The Australian National University (ANU) has developed an institution-wide strategy that focuses on continuing and enhancing the tradition of excellence across the institution. That strategy, ANU by 2020, confirms our commitment to research, education and public policy.

The ANU Information Technology Strategy outlines how technology can be used to enable each of these strategic goals to make Australia’s national university also Australia’s finest university.

Our vision for information technology is to create digital environments which are built on solid foundations and enduring relationships. This combination should drive productivity, creativity and discovery, enabling all at ANU to make a difference.

We aim to support and enhance the University and enable its strategic objectives by:

> delivering effective and fit-for-purpose IT solutions and services that leverage our significant investment in technology;
> renewing, consolidating, simplifying and integrating strategy, people and process with technology;
> promoting a sustainable and efficient IT service delivery;
> creating an environment that fosters working collectively, and sharing of insights, expertise and solutions; and
> providing technology and services that supports choice and rapid discovery through experimentation and innovation.

Our success will be measured by how well we support the goals and operation of the University. Specifically we will look to:

> improve the level of technology support across the research lifecycle;
> create a technology environment that enriches the learning experience and enables discovery and innovation;
> enhance and personalise the ANU experience for students, staff and alumni;
> support continued leadership in public policy at a regional, national and international level;
> effectively leverage the collective capability of ANU IT regardless of where that capability resides; and
> provide technology services that are up to date and that capitalise on emerging technology trends.
The role of technology at ANU

The IT landscape of the higher education sector is constantly changing as a result of the consumerisation of technology. This, combined with a changing regulatory and competitive landscape is compelling universities to reconsider how they enable research, engage with students, foster innovation and deliver services.

Our students are digital natives, and are engaging with technology as part of the learning process from a very young age. They have effectively built their entire lives around seamless abundant access to the Internet anywhere, anytime and on any device. They expect no less when they engage with us. Information technology services and platforms need to aspire to excellence. We will identify and carefully integrate technological trends in research and education into all aspects of our business.

The University has a range of specific needs that will help to differentiate itself in the Australian higher education marketplace.

The digitisation of education

Digital delivery platforms (both on campus and remote) are a major factor impacting the higher education sector and are key to providing a competitive edge in the market. The market for fully online undergraduate and postgraduate education is highly competitive worldwide.

Technology facilitates much about the 21st century learning environment: learning anytime, anywhere; accessing research and study information effortlessly; engaging in networked learning in collaborative and interactive environments; and utilising online tools for peer and self-directed learning, are all an integral part of modern education.

The digitisation of research

All aspects of the research life cycle, from conducting experiments to the publication or reuse of data, operate in a digital world.

Research relies on technology more than ever from the adoption of specific technologies to support experimentation and discovery through to the use of innovative platforms for analysis, collaboration, dissemination of research results and research lifecycle management.

Cloud computing

The cloud presents the sector with numerous opportunities and challenges. We are already seeing the influence of cloud computing in enabling teaching, learning and research through platforms such as ANU MOOC partner, edX. Properly managed, cloud computing models offer universities access to enterprise strength, secure, reliable computing and storage services faster and cheaper than what can be typically provided by internal IT functions.

The growth of cloud computing will facilitate a seamless change in how technology is delivered and the role of ANU IT.

The rise of Big Data

Historically we have generated more data than we have been able to store and analyse. This is further compounded with the adoption of sensor technologies (Internet of Things), wireless, eLearning, social media and digitisation of research.

Traditional data management and analytics technologies do not have the capability to provide those valuable and powerful insights that can only be obtained by combining large quantities of data from multiple sources.

The rise of Big Data and smart analytics technologies changes this paradigm. Big Data and analytics have the capacity to evolve and enhance all aspects of a university, especially the student experience, adaptive learning and research.
Brand and digital presence

Numerous studies have highlighted the importance of branding and online presence in influencing decisions made by prospective students and staff on whether or not to join a particular institution. Branding and adoption of multiple online and social channels is key to promoting the ANU brand, distributing content to a more digitally-engaged audience, and providing a platform to integrate services for an effective university experience.

