
* Create a **connected and networked** community using digital technology and digital approaches to increase knowledge, build communities and encourage innovation;
* Support the Government’s **levelling up** strategy to upskill and reskill employees for new employment opportunities, working in partnership with other universities, colleges and education providers in the city;
* Create opportunities to **innovate** with new and emerging digital technologies to improve education and learning, through the use of living labs, innovation hubs, crowd-based approaches, knowledge exchange and partnerships;
* Support our net-zero **sustainability** plan through effective use of digital technology and digital approaches to reduce our use of paper, and reduce business travel;
* **Harness** the value in our data to support our students and staff, and to contribute to problem-based global challenge research;
* **Improve** and effectively manageour institutional technology platforms, use of data, capabilities with digital technologies, and our operational processes;
* **Support** our staff and students to understand and harness the value of digital technologies, data and digital approaches to enhance education and learning, research activities, dissemination and impact, and ways of working, through continuing professional development.
* Take a **leading** position on use of digital technologies and digital approaches to improve open data practice, open educational and research practice, and dissemination and impact of our research;
* **Develop** globally focused online learning opportunities aligned to our research themes and priorities, building on, and learning from, our strong foundations;
* Undertake large-scale **research** into the efficacy and impact of digital technologies and online education on learning and learners, and teachers and teaching;
* **Partner** with the Leeds City Region to position Leeds as a region of excellence for digital transformation;
* Generate additional **income streams** through innovative use of digital technology to deliver global online education and professional learning, and through research and development activities;
* Lead global **networks** of HE partners and technology partners to drive forward disruptive digital transformation of higher education.

## Principles

All uses of digital technologies, data and digital approaches supporting digital transformation at the University of Leeds will:

# **Section 3**: Rationale



## Rationale

The rationale for a single University digital transformation strategy is to ensure that our research and innovation, student education and internationalisation strategies are integrated, aligned and complementary in this critical area of focus. There is a strong rationale to focus our efforts on digital transformation across our core academic activities: education and research & innovation, and in our ways of working and operational activities, as described below.

### Education and training

The University has a sector leading position in relation to digital education, particularly in relation to online provision and digital education systems. The university is evolving its pedagogic practice to use these systems and tools effectively through a hybrid delivery model enforced by the global pandemic, and there is a need for further research evidence to support our educational practice. However, there is much more to do in order to fully embed and evolve the digital, and active, pedagogies in use across all aspects of taught student education to support our students’ learning most effectively, and to realise the value of online education for our students, and postgraduate researchers.

**Case Study: Reflective practice through eportfolios**

The evolving priorities for Leeds quickly led us to an ePortfolio system that can provide crucial functionality across all aspects of learning and teaching. Critically, in the current context, this includes helping us to build academic and social communities as a core part of blended combinations of online and face-to-face experience. This means that PebblePad, the university’s new ePortfolio system, is getting set to support the challenges of a post-COVID Leeds community in several highly compelling ways:

First, PebblePad provides us with a more dynamic, interactive and reflective approach to learning and personal development and this is already being implemented in the institutional work on Academic Personal Tutoring. PebblePad facilitates student-led tutorials that will ultimately be supported by Learning Analytics data that allow students to monitor and enhance their own individual progress. This reflective and interactional functionality can of course be immediately put to use in other contexts, so the same shared spaces that will serve tutors and tutees can also provide enhanced experience for students and supervisors during undergraduate and post-graduate research projects, across placements, study abroad and any other experiential learning activity.

Second, PebblePad gives us access to collaborative, multimodal learning and teaching activities in a way some of us could possibly not have previously imagined. The emphasis placed on digital approaches to inclusive, student-centred learning in the University of Leeds education strategy leans heavily on engagement with digital technology, and the ePortfolio is clearly part of the response to this focus. The functionality of the ePortfolio enables us to easily collaborate and share a range of media in a way that was not previously possible. This in turn provides us with the ability to tailor our responses to the changing circumstances created by the pandemic and to support student learning in new, hybrid modes.

There is also a large piece of work required to meet the expectations of our students in terms of the digital student journey and experience, and to support the aspirations of global lifelong learners. We also need to maintain the appropriate balance in our use of digital technologies to support our students education on-campus, deriving maximum value from in person on-campus, physical interactions and experiential activities, and using digital technology and online learning to enhance, enrich and add value.

We need to recognise and manage the limitations of digital technologies, particularly ensuring that students have equitable access to the required technologies and Internet access, and are supported to get best use out of technology, through digital literacy and digital skills support. We believe that the data derived from learning through use of digital technologies and online learning can help us to reduce degree awarding gaps, and identify changes needed in our curriculum to enable all students to benefit equally from the learning, teaching and assessment approaches employed. We wish to focus effort on reducing digital poverty and reducing (not exacerbating) inequalities through digital technology.

