TECHNOLOGY STRATEGY AND ROADMAP 2020
# Technology Strategy and Roadmap 2020

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### Technology Strategy 2020

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Foreword

Chief Digital Officer, Tim Catley

Firstly, I would like to thank all the individuals from across UNSW who have contributed towards developing and endorsing the Technology Strategy 2020. We completed an extensive consultation with students and staff from across the University to ensure we captured the key priorities that are aligned with the UNSW 2025 Strategy.

It has been several years since UNSW has reviewed its Technology Strategy. The Technology Strategy 2020 will allow us to balance and address our key technology risks and drive efficiency, while at the same time supporting the future technology requirements of UNSW. This is consistent with the UNSW 2025 Strategy to constantly improve operational efficiency and effectiveness.

The role of Chief Digital Officer has been my first within the education sector and since commencing in February 2019, I've come to appreciate the complex ecosystem in which universities operate and have developed an understanding of their multifaceted requirements. I have gained a greater understanding of the technology environment of the education sector through visiting other Australian universities and been given further insight into their practices regarding investments in technology.

Our vision is to become UNSW's trusted technology partner. Technology is a primary enabler in uplifting teaching and learning and in developing cutting edge research initiatives. Both students and staff expect their technology experience to match or exceed what they receive in everyday life. In order to provide and meet these expectations, the Technology Strategy sets out the technology priorities that allow us to have a proactive rather than reactive plan. With certainty, I can say we have a couple of exciting years ahead as we strive to improve our student and staff experience while supporting UNSW in maintaining its standing as a top 50 university in the global rankings.
Background
The time is right to deliver the UNSW Technology Strategy and Roadmap to ensure we focus on the most important things for the University

The Technology Strategy will:

Set the technology priorities
A set of core priorities that allow us to look ahead rather than delivering purely reactive responses.

Address the burning issues
Ensure we address the foundations first, the basics and the capability gaps.

Map out our big investments
Become clear on what we need to be investing in and how we need to be delivering it.

Provide an on-ramp to the 2025 Strategy
This Strategy provides the foundations for the larger transformation agenda which is currently being shaped.

The Technology Strategy will focus on the achievable initiatives until 2022, and will evolve in-line with S25
Opportunities

There are significant opportunities to improve information technology and uplift UNSW capabilities.

Our students’ experience can be improved by reducing system fragmentation, improving navigation, and ensuring that we provide the information our students require in the way they wish to consume it.

Learning and teaching approaches vary by faculty. There is an opportunity to leverage existing and new learning technologies across our diverse learning areas, to reduce complexity and provide students with better access to learning.

Uplifting our enabling services technology provides an opportunity to reduce administration effort and allow our staff to better focus on their core tasks.

1 Source: Interviews and Uniform
2 Source: Researcher Experience Map and previous Strategy Work
3 Source: Workshops and Interviews
4 Source: Student Focus Group Workshops and Interviews

Research: simplifying our onboarding, grants management and ethics processes will uplift researcher productivity. Flexible and timely access to research compute and storage resources would provide UNSW a competitive advantage.

Improving access to trusted information by integrating data across our systems, reducing duplication of information, improving data quality and removing manual processes will enable more efficient and accurate data-driven decision making.
Strategy and Planning Process

In response, we delivered a strategy through the following co-design and stakeholder engagement centric process:

1. **Discovery**
   - **1.1 UNSW Strategy 2025**
     - Analysis of the major themes and objectives.
   - **1.2 Higher Education Trends and Drivers**
     - Analysis of broader industry trends.
   - **1.3 Current State**
     - Across people, process & technology.
   - **1.4 How we compare**
     - Interviews with other universities (CAUDIT, Uniforum data, Benchmarks etc.)

2. **Strategic needs**
   - **Shape of IT Needs**
   - **Strategic Business Needs**
   - **Governance & Organisational Needs**

3. **Strategic response & target state**
   - **A. Analysis**
     - Develop Target State
     - Develop strategic responses, target state architecture, and operating model, in consultation with key stakeholders
   - **B. Workshop**
     - Co-Design Workshop #1
     - Exercise to determine the themes and shape of UNSW IT
   - **C. Agree**
     - Student Workshop
     - Gain student perspectives on needs and responses

4. **Roadmap & investment plan**
   - **A. Analysis**
   - **B. Workshop**
   - **C. Agree**
   - **Communicate & endorse**
     - Gain support and endorsement
   - **Timing, dependencies and $ required to deliver the strategy**
Industry Trends

The role of technology is increasing in-line with the shifts in how learning and research is delivered

Increasing Expectations of Student, Researcher & Staff Experience
Students and academics increasingly expect that the University is able to match the experience they receive from leading digital companies elsewhere in their life i.e. easy effortless experience.

