INTRODUCTION

Each year since 2006 CAUDIT has undertaken a survey of its members to determine the Top Ten Issues affecting the strategic utilisation of technology in support of their organisation's mission.

With funding increasingly focussed on successful student progress and completion, along with achievement of competitive research outcomes, Information and Communications Technology [ICT] plays a vital role in determining technology investments to identify, implement and deliver key services, enable digital capabilities and provide competitive advantage.

The ability to deliver services in a time-sensitive way is predicated by ICT being engaged at a strategic level and aligned with the organisation's leadership and goals. The CAUDIT Top Ten Issues list is a vital tool highlighting the most significant areas of interest and opportunity for CIOs and their organisation.

CAUDIT TOP TEN ISSUES 2013 – 2015

The most significant technology-related issues faced by universities in each of the past three years, and how and where they rated over this period, is summarised in the graphic on the following page. The ranking of each is denoted by the number in the coloured symbol. Where an issue has been ranked in multiple years a line linking their rankings is featured.

From only ten issues in 2013, a short list of 21 issues were considered and voted on in 2014 and 25 (from a pool of 55) in 2015. Over the three years a total of 32 separate issues have been ranked by CAUDIT members.

In 2015 a new approach assigning three keywords to each issue, identifying the nature of each issue, was adopted. This facilitates tracking of trends over time, particularly where the description of an issue has evolved.

As attention has turned from 'hygiene'-type ICT, some issues core to ICT have dropped down (or off) the list as others have increased in prominence or entered the list. Closer inspection reveals a more nuanced identification of issues and a number 'on the fringe' of the top 10 in 2014 have dropped below the top 25. Examples include managing demand; enterprise architecture; transitioning infrastructure and data centres; and consumerisation of technology.

For upward shifts in issue ranking, 2015 saw 'Developing a digital strategy for the future' redefined to 'Developing a fit-for-purpose digital strategy for the institution's future' and jump to #2 from #8 in 2013 and #7 (2014). Others to rise include secure collaboration #5 and analytics #6.

Support for the core activities of teaching and learning and research remain at the top with additional issues relating to these also appearing.

New or redefined issues in 2015 either in the top ten or on the fringe are:

#4. Emerging technologies - Facilitating and supporting the application of emerging and existing technologies to improve the 'University experience' for students and staff
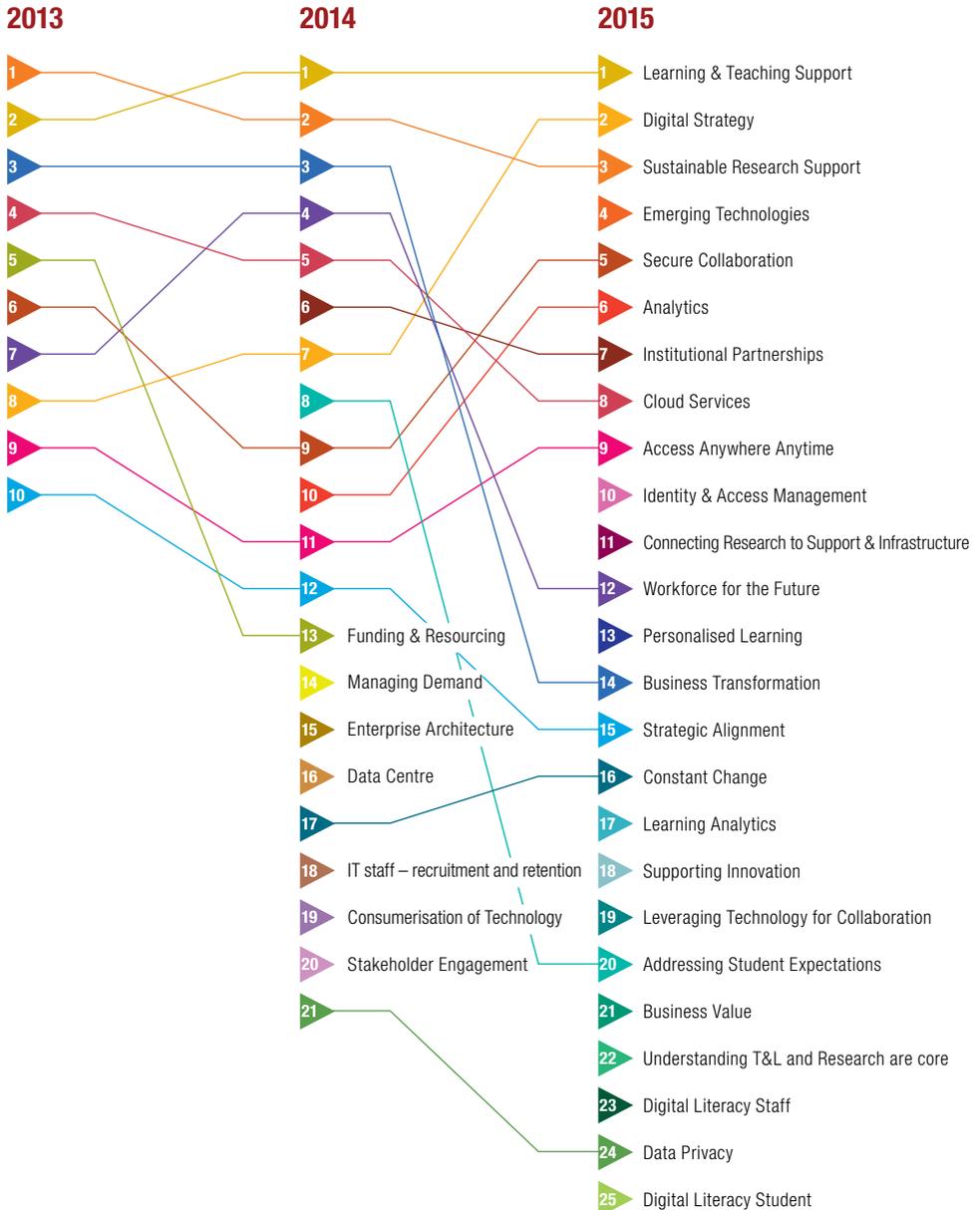
#10. Identity and access management - Effective and efficient Identity and Access Management to provision appropriate e-Services to students and staff