On-campus experience

In a recent study, close to 80 per cent of responding students said that WiFi was an essential part of the university experience and 60 per cent indicated that it was an important factor when selecting an institution. Developed by their experience as consumers of the online world, students today expect ubiquitous access to services and content. ANU has the opportunity to create a superior and differentiated on-campus experience by interweaving a rich digital experience with the unique physical layout of the University campus.

Personal technology experience

Fast-paced developments in technology demand architectures and platforms that are agile and adaptive to the changing expectations of students and staff set by their personal technology experiences.

Students and staff have clear expectations of how technology should work in the modern, digitally enabled world, and are looking for similar experiences when engaging with the University.

Agility

As the research and teaching agendas of ANU change in-line with the need to differentiate itself, so must the underpinning technology. Technology environments need be agile and adaptive to support new services and technologies. The adoption of cloud based solutions, consumed ‘as-a-service’ will become a critical element to providing this agility and support for innovation; coupled with solid, scalable and sustainable technology platforms.

Collaboration

ANU promotes and supports strong interdisciplinary collaboration, to the point of being unique in the Australian University sector. The university’s focus on interdisciplinary research, contribution to the development of public policy and research-led education drives a need for significant collaboration both within the University, and also across external parties such as other universities, government authorities, virtual entities and research bodies. We need to implement collaborative environments and tools that will operate effectively across all these dimensions.
ENABLING THE RESEARCH LIFE CYCLE

ANU research continues to be rated among the best in the world with more than 94 per cent of research rated above world standards by the Excellence In Research for Australia exercise. Many of these outstanding research achievements leverage technology, however much of the investment in this technology has been very specific to the research areas and academic Colleges. This limits the access that research projects have to enterprise-grade infrastructure and potentially exposes ANU to undue resource wastage and risks.

There are significant opportunities to provide a portfolio of IT services designed to enable common, reusable technology platforms and infrastructure for the Research community. These include:

- Research lifecycle management
- NCI partnership
- Computing and storage environments
- Collaboration
- Data management and analytics.

To complement our existing investments, ANU will embark on initiatives that directly support and enhance our research reputation and performance. This includes delivery of a Research Information Management System (RIMS) and projects to target eResearch capability.

The RIMS aims to support the management of research endeavours over the entire research lifecycle including reporting, grants, ethics, IP, citations and the tracking of involvement and impact in public policy development.

ANU is home to and a partner of the National Computational Infrastructure (NCI), Australia’s highest performance research cloud that also hosts the Nectar Research Cloud, providing our researchers access to world-class computing capabilities. We will work to strengthen this relationship.

The research community also requires alternative options for accessing computing and storage environments. To support this need, we will create a catalogue of services where these environments can be easily and rapidly provisioned from a pre-defined set of templates with various profiles for scalability, backup, external connectivity and security.

The University has made significant investments into a range of specific technologies that support collaboration (video conferencing, web-based collaboration, etc.). There is now a need to upgrade and integrate these technologies to create a common collaboration platform that will support research and learning collaboration within the University, and also with external parties such as visitors, other universities, government authorities, virtual entities and research bodies.

Data management is seen as a priority for the University given the requirements of agencies to maximise the sharing and discovery of data within and across institutional boundaries. To support this, we will implement practices and tools to improve data governance and enable researchers to maximise use of their data.
“To support my research I need reliable, secure and responsive technology coupled with efficient IT support and technical assistance.”
ANU has a rich history in innovative teaching and learning, much of it delivered by our academic Colleges to support their highly individual needs. We will support this responsiveness and innovation, by underpinning it with solid infrastructure platforms and core business capabilities that are not duplicated across the University.

- Learning spaces
- Technology refresh
- Single identity.