Shift from “Traditional Learning” to Continuous Lifelong Learning
Increasing levels of student debt is leading to students wanting to get into the workplace sooner. Students will opt-out of degree learning if they can see a pathway to employment. Rapid changes in technology, such as rise of AI and robots require people constantly learn and re-skill.

Research & Learning Collaboration and Immersive Learning
Collaboration technologies such as video conference, social media etc. allow students and researchers to build worldwide communities. New technologies such as VR and AR will drive this further and increase use of online learning.

Competition from Global Universities, MOOCs and Others
Growth in massive online open-enrolment course providers (MOOCs) offering a variety of credentials (including degrees), some are affiliated with highly reputable institutions. Education marking is global with local and overseas institutions offering online courses. Tech companies such as LinkedIn, Google and AWS offer training and credentials.

UNSW IT Strategy
Needs to position us for increase used of technology

Rise of Big Data, AI, and Analytics
Universities are increasingly using data and analytics to gain insight to student performance, and offer personalised adaptive learning.
Current State – Technology

We aim to evolve our technology according to a master plan aligned to a carefully considered architecture.

Key Domains
1. Digital Exp. & Channels, delivers relevant content to devices
2. Integration, how we integrate data and services across systems
3. Student Relationship Management, manages student profile and interaction across the entire lifecycle & all points of interaction, to build our understanding
4. Student Management, supports platform for managing our student, and their related courses and achievements
5. Learning Delivery, delivers learning to students both digitally and on campus
6. Curriculum Mgmt., platform for the design, planning, scheduling and management of curriculum
7. Research Admin & Mgmt., supports whole of research lifecycle, from grant application to publishing
8. Service Management, allows staff & students to self-service HR, IT Finance etc.
9. Enabling Services, core systems for the management of HR, Finance and Estate
10. Data, Reporting & Analytics, supports data-driven decision making, by implementing reporting & analytics on trusted data
11. Collaboration & Communication, tools to allow staff and students to work with both each other and external partners
12. IT Infrastructure, underpinning IT Services
13. Research Storage & Compute, High performance and high capacity storage and compute for our researchers
2. STRATEGIC NEEDS

Success Factors

Overwhelmingly we were asked ‘how do we ensure the strategy is a success?’
The answer requires us to improve how we prioritise, invest, execute and govern IT

- **Sponsor as a joint executive and fund for transformation**
  - Sustained investment is required to transform our technology landscape.
  - Technology & Digital strategy needs executive sponsorship and “buy in” across the University - “IT cannot do this alone”.
  - Investment is required to first address risk and then establish foundation capabilities to enable transformation.
  - As the demand for technology to enable the University’s Academic Excellence and Research increases, we will need to fund both the transformation required to support this and the ongoing operation e.g. investment is required to support the growth of Research Data and Analytics.

- **Transform the IT organisation**
  - Transform the people, process and technology.
  - Continue our evolution from builders of technology to brokers of solutions, develop sourcing, partnering, design & service management skills.
  - Build digital and cloud capability to move from project monoliths to continuous value delivery.
  - Acknowledge that transformation will take time, funding and partnership. We can’t walk away from our past and the future needs to be built.

- **Uplift Governance to ensure we deliver the outcomes**
  - Develop principles and a target architecture that delivers on the capabilities we need.
  - Ensure investment is aligned to the roadmap and both the business and strategic technology outcomes are delivered.
  - Manage and govern technology spend across the entire portfolio.

- **See it as a priority and see it through!!**
  - Re-prioritisation and change is to be expected but it shouldn’t compromise the overall outcomes.
  - We need to ensure that we complete projects to decommission legacy technology and not add to our portfolio.
Strategic Business Needs

Looking more broadly, you told us the specific strategic needs for UNSW that will require an uplift in technology capability.

UNSW Strategic Needs

1. **Student & Campus Engagement**
   - Our students have a simple, seamless, personalised experience across their entire lifecycle; from recruitment, studying, to graduation, alumni and beyond, that helps them meet their life goals.

2. **Learning & Teaching**
   - We offer engaging and flexible continuous learning that allow students to learn what, when, where and how they need, allowing us to attract the best students.

3. **Research**
   - Provide a leading ecosystem, including access to data, tools and insights, to attract top researchers and empower them to solve complex problems with global impact.