In the education and training space, we believe there are three cohorts of learners who can benefit most from digital transformation: (i) our taught students and postgraduate researchers, studying on campus and online, who can benefit from pedagogically effective use of digital technologies and online learning, and an enhanced digital experience; (ii) global learners with lifelong learning aspirations, who can benefit from high-quality online education opportunities; and (iii) professional learners seeking opportunities to upskill and reskills, who can benefit from improved employment opportunities.

It is increasingly evident, both from the research literature and evidence-based practice, that digital technologies and online education offer many opportunities for learners to access educational opportunities more flexibly and inclusively, enable rich and diverse learning communities, and support learners to achieve their learning goals. Embracing digital technologies to enrich face-to-face, hybrid and online education improves learners’ motivation and engagement, and use of active learning pedagogies enables learners to work creatively and innovatively with their peers and teachers to co-create knowledge and gain new skills. We need to continually scan the horizon and invest in new and emerging technologies that we think can support us to improve our students’ learning opportunities, and enhance their experience, and we can actively develop, enhance, research and evaluate these solutions ourselves, through partnership between our students, researchers and technology partners.

#### As we evolve our student education strategy, we will incorporate identified good practice from our hybrid delivery model, and embed student-centred, digitally enabled active learning approaches into all aspects of student education. We will need to continue to redesign our curricula to support effective blended learning for on-campus learners, and be prepared to adapt our approach and pivot seamlessly to hybrid and online learning in the face of external forces. We will also need to redesign our assessments, and our processes for managing assessments, to continue to realise the benefits of digital delivery and marking of assessments, whilst maintaining quality, rigour and standards. This is a great opportunity to reimagine assessment to be more inclusive, flexible and authentic, and to explore digital credentialing.

**Case Study: Global University Network**

A strategic priority for the University is to work in partnership with global universities and technology partners to co-create new forms of open, community-based, collaborative, sustainable online education to support lifelong learning. These partnerships are focused on the United Nations Sustainable Development Goals, starting with enabling Zero Hunger and Climate Action in Africa.

This global collaboration will enable the University to provide accessible, stackable, credentialed online learning opportunities to support practitioners and policy-makers of the future towards solving global challenges.

The University has strong experience and success in supporting lifelong learning; currently offering over 100 online short courses on FutureLearn and Coursera reaching 2.5million individuals with high numbers of enrolments from the Global South, developing a suite of online learning resources from both the GCRF AFRICAP project, creating new opportunities to build on strong connections with African Universities securing GCRF-ARUA funding for “Food System Research Network for Africa”, and the Vice-Chancellor has been invited to join the International Advisory Board of their ARUA Centre of Excellence for Sustainable Food Systems.

#### Online education increases access to learning opportunities for people all around the world, and is a powerful force to enhance lifelong learning for all. Growing our online education portfolio will help to support global lifelong learning, and to support realisation of the UN’s Sustainable Development Goals. Through working in partnership with education providers globally we can increase and enrich the global learning community, and collaboration will create new knowledge and impact. Through these partnerships with other universities around the world, and with online education platforms, we can provide accessible, stackable, credentialed online learning opportunities to support people solving global challenges. These activities will offer us the opportunity to lead the way in terms of a paradigm shift in the access to higher education.

#### The educational provision created through these activities will be re-used and re-purposed to enrich our on-campus students’ learning, and to grow our professional learning portfolio to support regional, national and international upskilling and reskilling, to generate revenue for the university – another major opportunity of online education.

#### We will work in partnership with other universities, colleges and other education providers in the Leeds City Region to support the Governments ‘Jobs for Skills’ white paper, and provide more flexible, inclusive opportunities for learners to engage with education and training that will provide upskilling and reskilling to meet the demands of economic growth in an uncertain environment.

### Research & innovation

There are many opportunities to make better use of data to support our research on global challenges, and to bridge the research-education nexus. In order to achieve this transformation, we need to invest in our technology infrastructure and ensure our capabilities in technology and data are of the highest quality to support our vision. We need to provide secure, flexible, scalable, interoperable environments to enable researchers to use existing, and new, technologies, data and programming capabilities to their maximum potential to support research and innovation activities. We must ensure that our technology infrastructure and data tools are a foundation for innovation and creativity, not a barrier to progress.

