
THE UNIVERSITY OF QUEENSLAND

INFORMATION TECHNOLOGY STRATEGY

2017 - 2020



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Rob Moffatt

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MESSAGE FROM THE CHIEF INFORMATION OFFICER

I wish to thank the many contributors across the University who provided input to this Information Technology Strategy. It is critical that the diverse and often complex requirements of our University underpin our plans for leveraging technology to enable its strategic ambitions. Our planning approach has been collaborative, developing a principle based strategy that incorporates staged commitments to delivering on the University's mission.

The recent development of the Student Strategy Whitepaper has highlighted that UQ requires and is committed to changing the way we approach teaching and learning for our students. This context is imperative for Information Technology to have a profound impact on how our students live and learn. Our digital landscape at UQ must continue to evolve with student needs, integrating new and exciting tools that enhance the student experience.

Today, Information Technology is inherent in everything. It is a key enabler for creating, sharing and storing knowledge which goes to the heart of the academic endeavour. Our Information Technology environment is diverse and effective. We must ensure that it remains so, delivering services that support the University's standing as a top 100 University in the world rankings. The goals of the Information Technology Strategy are aligned with our organisational goals, and will be the foundation for specific priorities that will adapt as our institution requires to ensure that Information Technology is agile and relevant.

Robert Moffatt, AM
Chief Information Officer



The ICT Capital Investment Plan underpins the Information Technology Strategy and its priorities. Resources from the ICT Capital Investment Plan and other key initiatives such as the Student Strategy and Enhancing Systems and Services Program demonstrate the commitment to enhancing the student experience and enabling research and the academic endeavour.

OUR CONTEXT

Information Technology has a direct influence in supporting UQ's strategic mission which can be described as "knowledge leadership for a better world".

This mission translates into two areas of focus for UQ that the Information Technology Strategy will need to support:

- Delivering a student experience that transforms students into graduates who are capable of delivering change; and
- Delivering significant solutions to global challenges and opportunities through partnered innovation.

Enabling research and the academic endeavour is a key goal of the Information Technology Strategy, creating innovative solutions that are simple and agile. Our staff and students are living in a period of significant technological change which is both challenging and exciting. Our systems and tools that support research rely on Information Technology to adapt and embrace these new changes as opportunities that will set UQ apart from other higher education institutions. The Discovery Portfolio, championed by the DVC(R) aims to do just that. The overall goal of the Discovery Portfolio is to develop systems and processes that will support researchers and professional staff in delivering exceptional research results.

The Student Strategy White Paper has identified four goals that will be achieved through a set of initiatives between 2017 and 2020:


1. Game-changing graduates
2. Student-centred flexibility
3. Dynamic people and partnerships
4. An integrated learning environment

This Information Technology Strategy, in part, aims to support UQ's ambitious Student Strategy. Over the last decade, waves of new learning technologies have brought great changes and then great uncertainty about the future of universities. UQ has kept abreast of these by building arguably the most advanced automated eLearning environment in Australia where all courses have an online presence, assignments are submitted electronically and marked online, and lectures are recorded and available to students automatically.

Today UQ students login to Blackboard 80,000 times daily, and watch more than 4,000,000 lecture recording every year. UQ students submit over 400,000 assignments a year electronically and receive feedback electronically on over 300,000 assignments that are electronically marked by coordinators.

Information Technology will play a large role in supporting the Student Strategy through improving the digital environment with which our students interact, integrating technology within our physical spaces to create improved opportunities for learning and developing analytics to support University process. These opportunities, and more, lead to an Information Technology Strategic Goal of Enhancing the Student Experience.

UQ is creating a distinct premium learning environment where technology augments high value physical experiences rather than replacing them. While UQ will take advantage of the very best pure-online learning technologies, it will now build a competitive advantage in the market by delivering premium signature experiences through:



• **Technology enabled campus** - A vibrant technology enabled campus that is accessible all year round, supporting trimester offerings and creating a growing market for other value adding precincts and integrated landscapes including: commercial and industrial partners; residential accommodation for students; and entertainment, cultural and sporting facilities for both students and community engagement.

• **Face to face active learning** - High impact face to face learning in classrooms, work integrated learning, collaborative experiences with students working in groups and via industry placement, augmented with technology just as they would in the workplace.

• **World leading research** - A learning experience using our world leading research expertise to advantage by incorporating research and problem solving skills into our courses, producing distinctive graduates, attractive to employers, because they are equipped for an ever changing world.