#11. Connecting research to support and infrastructure - Connecting the disparate research community to existing support tools and infrastructure by facilitating awareness and access

#13. Personalised learning - Paradigm shift to personalised learning with online, blended and hybrid learning, and collaborative models to better engage with students

THE ISSUES DEFINING THE CAUDIT TOP TEN – TRENDS FROM 2013 TO 2015

2013

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2014

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13 Funding & Resourcing
14 Managing Demand
15 Enterprise Architecture
16 Data Centre
17
18 IT staff – recruitment and retention
19 Consumerisation of Technology
20 Stakeholder Engagement
21

2015

1 Learning & Teaching Support
2 Digital Strategy
3 Sustainable Research Support
4 Emerging Technologies
5 Secure Collaboration
6 Analytics
7 Institutional Partnerships
8 Cloud Services
9 Access Anywhere Anytime
10 Identity & Access Management
11 Connecting Research to Support & Infrastructure
12 Workforce for the Future
13 Personalised Learning
14 Business Transformation
15 Strategic Alignment
16 Constant Change
17 Learning Analytics
18 Supporting Innovation
19 Leveraging Technology for Collaboration
20 Addressing Student Expectations
21 Business Value
22 Understanding T&L and Research are core
23 Digital Literacy Staff
24 Data Privacy
25 Digital Literacy Student

EXPANDED EXPLANATION OF ISSUES
(SORTED ALPHABETICALLY)