As researchers focus on research questions to tackle global challenges aimed at improving life, health, society and work, there is a growing and urgent need for support for high performance computing, storage, manipulation and analysis of large, complex data sets, and use of new and emerging digital technologies such as extended reality (or immersive) technologies, Artificial Intelligence and robotics. All of these research endeavours require the university to be digitally-enabled, and equipped with the necessary infrastructure, platforms, support and culture to meet these challenges.

Use of data and digital approaches can enable us to disseminate our research more effectively to local, regional and global stakeholders, and to realise pathways to impact. We can use digital technologies, online learning and digital approaches to disseminate our research outcomes in multi-media formats, and to reach new audiences, and potential funders, collaborators and policy-makers.

**Case Study – ForestPlots – Faculty of Environment**

ForestPlots.net makes leading contributions to University priorities of Internationalization, Research Excellence and Impact, as well as wider societal change. It is encouraging inclusive science among the global south and north and bringing forests into climate policy. Built on a global forest data pipeline and advanced SQL programming, it delivers innovative tools for contributors and users to manage, share and analyse records together. By originating a hyper-collaborative, world-wide network ForestPlots.net is now connecting scientists, students, forest managers, and policy-makers as never before.

Key evidence of success include: (1) 2200 colleagues from 54 nations managing data with us; (2) >100 peer-reviewed scientific outputs this REF cycle involving more than one thousand authors worldwide, half now led by tropical researchers; and (3) sustained support to Impact studies on carbon sinks and stores as well as national submissions for Paris Agreement Forest Reference Emission Levels.

We believe that active engagement with digital technologies, data and digital approaches will have resonance in all of our research disciplines, from the medical, biomedical & health fields, through digital humanities, cultural practice, sustainable cities and living, the built environment, people and society and the future of work. It is hard to imagine any single research discipline where digital technologies and data are not necessary, valuable or an integral part of the research process, or indeed at the heart of the research question. We also wish to support our researchers who use platforms, systems and tools outside of the University, when collaborating with national and international partners.

**Case study - Extracting insights from crime reports – Faculty of Social Sciences**

This project, conducted by researchers in the School of Law and Leeds Institute for Data Analytics in collaboration with the Safer Leeds Partnership, explored how natural language processing techniques - algorithms that can extract knowledge from written text - might be used by crime reduction agencies to better understand specific types of criminal behaviours affecting our communities. Researchers built a software platform capable of ingesting and analysing tens of thousands of crime reports written by police officers and automatically identify patterns of similar offences - something that would have been logistically impossible for human analysts. Patterns of offences were then visualised using a dashboard designed to support operational crime analysts better understand local crime problems and, in turn aid them in developing problem-specific solutions to them.

The impact of new digital technologies and their adoption will also have profound implications for how we live as a society, how we feel about privacy and ethics, and how we explore and interact with culture. This will enable new avenues of research that intersect digital and society. We wish to maintain and extend our role as a civic university with strong ties to regional cultural organisations, and work in partnership to harness the power of digital technology to enhance our activities.

There are also many opportunities for the university to be globally leading in the research field of evidence-based educational practice, to evaluate the impact of new and emerging technologies on students’ learning, and to lead research, development and evaluation of new technologies and digital approaches to support research and learning.

**Case Study – Astbury Laboratory Facilities – University of Leeds**

The Astbury Biostructure Laboratory cryo-electron microscopy facility within the Faculty of Biological Sciences has world-leading research equipment in electron microscopy to transform research in structural molecular biology. They have used digital to transform the user experience and systems/processes for a wide range of stakeholders. Use of digital technology and digital approaches to improve aspects of the facility was crucial to their success. Three major areas are;

1) Finance tracking to implement a new system which captures all relevant information in a streamlined way, improving cost recovery, saving the time of both finance and facility staff, as well as improving the experience for our user community. Digital has transformed their ability to manage the facility in a financially sustainable manner.

2) Delivery of training - With the step change in activity they saw a major increase in users within two years. They used digital approaches to develop and deploy significant training materials. This was so successful it formed the basis for a substantial Wellcome-MRC co funded strategic support award to deliver an international training program in cryoEM.

3) Administration – they used online booking systems to explicitly track research space occupancy. This has been successful to show lab occupancy and is in line with safe working practice.

### Ways of working, campus facilities and operational activities

Digital technologies, use of data and digital approaches offer significant potential efficiencies for operational activities, and many sectors are engaged in transforming their operations through culture change, development of skills, changing processes and providing appropriate technology. As a university built on large, complex operational processes in education, research and business operations, there are many opportunities for us to improve our effectiveness, operate in a more agile, outcome-focused manner, and realise efficiencies, through digital transformation.