In addition to the pressures on driving academic outcomes and enhancing the student experience, our Institution is facing strong financial and competitive pressure unprecedented in the Australian higher education sector. Information Technology has the unique ability to enable the University through digitisation of processes, utilising technology that improves process timelines while using less resources. An Information Technology strategy goal of delivering services that the UQ community values ensures that resources are directed towards the academic endeavour.

With limited resources, the University requires more from Information Technology than ever before. This will only be possible through a robust governance, IT architecture and assurance framework. The Chief Information Officer will have accountability for the IT function, having a clear line of sight will increase coordination of Information Technology and its alignment towards University goals.

OUR VISION

The UQ digital environment is integrated and highly responsive to meeting the University's objectives. Information technology delivery is recognized as critical to supporting the delivery of outstanding results in teaching, learning and research, and partnering with industry, government, academia and alumni to deliver significant solutions to global challenges & opportunities. UQ's rich digital environment is integral to the student experience enabling the University to be regarded as a world class institution of learning and discovery sought by students globally.

OUR MISSION

Partnering with the University to deliver innovative IT solutions, to seize opportunities and meet challenges faced by the University. UQ will be leaders in the adoption of technology to enable world class teaching, learning and research activities, and to facilitate beneficial and authentic engagement with students, staff and industry partners across global boundaries.

OUR INFORMATION TECHNOLOGY PRINCIPLES

Our staff are provided opportunities to contribute to UQ's success on a daily basis, and the following principles help guide them so that their efforts are aligned with the University expectations. We will:

- **Be agile** - Delivering solutions using a customer centric agile approach, that encourages people and projects to adapt as needs change to deliver fit for purpose solutions.
- **Continuously improve** - Listening to and understanding what our customer values, maximising the value of IT and reducing all forms of waste.
- **Be digitally integrated** - Enable a vibrant and digitally-integrated environment that supports and enhances on-campus learning, external partnerships and student life.
- **Reduce complexity** - Opting for simple and secure access to systems and information that enable agility and innovation.

OUR GOALS

Information Technology must be responsive to the developing needs and priorities of the University. Three goals form the basis of the Information Technology Strategy and will lead to the achievement of our vision. The priorities under each goal will evolve and adapt as the University's priorities change, the goals in contrast will be held constant into the foreseeable future. Our goals are:

- **Enhancing the student experience**
- **Enabling research and the academic endeavour**
- **Delivering services that the UQ community values**



ENHANCING THE STUDENT EXPERIENCE

Digital technologies have fundamentally altered the way we communicate, live, learn and work. They have broken down barriers and given rise to new opportunities and challenges. Taking a holistic view of the student experience, UQ must develop an integrated learning environment that combines our physical and digital landscape, delivering powerful learning opportunities for our students to thrive.

Information Technology will:

- **Champion the University's digital presence**, delivering a digital environment worthy of a global top 100 University. Supporting a digital experience that recognises staff and students as both consumers and co-creators of value;
- **Prioritise teaching and learning above all else**, acknowledging that students are at the heart of everything we do;
- **Invest in IT infrastructure renewal** to enhance UQ's online experience and support the increasing demand of eService requirements across the University;
- **Provide students with a powerful, on-line learning experience** by providing systems which are personalised, easy to use and feature rich;
- **Strive to maintain accessibility standards** (WCAG 2.0) to ensure digital content is available to all students and support their learning needs;
- **Enhance the UQ digital environment** and embed digital literacies into core curriculum and to equip students with the skills to thrive in a digital world;
- **Record lecture content by default**, providing content available anytime, anywhere, on any device;
- **Develop further Massive Open Online Courses** (MOOCs), and Small Private Online Courses (SPOCs) to benefit more students and extend UQ's academic reputation;
- **Analyse and synthesise critical analytical data** that leads to insights and informed decision making for an enhanced student and staff experience both digitally and on campus;
- **Demonstrate the benefits for the student experience under a 'one UQ' approach for printing**;
- **Partner with business units to automate student facing processes**, recognising student time is valuable and should be focused on learning rather than University administration.



UQ SPOTLIGHTS

Flexible learning through lecture recording

For decades students struggled to juggle study and employment, attending lectures when they could, borrowing hand-written notes if they couldn't. In 2011 UQ set out to improve the flexibility of the study experience building the first fully automated lecture capture and delivery system in Australia. It is now the largest and is being adopted as a standard around the country.