▶	Access Anywhere Anytime	Providing access to on-campus learning and research applications off-campus, anywhere, anytime
▶	Addressing Student Expectations	Understanding and addressing the expectations of a new generation of students
▶	Analytics	Applying analytics to support strategic initiatives and change
▶	Business Transformation	Positioning IT as a catalyst to transform the business functions of the institution
▶	Business Value	Demonstrating business value to show how IT can help the institution achieve its goals
▶	Cloud Services	Leveraging cloud services strategically for integrated services to students and staff
▶	Connecting Research to Support & Infrastructure	Connecting the disparate research community to existing support tools and infrastructure by facilitating awareness and access
▶	Constant Change	Managing and leveraging the confluence of megatrends - mobility, personalisation, collaboration, flexibility and big data
▶	Consumerisation of Technology	Consumerisation of technology and supporting rapidly changing user owned devices
▶	Data Centre	Transitioning infrastructure and Data Centres (selective sourcing, resourcing, cloud)
▶	Data Privacy	Managing the impact of new data privacy legislation
▶	Digital Literacy Staff	Increasing the level of digital literacy of staff
▶	Digital Literacy Student	Increasing the level of digital literacy of students
▶	Digital Strategy	Developing a fit-for-purpose digital strategy for the institution's future
▶	Emerging Technologies	Facilitating and supporting the application of emerging and existing technologies to improve the 'University experience' for students and staff
▶	Enterprise Architecture	Understanding and leveraging an enterprise architecture which positions IT to maximise future value and minimise duplication
▶	Funding & Resourcing	Funding IT to effectively support the strategic mission of the institution
▶	Identity & Access Management	Effective and efficient Identity and Access Management to provision appropriate e-Services to students and staff
▶	Institutional Partnerships	Establishing a partnership between IT & institutional leadership to achieve a collective understanding of the capabilities of IT to support teaching, learning & research
▶	IT staff – recruitment and retention	Attracting and retaining IT staff with the necessary capabilities
▶	Learning & Teaching Support	Improving student outcomes through an institutional approach strategically leveraging technology
▶	Learning Analytics	Supporting improved student progress through establishing & utilising learning analytics
▶	Leveraging Technology for Collaboration	Leveraging and providing easy access to technology to enable greater use and increased collaboration
▶	Managing Demand	Managing demand to deliver high quality services and projects
▶	Personalised Learning	Paradigm shift to personalised learning with online, blended and hybrid learning, and collaborative models to better engage with students
▶	Secure Collaboration	Balancing agility, openness and collaboration with security, risk and privacy in a hybrid environment
▶	Stakeholder Engagement	Understanding cultural drivers and their impact on stakeholder engagement
▶	Strategic Alignment	Instilling effective governance structures for IT aligning with the strategic direction of the institution
▶	Supporting Innovation	Facilitating and supporting innovation, wherever it may occur
▶	Sustainable Research Support	Developing a sustainable research support model servicing the needs of all researchers
▶	Understanding T&L and Research are core	IT workforce developing an improved understanding of teaching and research as the core business of the institution
▶	Workforce for the Future	Reshaping the workforce to position IT as an agile enabler and strategic business partner

THE ISSUES EXPLAINED

1. IMPROVING STUDENT OUTCOMES THROUGH AN INSTITUTIONAL APPROACH STRATEGICALLY LEVERAGING TECHNOLOGY

Technology is ubiquitous in the student education experience. Expectations of, and dependency by, both students and faculty on technology in its various formats apply to almost all levels of the teaching and learning process. To meet these demands, and faced with ever increasing new and emerging technologies, ICT has a critical role in working with teaching and learning associates to identify, assess, implement and enable access to systems and applications best suited to student and faculty needs within the institution's technical and operational capabilities.

Providing the 'digital native' student cohort with seamless access and provision to innovative learning applications to empower their self-driven efforts and successfully complete their studies is crucial. Meeting the desired outcomes of both the student and the institution is paramount in higher education. A coordinated approach which leverages technology effectively is essential to achieve this.

Ranking Trend   2013: #2   2014: #1 ▲   **2015: #1** ●

2. DEVELOPING A FIT-FOR-PURPOSE DIGITAL STRATEGY FOR THE INSTITUTION'S FUTURE

Nearly every aspect of everyday activity is becoming increasingly digital with the impact on higher education becoming profound. The established higher education business model is being strongly challenged – not only by funding source changes but also from the development of innovative practices in teaching and learning. Within the current sector as well as with new entrants, local and global, new methodologies for teaching and learning are being established, impacting on the student experience and successful study completion.

Jointly with university management and academia, ICT has a key role in firstly defining the elements of the digital strategy, then advising on and implementing the most appropriate digital technologies to enact the strategy for a viable future for the institution. ICT needs to be alert to disruptive technology trends and have prepared strategic plans to mediate their potential impact and take advantage of opportunities.

Ranking Trend   2013: #8   2014: #7 ▲   **2015: #2** ▲

3. DEVELOPING A SUSTAINABLE RESEARCH SUPPORT MODEL SERVICING THE NEEDS OF ALL RESEARCHERS

Research support differs in its needs from those of mainstream teaching and administrative computing systems and applications. Traditional modes of ICT support have often impeded effective research and made researchers seek to avoid institutional ICT. With digital technologies increasingly used in collaborative cross-disciplinary and international teams, many researchers can develop and establish their ICT support independent of an individual institution. Developments in areas of big data, visualisation, cloud and high performance computing facilities are necessarily shared to apply innovative and emerging technologies.