Our sustainability goals and net zero commitments are also a powerful driver for increased digital transformation, and should encourage us to consider all ways in which digital technologies can help us to preserve our natural resources and reduce our carbon emissions. We will drive out the transformational changes promised by the Student Lifecycle Programme and Corporate Processes and Systems programme, to deliver digitisation and automation of our administrative processes.

Our campus facilities are increasingly digital enabled, and the growth of Internet connectivity, and the internet of things will provide many opportunities for us to use of physical estate more effectively and efficiently, and to operate a smart campus. Through continued investment, we can continue to enhance the facilities we provide in our education spaces, libraries, research laboratories, offices and other campus spaces, to enable effective learning, working, collaboration and to make our campus a safe, appealing and sustainable location.

**Case Study: Strategy and Planning - Use of University data**

Digital transformation can deliver a number of benefits including cost savings and time efficiencies, while also empowering staff and giving them confidence to work differently. Digital has had a positive impact on the Strategy & Planning Team helping them to automate key processes related to data extraction and manipulation for student recruitment and admissions reporting. Legacy processes that had been gradually improved over a number of years required manual intervention, were time consuming and created inefficiencies.

The team identified a solution to digitise forms and use automation to run a weekly report without human intervention. To implement the solution they used a new way of working dedicating staff time to work together intensively to resolve the issues over a 2 week period. Staff were empowered to ‘think big’, map what the transformation should look like, and identify the priority areas of focus.

Implementation of the solution has seen a saving in staff time (20+ days per year of staff time reduced to 1-2 days), while also enabling the team to produce more timely insight as reports can be run more frequently. Their approach drove a change in culture, increasing collaboration and confidence while encouraging them to continuously identify new ways to make changes to their way of working.

A key underpinning activity to our success in digital transformation will be making effective decisions about our institutional technology platforms, the management and use of our data, the improvement of our processes, and the on-going development of digital skills in our staff and students. A key objective will be transformation of our ways of working to ensure that effective use of digital technologies and approaches improves our administrative processes, freeing up as much time as possible for our core business. We will need to work on transformation of our culture to embrace digital technologies, and on-going, deep and impactful professional development to support all staff and students to be able to harness the power and potential of digital technology, and manage the challenges they present. We will need to work hard on all of these areas to realise the benefits of digital transformation for our community.

# **Section 4**: Strategic delivery plan



## Strategic Delivery Plan

The vision for the new digital transformation strategy is as follows: Our effective, creative and research-informed use of digital technologies, data and digital approaches will enhance student learning and experience, enrich our research activity, and improve our infrastructure and ways of working. Through our digital transformation activities, we will be a leading digitally-enabled university having a global impact through education, training and research.

To realise the digital transformation strategy, the Digital Transformation Strategy Board will oversee delivery of this strategy delivery plan, and Digital Transformation Advisory Boards for staff, students, alumni, technology partners and regional leaders will provide advice and input.

In the immediate short-term, the focus of our efforts will be on supporting remote working, hybrid learning, maintaining essential operations and supporting our digital research infrastructure. The strategy acknowledges our starting position and recognises the need for a range of foundational activities to enable later transformation – therefore, the objectives include foundational activities to incrementally improve our activities as well as transformational activities which will differentiate us.

The digital transformation strategy is cross-cutting, and spans research & innovation, education and training, and operational activities, organised under the following three over-arching objectives:

* 1. **Enhance ways of working, campus facilities and operational activity;**
  2. **Improve our capabilities to conduct high-quality, collaborative and globally impactful challenge-based research & innovation;**
  3. **Enhance our educational provision and grow our fully online education portfolio.**

## Objectives and actions

### Enhance ways of working, campus facilities and operational activity

* 1. *We will support all our staff and students to harness the potential (and manage the challenges) of digital technologies, data and digital approaches through professional development, support and guidance by 2023.*

To achieve this objective, we will take the following actions:

* + 1. Implement a comprehensive professional development programme for all staff, doctoral researchers and taught students, including access to professional accreditation for staff, ensuring engagement through workload allocation and recognition processes;
    2. Provide all staff with defined tools and techniques to develop a digital mindset and to manage digital change effectively and pro-actively;
    3. Ensure that all digital transformation projects undertake integrated impact assessments covering equality, diversity, inclusion, sustainability and health and safety;
    4. Implement an on-going programme of events and debates about the potential and challenges of digital technology for all staff, researchers and students;
    5. Embed engagement with digital transformation activities through the professional recognition criteria.
  1. *We will digitise and automate our processes, reduce paper use and manual processes, maximize hybrid working practices and free up time for staff, improving our sustainability and effectiveness by 2025.*