Today, UQ lectures are recorded automatically based on the class timetable system, and then automatically inserted into the student's online course ready for them to use for study and revision that night. UQ students consume lectures in a location convenient to them, at a time that fits their work commitments, and re-watch as many times as they need, at a pace they need for their personal learning style. UQ students consume more than 15,000 lecture video views every single day during semester from UQ's eLearning systems, and more than 35,000 views per day during revision week.

Students love UQ's lecture capture system, and now staff are using it to pre-record content freeing up some classes for high impact active learning experiences.

Supporting quality UQ lectures

In 2011 the quality of UQ lectures was compromised by the quality and consistency of the technology in our lecture theatres. Lecturers could arrive at a theatre and discover it did not have a document camera, or a PC or lecture recording capability. While many rooms were fitted with a touch panel to control the audio visual (AV), lecturers were often confronted by the different interfaces.

Today UQ lecturers arrive at any centrally controlled theatre and use a full suite of presentation technologies connected to a standard touch screen interface. The consistent interface is intuitive and used throughout, allowing lecturers to arrive at any room and provide a quality lecture with confidence.

The software created and deployed by the Audio Visual Team to achieve this goal won industry awards in 2014 and 2015 for campus impact.

Delivering effective class engagement tools.

Click on the image to watch Associate Professor Mark Nielsen talk about how he has incorporated UQwordcloud into Psychology courses to improve engagement



ENABLING RESEARCH AND THE ACADEMIC ENDEAVOUR

To keep pace in the dynamic global higher education environment and to meet the demands of students, academics and partners in the academic endeavour, The University of Queensland must continue to provide state-of-the-art collaborative spaces, supported by cutting-edge information and communications technology that will enable further development of UQ's intellectual capital.

Information Technology will:

- **Provide a modern information management approach** that supports decision making, process improvement and research outcomes;
- **Actively engage in and contribute to University decisions**, merging the lines of what is 'IT' and what is 'business';
- **Identify, trial, adopt and support new technologies** that improve the student experience and enhance teaching practices, research outcomes, or that deliver efficiencies that in turn allow academics to pursue higher value activities;
- **Empower and strengthen UQ's ability to collaborate and communicate** using social networks, virtual communities and other digital tools;
- **Provide solutions for storing research data** to make it easier for researchers to store, analyse, curate datasets, and collaborate on research activities;
- **Develop staff expertise in eResearch technologies** that the research community can rely on to deliver world class research output;
- **Help transform the systems and processes within the Discovery Portfolio** to electronic online solutions with appropriate workflows;
- **Create improved awareness of and access to significant software and computer resources** throughout the research community.
- **Optimise high performance computer access**, for existing and future devices, so researchers are empowered to make the best choice of resources to achieve results in their research fields
- **Enhance training for researchers** to utilise resources, better advertise options available to them and develop the service underpinnings further
- **Extend the network capabilities** to extreme speeds to allow larger quantities of data to flow seamlessly and to allow better utilisation and sharing of resources to enhance fields like data mining, video editing, medical imaging and high performance computing



UQ SPOTLIGHTS

Tinaroo aiding research into supercapacitors: a potentially better energy source for electric vehicles than batteries

Ryan Burt was fully expecting to have to delay his thesis by a year until computing resources became available. However, luckily for Mr Burt, UQ has introduced the new high performance computer (HPC) Tinaroo in May this year, solely for use by UQ researchers'. Mr Burt, from the Department of Chemical Engineering, became an early adopter of Tinaroo, using it with a "well-established method and code" to complete his production simulations, which require a large amount of computation — he expects to use about four million CPU (central processing unit) hours this year alone.

Tinaroo's introduction not only solved Mr Burt's problem of insufficient computing resources, it enabled him to "produce results much faster than before." Which is good news for not only him, but also the emerging electric vehicle industry as Mr Burt's research is on supercapacitors, a faster charging and discharging alternative or complement to batteries. Without Tinaroo, Mr Burt would have spent most of this year writing grant applications for computing time, which might not have proved successful, instead his research is progressing right now.

Transforming assignment management and marking

Just five years ago (2011) tens of thousands of UQ students had to print their assignments and travel to a campus office to physically submit them during restricted hours. Disputes over successful submission were common. Assignments were then manually distributed for marking in unwieldy piles resulting in losses. Eventually the student was allowed to physically return to a campus office or nook to retrieve their assignment to read feedback, again during fixed hours.