4. **Enabling Services**
   - The simplification of our HR, Finance, Facilities Management and IT Service platforms will reduce our risk and operational cost.

5. **IT Organisation & Services**
   - 1. We are **thought leaders** and working towards a strategic plan.
   - 2. We are **true partners** who understand our customer’s needs.
   - 3. We deliver **efficient** and **reliable** services and projects.
   - 4. IT is **investing in key enabling technologies** UNSW needs.
   - 5. A rationalised **simplified environment** where risk is known & managed.

Our IT Capabilities (People, Process, Technology) support these needs.
3. STRATEGIC RESPONSE & TARGET STATE

Strategic Responses

To deliver the identified needs we have created a set of strategic responses

**UNSW Strategic Needs**

- **Student & Campus Engagement**
  - **Student Centric Experience**
  - We will offer a frictionless and personalised experience across campus life, learning and beyond

- **Learning & Teaching**
  - **Exemplary Education & Career Pathways**
  - Online, real-time and insights driven learning to deliver the best academic & career pathway outcomes.

- **Research**
  - **Rich Research Ecosystem**
  - Research Platform that supports researcher effectiveness in an increasingly data rich and compute led task

- **Enabling Services**
  - **Enable Our People**
  - The simplification of our HR, Finance, Facilities Management and IT Service platforms will make it easier for staff to maximise their time on core learning & research, whilst reducing our risk and operational cost

- **IT Organisation & Services**
  - **IT Capability & Cyber Uplift**
  - Aligns IT to UNSW Strategic needs, focusses investment in key platforms & enablers, and simplify our architecture to manage risk

**Strategic Responses**

- **A. Student Centric Experience**
- **B. Exemplary Education & Career Pathways**
- **C. Rich Research Ecosystem**
- **D. Enable Our People**
- **E. Digital & Cloud Enabled**
  - Digital and Cloud platforms enable flexible, rapid, and secure delivery of applications and services
- **F. Data, Analytics & Insight Driven**
  - Easy, timely and secure access to data, analytics and insights enables data-driven decision making across UNSW
Agreed Priorities

We prioritised the response areas in order of overall outcomes, and then prioritised programs within response areas.

These priorities, along with dependencies and technology risks, informed the building of the investment plan and roadmap.

Improving our Student Experience to uplift engagement, increase student intake and generate revenue:
- A1. Student Experience, Interaction and Service Management
- A2. Student Relationship Management
- A3. Marketing, Acquisition, and On-boarding

Dependency for A1-3 & B:
- A4. Student & Learning Data Analytics and Insight

Ensuring that our systems maximise staff productivity and efficiency, freeing resources to focus on student, education and research:
- D1. Service Management
- D2. Human Resource Management Uplift
- D3. Financial Management Lifecycle and Uplift

Modernising learning delivery, to educate more students:
- B3. Student Experience - Access to Curriculum and Course Information
- B2. Learning Delivery

Low Priority:

Enable researcher productivity and boost UNSW reputation:
- C1. Flexible Compute and Storage
- C2. Research Experience, Collaboration & Administration

Enablers:
- Not prioritised as they will be shaped in alignment to the business priorities (A-D), as well as a view of key IT services:
  - E. Digital & Cloud Enabled
  - F. Data, Analytics, and Integration
  - G. IT Capability & Cyber Uplift

While Student Experience is our top priority, we must deliver across all areas within the roadmap.
A. Student-Centric Experience

We will offer a frictionless and personalised experience across campus life, learning and beyond

Why? – Strategic Drivers

Our students’ experience can be improved by reducing system fragmentation, improving navigation and ensuring that we provide the information our students require in the way they wish to consume it.

Students having increasing expectations of our digital channels and increasingly interact via online and mobile channels.

What? – Our Strategic Response

Establish a digital engagement platform (including IT digital delivery capability) to uplift student experience. The platform will be supported by capabilities that support access to student services and requests for assistance, as well as a CRM that holds a complete view of all student interactions and needs.

Displace the direct interaction students currently have with fragmented and ageing core platforms with the engagement platform and reduce core platforms to key systems of record for the functions they own.

Use marketing personalisation and analytics to target student acquisition, as well as leverage the digital engagement platform to onboard them seamlessly.

How? – Our Approach

Drive transformation across three horizons that address burning needs and moves progressively towards the strategic target.

Result – The Benefits

- Increased revenue
- Increased student satisfaction
- More efficient student operations
B. Exemplary Education and Career Pathways

Use online, real-time and insights-driven learning to deliver the best academic and career pathway outcomes

Why? – Strategic Drivers

Learning delivery is a critical component of the student experience and learning outcomes. Whilst UNSW academically has highly reputable courses and field-leading academics, the approach to delivering learning and teaching varies by faculty and there are challenges in the uptake of technology.