To achieve this objective, we will take the following actions:

* + 1. Deliver all the anticipated changes and benefits of the Student Lifecycle Programme and Corporate Processes and Systems Programme;
    2. Support all staff, researchers and students to work and study effectively and sustainably through hybrid working practices using digital technology and digital approaches;
    3. Digitise and automate processes across our business operations, improve sustainability performance and reduce business travel, and to free up time;
    4. Provide enhanced business analytics and reporting capabilities to support all core service functions;
    5. Provide technology and data infrastructure to enable digitisation and automation of processes, and ensure our staff have the skills and resources required to support this;
    6. Create a plan to ensure our technology infrastructure is itself efficient and sustainable.
  1. *We will transform our physical campus to use digital technologies effectively to support education and research & innovation, and to provide a welcoming, social, efficient and sustainable physical environment by 2025.*

To achieve this objective, we will take the following actions:

* + 1. Adapt our meeting, education and social, informal spaces to enable multi-mode use, in order that physical and remote participants can interact and collaborate effectively;
    2. Continue to transform our formal and informal education and social spaces to enable interactive, collaborative and digitally-enabled learning and teaching, ensuring consistency of experience and minimum standards of equipment in all spaces;
    3. Enhance our practical education spaces by embedding new and emerging technologies (e.g. AR/VR) to enrich students’ learning, and to enable multi-purpose access;
    4. Provide bespoke spaces and facilities to enable staff and students to produce multimedia content;
    5. Define a campus change programme to implement digital technologies across our physical estate (including libraries) to ensure effective, efficient and sustainable use of our physical infrastructure.
  1. *We will use digital technology and digital approaches to develop and enhance our communication and relationships with students, alumni, and local, regional and global partners by 2023.*

To achieve this objective, we will take the following actions:

* + 1. Implement systems and processes to enable effective communication and relationship management with potential students, applicants, current students, staff, alumni, and partners;
    2. Continue to refresh and enhance our web estate to support our core activities;
    3. Provide our alumni with a high-quality digital experience and access to key services and resources, to encourage ongoing engagement in our community;
    4. Provide systems to enable staff and external stakeholders to hold collaborative activities and events online (e.g. virtual conferencing system);
    5. Ensure our digital systems, tools and approaches are openly accessible, and configured to encourage collaboration, sharing and interaction;
    6. Develop digital infrastructure to support relationships and increased engagement with employers and other external organisations to support students’ roles as agents of social change and societal entrepreneurs.
  1. *We will use digital technologies, data and digital approaches to reduce digital poverty and inequalities for staff, researchers and students, enhancing our global reach and impact in education, research and innovation by 2023.*

To achieve this objective, we will take the following actions:

* + 1. Ensure all of our staff, researchers and students have equitable access to the digital technologies, systems, services and resources required for their work and studies;
    2. Monitor and actively address digital poverty indicators within our student and doctoral researcher cohorts;
    3. Increase our capabilities to create digital materials from our research and innovation activities, to provide educational materials for delivery on online platforms (e.g. online learning, podcasts, blogs, digital asset repositories etc.);
    4. Support and encourage our staff to use open educational practices to share educational resources globally to support lifelong learning, and reduce inequality in access to education.

### Improve our capabilities to conduct high-quality, collaborative and globally impactful challenge-based research & innovation

* 1. *We will provide high-quality, flexible, secure, interoperable* *user-focused technology and development environments for postgraduate researchers, researchers and staff by 2023.*

To achieve this objective, we will take the following actions:

* + 1. Establish, and deliver, effective, enterprise-level interoperable technology infrastructure and environments informed by researchers needs;
    2. Establish shared technology infrastructure to support research with key partners and collaborators;
    3. Enhance our digital library infrastructure to enable digital research and scholarship.
  1. *We will provide secure environments in which our researchers and partners can use data sets, enabling sharing and effective data analysis by 2023.*

To achieve this objective, we will take the following actions:

* + 1. Establish a data strategy and data service for all data related activities;
    2. Establish, and deliver, effective, enterprise-level data infrastructure informed by researchers needs, including data sharing agreements for all partners and collaborators;
    3. Provide an enhanced research data management service;
    4. Embed use of research intelligence and analytics effectively to maximise the academic impact, visibility and reach of our world-class research;
    5. Establish policies around data storage usage, charging and sustainability.
  1. *We will provide institutional platforms for extended realities and artificial intelligence and support for specialized research by 2025.*

To achieve this objective, we will take the following actions:

* + 1. Establish an institutional platform (technology, support, guidance) for development, use and evaluation of extended realities in research, education and operational activities;
    2. Establish an institutional platform for development, use and evaluation of artificial intelligence in research, education and operational activities;
    3. Provide capabilities for leading research in digital humanities.
  1. *We will increase our use of open research practice, digital scholarship practices, and use of digital approaches for publication, dissemination and impact activities by 2023.*

To achieve this objective, we will take the following actions:

* + 1. Support further automation of Library process, digitisation of Library collections, and enhancements to Library metadata to support open research practice, digital humanities scholarship, and educational activities;
    2. Position the Library as a research partner by enabling scholars to exploit both the data about Library collections and Library digital collections through the implementation of standards and deployment of tools;
    3. Develop capabilities in the library for the discovery, curation, and archiving of new research output formats, and extend the use of metadata creation and management;
    4. Provide support and integrated systems for the dissemination of research and educational content, through our repositories and web presence (e.g. podcasting system, blogging platform, support for use of social media) for all postgraduate researchers, researchers and staff;
    5. Provide institutional electronic laboratory notebook capabilities for use by all postgraduate researchers, researchers and staff.
  1. *We will establish and extend research capacity in evidence-based practice in digital pedagogies, new and emerging digital technologies, digital humanities, online education and digital transformation by 2022.*

To achieve this objective, we will take the following actions:

* + 1. Support evidence-based practice through investment in research and scholarship in digital areas;
    2. Support cross-institutional networks of researchers and practitioners focused on digital research;
    3. Establish an Institute of Digital Futures as a cross-institutional hub for research and education in digital technologies and digital approaches.

### Enhance our educational provision and grow our fully online education portfolio

* 1. *We will explore the opportunities of new and emerging digital technologies, and embed these in our pedagogical practice, to support students and researchers learning on campus in face-to-face, hybrid and fully online modes by 2025.*

To achieve this objective, we will take the following actions:

* + 1. Embed basic (and advanced disciplinary specific) digital literacy training for doctoral researchers and taught students into the curriculum, and ensure digital literacy is clearly articulated as an essential graduate outcome;
    2. Ensure that all of our students have equitable access to the technology, systems and resources required to engage flexibly and inclusively with their studies;
    3. Support the delivery of the curriculum enhancement project, particularly emphasising the potential for digital technology to scaffold and facilitate interactions and active pedagogy;
    4. Invest in digital technologies to support digital assessments and secure online examinations, embed end-to-end digital assessment and feedback processes, and explore digital credentialing;
    5. Invest in new and emerging technologies proven to enhance accessible, flexible and inclusive student education.
  1. *We will increase the use of digital technologies, data and digital approaches to provide a high-quality student experience for our taught students and postgraduate researchers, and to support student success, by 2025.*

To achieve this objective, we will take the following actions:

* + 1. Ensure all students have equitable and inclusive access to a consistent and baselined student experience throughout their university experience, irrespective of discipline, route of entry or level of study;
    2. Design and implement a strategy for student experience that makes most effective use of digital technology and digital approaches, investing in appropriate digital technologies and changes to processes and practice;
    3. Collaborate with peers at national and international level around alternative approaches to the creation/provision of course readings (e.g. open access textbooks; copyright changes; digitisation models).
    4. Develop artificial intelligence-based chat tools for providing all students with up-to-date information and to handle routine enquiries;
    5. Embed ethical use of learning analytics to support individual students and cohorts of students, and to evolve our curriculum to reduce inequalities and remove colonial approaches, and to ensure inclusive practice.
  1. *We will grow our fully online education portfolio of online degrees, sub-degree qualifications and online short courses for globally distributed online learners and professional learners by 2023.*