With new online marking technologies available, Information Technology embarked on a persistent awareness building campaign visiting school and faculty meetings and documenting success stories to promote use of the technology wherever appropriate. Five years later, UQ's adoption of online marking technologies has increased to the point that now 200,000 assignments are marked online each year, and over 300,000 are submitted and managed online. This has produced a dramatically more flexible learning experience for students. Students can submit their assignment from wherever they are studying. Assignments are received by the instructor immediately and are marked online more efficiently using drag and drop comment banks and audio comments. The feedback is then made available to students conveniently online, again in their preferred place of study. This more efficient process allows instructors to give more informative feedback more quickly to students, hopefully in time to impact understanding and preparation for subsequent assessments.

Click on the image to find out more about Tinaroo high performance computing or head to rcc.uq.edu.au/tinaroo



DELIVERING SERVICES THAT THE UQ COMMUNITY VALUES

Information Technology changes and evolves at a rate far greater than most industries. This coupled with the current disruption in higher education, means that IT professionals need to be adaptable and lead changes in technology and its delivery that support the University's objectives. The Information Technology services provided at UQ will adapt to the changing needs quickly and seamlessly, always focusing on improving value for the community.

Information Technology will:

- **Measure and enhance the user experience**, providing IT services that are simple, intuitive and seamless;
- **Opt for cloud delivery first**, balancing functionality with value and only constructing and customising systems as a last resort;
- **Identify opportunities to work closely with external partners** that support UQ's competitive advantage or deliver efficiencies;
- **Undertake a University-wide integrated approach** that delivers efficient and effective services for the UQ community;
- **Make relevant data available** when and where it is needed to enable informed decision making;
- **Increase integration service capabilities** that enable automation or enhance the University's ability to engage with its stakeholders, including real-time data interchange;
- **Utilise technology to provide IT support that is efficient and expedient**;
- **Develop our staff to be capable today and into the future**, enabling UQ to benefit from current and emerging technologies;
- **Deliver highly efficient and effective digital ways of working** by designing and delivering services based on user needs, with students and stakeholders as partners in the design of those services;
- **Provide wireless networking** as the primary solution to staff and student mobility, with the 'wired solutions' shifting towards research and infrastructure use;
- **Actively look for opportunities to retire services and systems**, focussing instead high value systems and infrastructure for greatest impact to the academic endeavour;
- **Actively evaluate the IT application portfolio** to determine whether the University still requires legacy applications and if they can be replaced with commercial off the shelf applications.



UQ SPOTLIGHTS

Web transformation for the User Experience

In 2014, Information Technology began a process of transforming how prospective and current students interact with UQ's web and digital presence. The University's major websites for students – my.UQ, Courses and Programs, and SI-Net – hadn't changed substantially in 10 years, and UQ's web and mobile services didn't meet the requirements or expectations of a new generation of users, who were habituated to digital culture, intuitive design, ever-changing technologies, and online communication.

Throughout 2015 and 2016, Information Technology researched, plotted and implemented a single user journey from future student to current student. For the first time, users and their needs drove the decision-making and research, so that information could be presented in a way users would best understand. Once the research process was complete, developers, designers and content experts worked together to create new websites (Future Students), update existing websites (my.UQ) to bring together content in a streamlined, coordinated, logical and helpful way.

In parallel, an ambitious upgrade of UQ's content management system across the university was being delivered. The transition to Drupal promised greater flexibility, reliability, manageability, security, support and interoperability than anything UQ had used before. For the first time, the university-wide transformation of UQ's digital presence was a combined effort of development, design and content – with the user experience as the key priority.

Follow-me printing

Until recently, management of printing was uncoordinated, inefficient, error-prone and did not deliver any additional benefit to users. In 2016, Information Technology migrated 860 devices to a new centralised print management platform utilising PaperCut software. Centralised print management enables UQ to reduce waste, track printing and save money through much greater visibility of the print environment. Already, on a busy day UQ prints over 160,000 pages through the new system.

By standardising on a single platform there have been enormous benefits in terms of ease of administration and reduction in issues. From a student or staff perspective, the inclusion of electronic card readers brings even greater advantages and is being progressively added to the fleet of printers.