As well as supporting these technologies, servicing the 'long tail' of all researchers across all disciplines with an effective fit-for-purpose support model is a challenge for ICT. Many institutions need to revisit their research support model and consider both integrated and 'line-of-business' services.

Ranking Trend   2013: #1   2014: #2 ▼   **2015: #3** ▼

4. FACILITATING AND SUPPORTING EMERGING AND EXISTING TECHNOLOGIES TO IMPROVE THE UNIVERSITY EXPERIENCE FOR STUDENTS AND STAFF

The student experience is a potential market differentiator. Students have high expectations for a wide set of robust, secure, easy to use services available across all devices to enable them learn and interact with faculty and each other seamlessly. Learning management systems, collaboration tools and communication services are expected to be available at all times. Not only is ICT charged with connecting students to the technological resources they require to be successful, new tools enabling early intervention and preventative action to ensure the health and well-being of students are sought. Wayfinding and proximity 'advertising' are also in the mix.

ICT is being challenged with "I can make technology work as I want it to at home. Why can't I do the same on and off campus?" This comes from both students and staff. With personalised learning, the student can study and progress at their own pace, using both prescribed and non-prescribed technologies at, when and where they choose. New flexible ways of working and interacting with their colleagues and the campus are expected by management and staff. To meet demands on existing services and, more critically, identify the key potential emerging technologies to deliver better outcomes, ICT needs to reach out directly and engage in an ongoing dialog with students and staff.

Ranking Trend   2013: #1 & #2   2014: #2 & #1 ●   **2015: #4** ▼

5. BALANCING AGILITY, OPENNESS AND COLLABORATION WITH SECURITY, RISK AND PRIVACY IN A HYBRID ENVIRONMENT

The increasing use of multiple personal devices on and off campus, growing dependency on cloud services, more sophisticated cyber-attacks along with the proliferation of mobile devices and available apps are key factors in the complex environment faced by ICT. Students and staff need secure and functional access to available technology services and tools at any time, using a variety of devices. The need for security, risk management and privacy compliance can be at odds with the desire for agility, openness and collaboration.

Security breaches can result in loss of reputation as well as substantial consequential cost. ICT needs to ensure contingency measures are adequate and activated without any great personal imposition on students and university staff. Student and staff authentication processes need to be simple as possible but robust.

Ranking Trend   2013: #6   2014: #9 ▼   **2015: #5** ▲

6. APPLYING ANALYTICS TO SUPPORT STRATEGIC INITIATIVES AND CHANGE

To support university management in addressing the impacts of the student demand-driven funding model, business intelligence systems, load planning and predictive analytics tools are being deployed to support decision making processes. There is a greater focus on student outcomes and the associated funding from successful progression and completion rates. Modelling student data and triangulating disparate data sources – internal and external – are used to provide insight on student and faculty performance. These same tools may also be applied across the business areas of the university in areas such as power management, space utilisation and workforce planning.

ICT has a key role collaborating with the university business system owners to help develop and apply data management practices. A major need is to ensure the increasing volume of university data, created and demanded, remains consistent and viable over time. Timely, easy access to data by the business user is also paramount.

Ranking Trend   2013: -   2014: #10 ★   **2015: #6** ▲

7. DEVELOPING INTERNAL PARTNERSHIPS TO ACHIEVE A SHARED UNDERSTANDING OF TECHNOLOGY CAPABILITIES TO SUPPORT TEACHING, LEARNING AND RESEARCH.

The role of ICT in most universities is evolving from being primarily an infrastructure provider to include roles as strategic advisor, service broker and competitive differentiator. At the same time, there are numerous options to circumvent ICT if it fails to deliver or provide support as quickly and cost effectively as expected. With digital disruption to teaching and learning, research and administrative activities, ICT, through partnership and in direct collaboration, needs to demonstrate capacity to deliver a range of capabilities in a reliable, flexible and adaptive manner.

To effect what, in some cases, is major cultural shift ICT managers need to instil new approaches and lead in skill acquisition and engagement. Strategies to gain recognition by academia, research and administration of these capacities is essential with the most benefit being gained when the capabilities of ICT are brought to the table at an early stage of discussions. By identifying and effectively describing the most appropriate, fit-for-purpose technologies along with the capabilities of the ICT team, ICT can develop a shared understanding of its strategic and business value to the organisation.