In time the learning task will become more digitally enabled and move from content delivery to insight-driven interactive platforms that span physical onsite and digital learning. This will form a critical foundation for UNSW’s ability to deliver learning in the digital age.

What? – Our Strategic Response

Broadly, there are two sides to learning. The first is getting students to plan their degrees and assign resources from the university to undertake the learning. Then there is the act of delivering learning.

The approach here is to roll out solutions that make it easier for students to plan their degrees and courses, as well as data-enable and converge load planning.

On the learning delivery some tactical fixes will improve the current LMS. The long term approach is to leverage the LMS as a content store and drive more learning interaction through the student engagement platform that improves user experience, leveraging analytics to optimise learning outcomes.

How? – Our Approach

Immediate focus on improving degree planning for students and optimising teaching resource planning with a longer term view to transforming the LMS capability to bridge classroom and digital learning.

Result – The Benefits

- Improved student satisfaction for learning
- More efficient use of UNSW resources for teaching
- Digitally enabled future learning
### C. Rich Research Ecosystem

Provide a research platform that supports researcher effectiveness in an increasingly data-rich and compute-led task

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<td>Research Excellence is a cornerstone of UNSW’s reputation and a foundation of the 2025 Strategy. By providing a leading ecosystem, UNSW will be better able to attract top researchers and empower them to solve complex problems with global impact. Our researchers’ time and effort is extremely valuable so our intent is to get researchers onboarded and productive as soon as possible. The volume of data and the complexity of analytics required is rapidly increasing, requiring a technology response. Flexible and timely access to research compute and storage resources would provide UNSW a competitive advantage.</td>
<td>To provide researchers with an environment that reduces operational and admin effort. Our initial focus will be to address pain points in ethics management while making tactical investments in HDR admin. Later, we will leverage the investments in digital experience, for student (A), to deliver a better researcher experience. Data management will allow UNSW to manage research data to address the growth of data. Research storage uplift will ensure we have reliable and cost-effective storage. UNSW IT cloud capability will be leveraged, in collaboration with ResTech, to provide secure, cost-effective and flexible compute and storage to complement HPC and replace on-premise servers. Collaboration tools will allow UNSW researchers to work with colleagues both at UNSW and worldwide.</td>
<td>Immediate focus on addressing research data management and storage, with a longer term view to leverage cloud for flexible compute and storage, and uplift research experience, in-line with our new digital platform.</td>
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**Result – The Benefits**

- Secure, cost-effective storage of big research data
- Rapid access to compute resources allows researchers to publish first
- Attract researchers to UNSW
D. Enable Our People

The simplification of our HR, Finance, Facilities Management and IT service platforms will make it easier for staff to maximise their time on core learning and research, whilst reducing our risk and operational cost.

Why? – Strategic Drivers

Uplifting our enabling services technology provides an opportunity to reduce administration effort and allow our staff to better focus on their core tasks.

MyUNSW attempts to aggregate these services but they are delivered and managed in very different platforms making the experience jarring and difficult for users.

There are substantial efficiency gains to be had from modernising our core platforms and ensuring that we converge service request management and delivery to a common and efficient employee platform.

What? – Our Strategic Response

Establish a core service management platform and use it to initially drive efficiency within IT service delivery. This foundation can then be used to onboard services from areas like HR, Finance and Estate Management.

As part of onboarding these services, integration will be used to intermediate between the core process platforms and the service management platform. This decoupling will allow both simplification and the ability to better manage the upgrade and transition to contemporary core HR & finance systems.

How? – Our Approach

Deliver a core service management platform and drive IT efficiency and service improvement. Onboard and decouple this platform from core HR and Finance systems. Transform these core platforms and drive efficiency and further process improvement.

Why? – The Benefits

- Improved staff satisfaction and engagement
- More efficient and user-friendly shared service capabilities
- More efficient shared service functions
- Reduced risk of critical core finance and HR platforms
Migration to contemporary cloud-based services will make it easier for us to deliver solutions and provide the data needed to frontline business systems to be analytics driven.

Why? – Strategic Drivers

Improving access to trusted information by integrating data across our systems, reducing duplication of information, improving data quality and removing manual processes, will enable more efficient and accurate data-driven decision making.

Increasing access to trusted sources of information will allow us to better develop a host of frontline learning and student services.