Leveraging secure print release technology ensures sensitive documents are only released when the person is present at one of the devices that feature a card reader. This service is known as 'follow-me printing' and has the added benefit of cutting a significant amount of waste from uncollected printing. In its first year over 1 million pages of printing were not released because of the new system, this is equivalent to 75 trees or around \$60,000.

Click on the image to explore myUQ for Students and experience first hand the intuitive technology or head to my.uq.edu.au



IT GOVERNANCE

Information Technology has the unique ability to enable the University in three distinct ways:

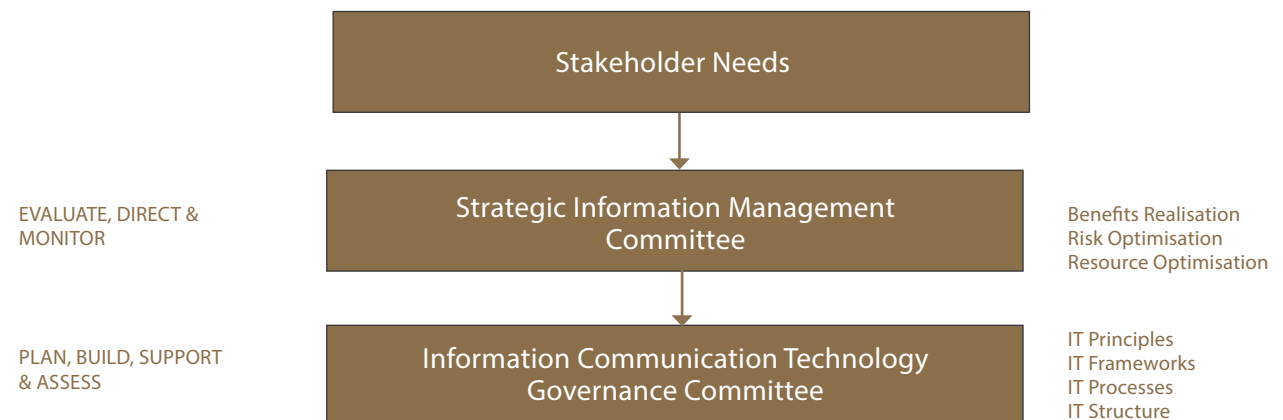
- IT can deliver significant **business efficiencies and improve student experiences** by automating previously manual and time intensive processes. These resources can then be diverted towards the academic endeavour;
- IT can **contribute to the research, teaching and learning, providing innovative solutions** that directly deliver the academic endeavour for the University;
- IT can **reduce the cost** of running IT itself through automating IT processes and being innovative about IT solutions and services that return value to the academic endeavour.

IT Governance at UQ is designed to assist the University to achieve its objectives, not hinder it. It must support agility and enable staff to explore opportunities for value creation and improving UQ's competitive advantage. It will not require certification to industry frameworks, having governance for governance sake. Rather, IT Governance at UQ will be lightweight and adaptable, evolving with the Institution to deliver the following objectives:

- Influence strategic organisational change;
- Align Information Technology with UQ's strategy and ensure the advancement of organisational priorities;
- Enhance and communicate the performance of Information Technology;
- Maximise the value of Information Technology resources to provide stakeholder value;
- Ensure compliance and Information Technology Risk is identified and mitigated appropriately.

To ensure that our IT environment is fit for purpose, designed for agility and efficiency, our highly skilled and engaged staff will be supported by appropriate governance frameworks within the Strategic Information Management Committee (SIMC) led by the Chief Operating Officer and the ICT Governance Committee (ICTGC) led by the Chief Information Officer. The frameworks are underpinned by capable individuals who are accountable for the services they deliver, recognise and manage risks appropriately and adhere to the IT principles.