Ranking Trend   2013: -   2014: #6 ★   **2015: #7** ▼

8. LEVERAGING CLOUD SERVICES FOR INTEGRATED SERVICES TO STUDENTS AND STAFF

Cloud services and the attractiveness of agile application solutions to teaching academics and researchers create some challenges for ICT. The provision of services 'any time', 'at any place' and increasingly 'on any device' is driving the demand for cloud services by students and staff - both on and off campus. With significant gains in flexibility together with cost reduction and control, critical enterprise-wide platform and infrastructure services are increasingly becoming cloud service based.

Identifying and developing strategic partnerships with specialist cloud service providers to meet specific university needs will be an increasingly important role for ICT. In the cloud or hybrid environment, ICT managers will need new skills in external engagement and managing cloud service providers. Ultimately more services in the cloud has the potential to free up ICT to increase focus on advancing teaching, learning and research capabilities and support.

At the same time, ICT needs to be alert to the potential risks of data security – its storage, protection and retrieval – complicated by physical location and legal jurisdiction.

Ranking Trend   2013: #4   2014: #5 ▼   **2015: #8** ▼

9. PROVIDING ACCESS TO ON-CAMPUS LEARNING AND RESEARCH APPLICATIONS OFF-CAMPUS, ANYWHERE, ANYTIME

Capacity to deliver core services to authenticated users, regardless of location, is a fundamental requirement of ICT today. Increasing the use of technology to deliver teaching and learning activities is just one of many examples of the important role of ICT. The 'digital native' cohort of students, researchers and staff who grew up with the internet, demand access 24x7 to applications, resources and services as part of their university experience. Services such as access to lecture recordings or to corporate systems at any time and from any location are seen as a basic on-demand service.

Recognising how emerging technologies are to be incorporated and supported within the integrity of the enterprise architecture of the institution is a key ICT challenge. ICT leaders need to develop innovative strategies, including collaborative arrangements within their institution along with external partnerships, to ensure services are available when and how students and staff need them.

Ranking Trend   2013: #9   2014: #11 ▼   **2015: #9** ▲

10. EFFECTIVE AND EFFICIENT IDENTITY AND ACCESS MANAGEMENT (IDAM) TO PROVISION APPROPRIATE E-SERVICES TO STUDENTS AND STAFF

Juxtaposed against the strong ethos of openness and collaboration by academics and students, a secure digital environment providing access to the correct data, systems and services for the authorised periods is critical. Institutions need to ensure the identity and access management (IdAM) system and protocols integrate identities across all systems with appropriate security and access controls. With digital access and security privilege assigned by an individual's role, systems must provide a consistent user experience, particularly if a user has more than one role.

For its complex set of users and the disparate range of university systems ICT faces several challenges to implement the most effective fit-for-purpose IdAM. The system must be capable of handling large intakes of new identities at enrolment times as well as provide access for external organisations such as medical centres or business partners and changing internal roles. In supporting the organisational processes, the system provides ICT with a coherent model of the organisation, its members, activities, facilities and systems. Good identity and access management is a valuable foundation for every university.

Ranking Trend   2013: -   2014: -   **2015: #10** ⭐

ON THE FRINGE

11.

CONNECTING THE DISPARATE RESEARCH COMMUNITY TO EXISTING SUPPORT TOOLS AND INFRASTRUCTURE BY FACILITATING AWARENESS AND ACCESS

Ranking Trend   2013: -   2014: -   **2015: #11** ★

12.

RESHAPING THE WORKFORCE TO POSITION IT AS AN AGILE ENABLER AND STRATEGIC BUSINESS PARTNER

Ranking Trend   2013: #7   2014: #4 ▲   **2015: #12** ▼

13.

PARADIGM SHIFT TO PERSONALISED LEARNING WITH ONLINE, BLENDED AND HYBRID LEARNING, AND COLLABORATIVE MODELS TO BETTER ENGAGE WITH STUDENTS

Ranking Trend   2013: -   2014: -   **2015: #13** ★

14.

POSITIONING IT AS A CATALYST TO TRANSFORM THE BUSINESS FUNCTIONS OF THE INSTITUTION

Ranking Trend   2013: #3   2014: #3 ●   **2015: #14** ▼

15.

INSTILLING EFFECTIVE GOVERNANCE STRUCTURES FOR IT ALIGNING WITH THE STRATEGIC DIRECTION OF THE INSTITUTION

Ranking Trend   2013: #10   2014: #12 ▼   **2015: #15** ▼

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