The ANU Education Plan calls for the creation of experiences in teaching and learning which are personalised and akin to the real world. Through the ANU OnLine Program, we will deliver modern systems to bring teaching and learning up to best practice, and establish the platforms for future learning delivery.

There are numerous learning spaces across the campus that do not align with the modern student’s expectation of a digital learning environment. We will enable a greater level of engagement, a more accessible collaborative experience, and an enhanced physical and virtual student experience. Big Data generated from collaborations with international partners such as edX will enable the University to set pathways to excellence.

We will support the ANU Education Plan’s intentions to extend the University’s online presence via a suite of high quality online graduate programs.

Venue accessibility will continue to be a priority, with improvements in technology allowing the installation of infra-red hearing loops across all major teaching and learning rooms.

Academic libraries are creating new services and environments to meet the needs of an increasingly technology rich and information dependent world. Over the next two years, ANU IT will partner with our libraries to provide robust access to technology and digital content along with an IT infrastructure capable of supporting fast paced learning and connectivity.

Building on the bricks and mortar of collections, both online and physical, our libraries will be central in offering staff and students spaces to facilitate dialogue, innovation and engagement. ANU IT will provide the necessary foundations to support the digitisation of unique materials, the creation of scholarly publishing through the ePress, and institutional goals for open access.

Underpinning a world-class learning experience is the need for stable, reliable and fit-for-purpose technology platforms. Over the next two years, we will undergo a technology refresh to ensure that the underlying infrastructure and networks have the capability and capacity to meet the University’s aspirations today and into the future.

We will implement an integrated approach to identity management and authentication across the University. This is a priority to support the continued provision of federated services, and an increase in the use of digital and cloud-based services. A single, common digital identity will reduce current security risk and provide students with a single sign-on as they engage and collaborate across the different Colleges and Service Divisions.
“As a lecturer I need an embedded digital learning environment that can be accessed anytime, anywhere and anyhow.”
The ANU community is comprised of students, academic and professional staff, partners, and alumni. All have different and varied needs but all contribute to making ANU the institution it is.

With a higher number of on-campus residential students than any other Australian university, we have additional pressures to provide a high quality IT experience.

Technology plays a key role in attracting and retaining world-class staff and students as their digital experience forms a significant part of their overall University experience.

> Digital presence
> Mobility – anywhere, any device, any time
> Automation and self service capability
> Common platforms -and information.

An individual’s experience with ANU will start in the digital world. We need to harness the power of all forms of digital media to create an ANU digital presence that supports our brand and vision. This is more than just the website, but also the creation of services to promote the ANU brand across multiple digital channels.

To enhance the on-campus and residential experiences, we will leverage the Internet-Of-Things and partner with the Facilities and Services Division to create a smart and safe campus.

The lifeblood of a university is its information and we need to make it available anywhere and at any time. The rise of mobile computing has put significant emphasis on the use of location services and more importantly contextualising them. Information and services can now be made available to individuals in a highly personalised manner depending on their preferences, location and context. Over the next two years, we will invest in data network transformation, encompassing wireless, external connectivity, authentication and network management, to support the growing use of mobile devices across the University.

In today’s world there is an expectation that students and staff should be able to work whenever and wherever they wish on their own personal device. To achieve this, we will develop and adopt a BYOD (Bring Your Own Device) strategy along with the appropriate provisions for remote access and personal cloud storage. To support this we will adopt a policy that all applications need to be mobile friendly.

We will expand the breadth of self-service solutions available through initiatives like the Student Portal. These will be underpinned with automation of processes and activities and improving the out-of-hours support of systems and infrastructure.

Duplicate, disparate and ineffective systems affect both the productivity of the University and the user experience. Through the adoption of common platforms we will look to rationalise, upgrade and integrate our core business systems. As part of this approach, we will seek to consolidate information so that the University can better target communication and engagement.
“As a student of ANU I want to be able to use my laptop and other devices to get reliable access to the internet and university assets like printers. I also need information to learn how to use the technology and assistance when the technology goes wrong.”
Information Technology at ANU needs to support the operational efficiency of the institution by delivering efficient, reliable, automated and cost effective services. To achieve this, we will need to invest in improving, standardising and integrating our service delivery processes and the underpinning information system and infrastructure platforms.