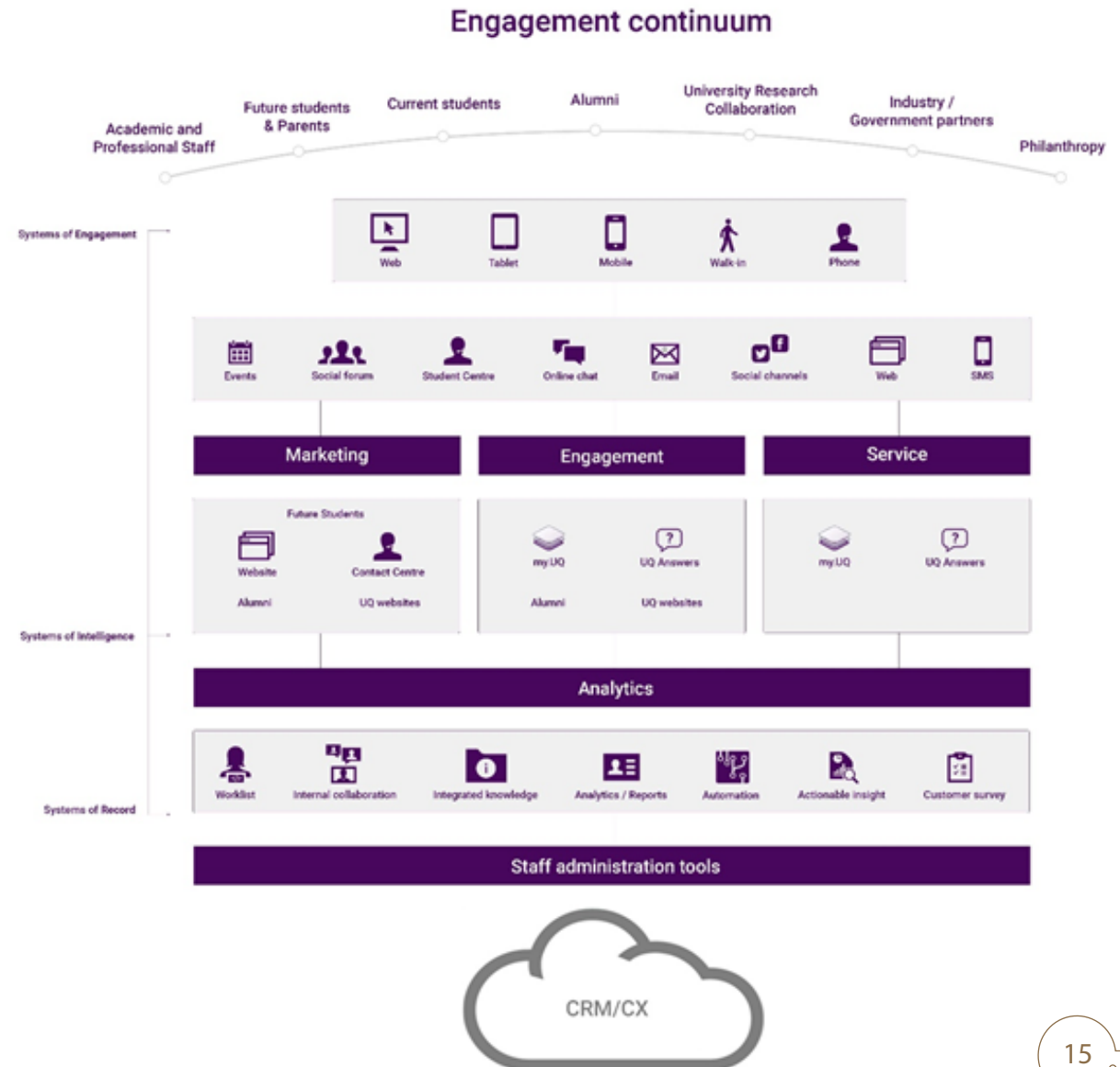
GOVERNANCE OBJECTIVE: VALUE CREATION



UQ SPOTLIGHT

Developing the Engagement continuum

The Deputy Vice-Chancellor (External Engagement) and Information Technology have mapped the Engagement Continuum (shown below) which will form a proposal to enhance the capability UQ has to engage with stakeholders effectively. A roadmap of systems, processes and strategies are being developed to enhance UQ's environment and approach.



OUR SUCCESS MEASURES

Our success will be measured by the ability for UQ to deliver on its mission. The following simple measures will gauge the overall success of Information Technology and its impact for our institution:

- Decrease spend on IT operations as a % of UQ revenue;
- Increase in staff satisfaction with their IT services;
- Increase in student satisfaction with their IT services;
- Increase in the number of fully automated administrative and student facing processes.

Specific objectives against these measures and for our Information Technology initiatives will be developed and maintained throughout the life of the Information Technology Strategy.



CONTACT

OFFICE OF THE CIO
The University of Queensland
Level 4, Prentice Building, St Lucia
Brisbane Q 4072

T +61 (0) 7 3346 6881

E cio@uq.edu.au

W its.uq.edu.au

CRICOS Provider Number 00025B