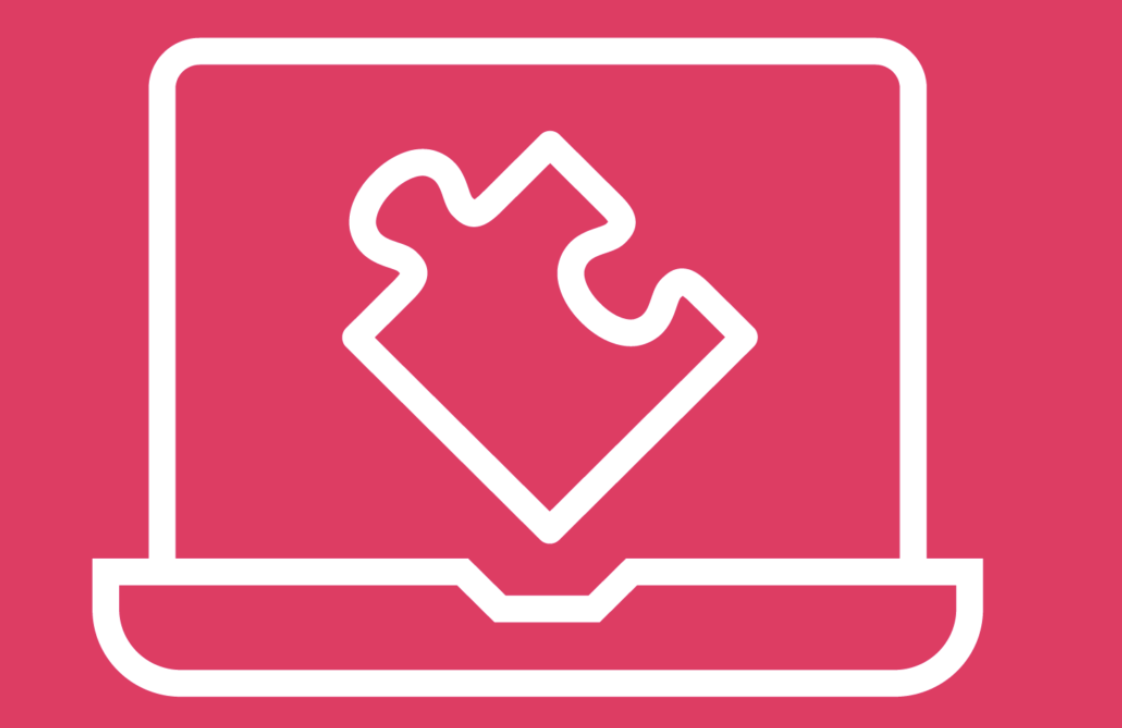
To achieve this objective, we will take the following actions:

* + 1. Deliver our fully online education strategy, including investment in our online learning capabilities and institutional capabilities to support staff to create and deliver high quality large scale online professional learning;
    2. Invest in internal market insight capabilities and digital marketing capabilities;
    3. Establish clear principles for use, re-use and re-purposing of digital learning materials created by staff;
    4. Deliver capabilities to extend provision of online doctorate qualifications;
    5. Review and refresh our strategy for online discovery modules for campus-based students.
  1. *We will work with global universities and technology partners to co-create community-based, collaborative, sustainable online education aligned to the UN’s Sustainable Development Goals, to support lifelong learning by 2024.*

To achieve this objective, we will take the following actions:

* + 1. Establish a global online education network focused around global challenges research;
    2. Co-create open learning content through collaboration and partnership with external stakeholders for re-use, re-purposing and sharing via online learning platforms;
    3. Create access to learning opportunities for community-based learners, students and professionals who can benefit from education and training based on our research.

# **Section 5**: Project portfolio



## Project portfolio

We are currently defining programmes of work and projects that will need to be delivered to achieve the actions and objectives of the strategy. The digital transformation projects are currently being prioritised prior to development of investment cases for consideration. The digital transformation projects have been categorised into **foundational** and **transformational**.

**Foundational projects** fall into a number of areas: (i) People; (ii) Technology and data infrastructure (digital enablement); (iii) cybersecurity; (iv) campus changes for multi-mode and new ways of working; (v) digital education/student experience; and (vi) digital research. These foundational projects are required to: (i) keep the university operating safely, (ii) maintain our reputation, (iii) enable us to realise cost savings from digitisation and automation, (iv) support our net zero commitments and (v) enable us to grow our income. For example, investment in technology and data infrastructure + upskilling our workforce will enable digitisation and automation of our processes across services and academic activities that will realise efficiencies and deliver sustainable outcomes.

However, the efficiencies and cost savings possible from these investments will only be realised if there a shift in culture and mindset across the organisation to move to simplified, digitised, processes in education, research and business operations. The projects that will enable us to grow our income fall primarily in the areas of education (e.g. fully online degrees, sub-degree qualifications, professional education). Some of our foundational activities will not result in financial benefits, but will have significant non-financial benefits aligned to our strategic objectives, and will serve to protect our income and reputation.

We also want to be able to pursue a range of **transformational activities** that will differentiate us in education and research, and help us to achieve our university strategy. Transformational projects are in the research, education and campus facilities areas. For example, investments in our extended reality (i.e. VR, AR etc.) capabilities will transform our research in this area and enable student learning to be greatly enhanced. Further down the line, these investments will create income generation opportunities from licensing and commercialisation.  Other projects will be required to initiate research and education initiatives that will help us to realise the over-arching university aim to have global impact e.g. the Global University Network and the Institute of Digital Futures. It is expected that initiatives such as these will be partly funded through philanthropic routes.