- Service management
- Asset lifecycle planning
- Standardisation and consolidation
- Systems and data integration
- Cloud
- Risk management.

We will adopt Service Management practices both internally and through our technology partners to simplify and improve the predictability of IT services delivered. As part of this process, we will leverage a single Service Management platform, implement a Services Catalogue and consolidate service desks where appropriate.

Our enterprise systems and technology platforms require constant investment and maintenance. The University will better plan and manage technology asset lifecycles, including our enterprise systems, desktops and software platforms. We are committed to periodically assessing whether they are fit-for-purpose to protect against the risks and additional costs incurred by aged and unsupported technology.

Our application portfolio comprises over 100 applications written in a variety of languages and using a variety of platforms. It is imperative that we standardise and rationalise the application portfolio to remove risk and reduce operating and support costs.

Historically the University has relied on custom built interfaces to share data between applications. In parallel with the rationalisation of the application portfolio, there is a need to implement an integration layer that will allow data to be abstracted and accessed across a variety of information systems in a standardised manner to support data sharing and business process automation. Recognising the technology trends in the market, the chosen platform will need to support both traditional systems integration and the integration of cloud based services.

Over the next two years, we will focus on renewal, consolidation and standardisation of common IT infrastructure across the University with a view to improving supportability and reducing operational costs.

The use of cloud technologies will have many benefits to the University in terms of cost, agility and speed to market. The University will develop a Cloud Strategy to guide how cloud computing capabilities can be adopted by the University in a way that is pragmatic, and carefully manages the risks associated with the use of these technologies.

ANU IT will aim to support the efforts of our colleagues across the University in their service improvement initiatives; and the University will also invest in appropriate enterprise systems for managing and reducing risk.
In the current environment of rapid technology change, it is impossible for a single entity to be the authority on all technology matters. We need to draw on the combined capabilities across the institution to deliver the best outcome for the University. A future operating model for IT at ANU needs to leverage the strengths of its current model, eliminate inefficiencies and standardise core services within governance and architecture frameworks. This will empower all areas of the University to access and value technology.

Specifically, we need to:

- centralise IT services where it makes sense to do so;
- optimise and exploit the skills and capabilities available in the current model;
- establish capabilities to support choice and rapid discovery through experimentation and innovation;
- draw on the vast expertise across ANU to produce innovative solutions;
- enable Colleges to be centres of excellence and publish their technology solutions and innovation for the wider ANU community to consume; and
- support the development of a cohesive IT workforce across campus.

Key features of this model include:

- core commodity IT capabilities delivered centrally or acquired As-A-Service;
- support for the delivery of specialist IT functions by the areas closest to the users (e.g. Colleges);
- providing options for staff and students on how they can interact with the various IT services at the University;
- establishing a Services Brokerage capability that facilitates access to technology and services regardless of where they are provided from.

Services brokerage is key to bringing this model together. Implemented effectively, it will provide the mechanism for having visibility of, and access to, technology solutions and services across the University, whether they are delivered from Central IT or from one of the Colleges.
The ANU by 2020 Strategy, and subsequent plans such as the Education and Research Plan, demand that information technology be more reliable, responsive, agile and innovative than ever before. This strategy has outlined specific areas for investment in technology, and changes to how technology is delivered to address the needs of the University.

**Enabling excellence in research, teaching and learning**
- Rapid provisioning of environments
- Virtual learning spaces
- Collaboration platform
- Technology refresh.

**Staff and student experience**
- Anywhere, any device, any time connectivity
- Improved out-of-hours support
- Common platforms
- Consolidated information.

**One ANU IT**
- Commodity IT capabilities delivered ‘As-A-Service’
- Services Brokerage capability
- An optimised federated model
- Flexible engagement model.