Digital underpins a more iterative and responsive way of delivering customer-facing solutions such as websites, agent portals and student and employee service portals.

Developing a cloud hosting platform and services will significantly improve researcher time to productivity and allow us to optimise our cost of hosting solutions.

What? – Our Strategic Response

Deliver a data and integration platform that will initially support delivery of key digital initiatives related to student engagement. The platform can then be expanded to support transformation of core shared service platforms as well as education.

Cloud will take a similar approach. IT will deliver a baseline platform that will drive efficiencies in internal hosting and capability, this can then be leveraged to provide research-specific services.

How? – Our Approach

Deliver a core cloud platform that can drive hosting migration and IT efficiency. Leverage this to deliver research compute services. Deliver integration services to initially support digital and then broaden to support data access and, over time, advanced analytics services for education and student services.

Why? – The Benefits

- More efficient hosting services and capability
- Faster time to productivity for our researchers
- Supports A and B in revenue and education outcomes
- Less costly to delivery systems
- Fewer passwords and easier to login
G. IT Capability and Cyber Uplift

We need to reshape IT and the IT operating model, addressing identified deficiencies and building new capabilities.

**Become More Efficient**
- Improve and simplify our processes
- Embrace automation and improve our tooling
- Simplify the delivery of projects by moving to the cloud and buying rather than building solutions
- Extract the maximum value from our investments by ensuring we reuse before buying or building new solutions with a focus over time to rationalise and simplify our technology footprint.

**Modernise the IT Function**
- Organise around our customer
- Build domain knowledge and productive working relationships with the Faculties and Divisions
- Create a customer centric culture
- Accelerate the adoption of contemporary ways of working to be more effective but also more efficient
- Cloud First - standard off-the-shelf service offerings reducing effort, operation complexity and risk
- Uplift capabilities in line with Strategy

**Source Strategically**
- Establish strategic partnerships
- Source capability from the market where we can leverage the scale and investment of partners
- Build strong commercial skills
- Build a resourcing model to allow us to flex capacity and capability to meet the varying work demand

**To Be UNSW’s Trusted Technology Partner**

Our Aspiration is...
Guiding Principles

Our approach, responses and target state will be underpinned by a set of principles:

- **IT Principles**
  - **Simple Decision Making**
    - Empower our people and move decision making closer to the people doing the work with the knowledge
  - **Strong Governance**
    - Consultation, guidelines and processes to agree on clear decisions ensuring we are all pulling in the same direction
  - **Actively Manage Data as an Asset**
    - UNSW will actively manage our data and to ensure that we have trusted data available
  - **Security by Design**
    - Cyber Security and Risk will be considered during the design for all solutions
  - **Embed Digital Transformation**
    - We will operate using leading digital capabilities, to ensure agility
  - **Leverage the Innovation of vendors**
    - We will partner with our vendors to ensure that we maximise their innovations and platforms
  - **Human-Centric Experience**
    - Create a positive client experience by thinking from the outside in
  - **Actively Simplify**
    - Re-think, reduce complexity, consolidate and streamline our processes and technologies
  - **Re-use Before Buy, Before Build**
    - Maximise the value of our investments by re-using assets before buying building additional systems, ensuring that we only use systems for their intended purpose
  - **Cloud and “As-a-Service” First**
    - Utilise Cloud “as-a-service” platforms first, “SaaS”, before “PaaS, before “IaaS”
  - **Adopt & Adapt**
    - We will adopt and configure standard platforms and adapt UNSW process to fit, over building custom solutions
Roadmap Phases

Our roadmap will be phased to shape strong foundations and the right capability early on before embarking on more transformational change.

**Horizon 1:**
- Establish a solid foundation and fix pain points

**Horizon 2:**
- Transform core platforms and capabilities

**Horizon 3:**
- Enable the future of UNSW

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**Horizon 1:**
- Ensure we manage our technology risk (G)
- Reshape and ready the IT organisation to be able to drive transformation and sourcing (G, H)
- Embed the foundations of student experience and digital delivery (A, E, F)
- Establish a platform for employee and student service delivery (D)
- Address learning and research pain points (B, C)

**Horizon 2:**
- Transform core HR platform to enable our people (D)
- Uplift student experience and develop 360 degree of student across UNSW (A)
- Enable research data, cloud compute and storage and collaboration uplift (C)
- Migrate majority of workloads to the cloud (H)

**Horizon 3:**
- Transform core student management (A)
- Transform finance platform (D)
- Develop next generation learning management (B)
- Complete application consolidation & modernisation (H)
- Transform Learning A/V and Networks (H)