# **Section 6**: Benefits, KPIs and measures of success



## Benefits

Each project in the portfolio will describe its benefits, and the overall digital transformation strategy will have documented benefits.

## Key Performance indicators

As we formalize the measures of success for this strategy, we will include KPIs against which the delivery and success of the strategy can be monitored.

## Measures of success

These will evolve as the strategy develops, but measures of success will include:

* Significant reduction in the use of paper for teaching, assessment and administrative activities;
* Reduction in the amount of business travel, replaced by virtual meetings/conferences;
* Growth of effective use of new and emerging technologies to enrich learning;
* High quality research outputs and impacts on evidence-based digitally-enabled educational practice;
* Growth in partnerships to support collaborative research, enabled through digital technology and digital approaches;
* Significant contribution from increased use of digital technology to our net-zero targets;
* Improved satisfaction with technology and data infrastructure from all stakeholders;
* Growth in philanthropic activity in the digital transformation area;
* Evidence of impact on reducing inequalities, not only in terms of digital literacy and access to technology but more widely in terms of widening participation and degree awarding gaps;
* Increased opportunities for learners globally to engage with lifelong learning;
* Significant growth in revenue from professional learning;
* Significant growth of fully online degree portfolio;
* Significant growth of sub-degree credential online education portfolio;
* Improved performance and resilience of our technology platforms;
* Improved management and use of our data to support our core mission;
* Increased satisfaction from staff and students about our digital technology provision;
* Improved efficiencies in our administrative processes and our use of campus facilities.

# **Section 7**: Further information



## Links to relevant strategies and policies

[Blended Learning Strategy](https://ses.leeds.ac.uk/info/22149/a-z_of_policies_and_key_documents/634/blended_learning_strategy)

[Code of Practice on Learning Analytics](https://www.leeds.ac.uk/secretariat/documents/learning_analytics_code_of_practice.pdf)

Curriculum Enhancement Project vision [in development]

Data Strategy [in development]

[Digital Education Service Strategy](https://digitaleducation.leeds.ac.uk/2644-2/)

[Digital Literacy Framework](https://digitalpractice.leeds.ac.uk/framework/)

Fully Online Education Strategy [in development]

IT Strategy [in development]

[Learning Analytics Strategy](https://www.leeds.ac.uk/secretariat/documents/learning_analytics_strategy.pdf)

[Open Educational Resources position](https://ses.leeds.ac.uk/download/96/open_educational_resources)

Professional Learning Strategy [in development]

[Sustainability Strategy](https://sustainability.leeds.ac.uk/about/sustainability-strategy/)

## External Digital Transformation Case studies

**Education**

* [Deakin Genie](https://www.youtube.com/watch?v=zsRPuU53E74)
* [University of New South Wales](https://www.pwc.com/gx/en/about/case-studies/university-of-new-south-wales.html)

**Research & Innovation**

* [Deakin Cadet](https://www.deakin.edu.au/research/research-news/articles/cadet-a-boon-to-research,-too)

**Ways of working, Campus Facilities and Operational Activities**

* [Data Architecture](https://teams.microsoft.com/l/file/A94ACAEA-8705-41DB-9DB6-2A7F93A150E9?tenantId=bdeaeda8-c81d-45ce-863e-5232a535b7cb&fileType=pptx&objectUrl=https%3A%2F%2Fleeds365.sharepoint.com%2Fsites%2FTEAM-DigitalTransformationStrategyExternalReview%2FShared%20Documents%2FGeneral%2FStrategy%20case%20studies%2FDW%20Reference%20Architecture%20-%20Architecture%20Group%2020201119.pptx&baseUrl=https%3A%2F%2Fleeds365.sharepoint.com%2Fsites%2FTEAM-DigitalTransformationStrategyExternalReview&serviceName=teams&threadId=19:a2dd5ea9a2e54712a97a516187b67c38@thread.tacv2&groupId=26559309-fd02-4b91-8caa-70c45f077b14)
* [Deakin Smart Campus](https://www.youtube.com/watch?v=yJmWcGCQ6EE&feature=youtu.be)

1. Malcolm Brown, Betsy Reinitz, and Karen Wetzel, [**"Digital Transformation Signals: Is Your Institution on the Journey?"**](https://er.educause.edu/blogs/2019/10/digital-transformation-signals-is-your-institution-on-the-journey) *Enterprise Connections* (blog), *EDUCAUSE Review,* May 12, 2020.  [↑](#footnote-ref-1)