

# CAUDIT 2017 TOP TEN TOPICS



Summarising the most significant technology-related topics for higher education in Australia and New Zealand



# INTRODUCTION

University ICT leaders are a primary source of strategic advice about technology's role in transformation and delivering services. Their advice assists universities to achieve effective, efficient, contemporary outcomes in higher education, research and administration. The ICT leader's brief entails matching institutional purpose, vision, mission and values with responsive, value-adding, cost-effective technology capability.

CAUDIT's annual member survey determines the Top Ten Topics. First conducted in 2006, this year marks the 12th annual survey and report. The survey collects information about technology-related priorities in strategic and operating contexts characterised by funding pressures and policy uncertainties.

CAUDIT's Top Ten Topics list is a practical tool that identifies significant challenges and opportunities. The Top Ten booklet encourages conversations about transformative technology and related topics that serve the competitive advantage of individual institutions, and benefit the higher education and research sectors as a whole.

University ICT leaders must carefully assess pressures and uncertainties in a time of continuing disruptive technological and societal change. Enduring as these realities are, they do not alter the commitments of CAUDIT member institutions to secure successful student outcomes, and to achieve research impact in a competitive funding environment.

## Thank you to 2017 Top Ten Working Party members

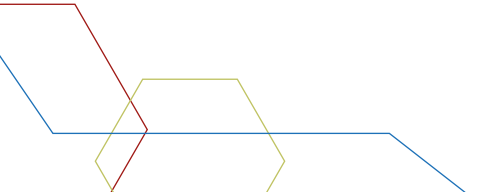
**Dr April Weiss**, Associate Director, Enterprise Services, The Australian National University

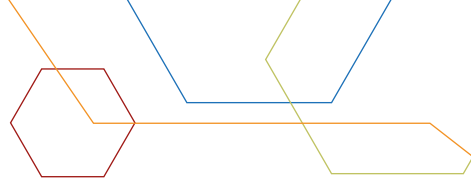
**Louise Howard**, Director, IT Infrastructure & Cloud, Griffith University

**Steve Jacob**, Associate Director, IT Operations, Western Sydney University

**Paul Morgan**, Senior Manager, Client Services, University of Wollongong

Facilitated by **Steven Wojnarowski**, Director, Analytics and Strategic Initiatives, CAUDIT





# OVERVIEW

The graphic overleaf summarises the most significant technology-related topics engaging universities in each of the past three years, and where they rank over this period. The number in the coloured triangle denotes each topic's ranking. Rankings are linked where a topic has been ranked in multiple years.

## Methodology

The 2017 Top Ten program commenced with CAUDIT staff undertaking a literature review of higher education and ICT articles. Some 506 documents were identified and reviewed, providing an initial long list of 113 topics. A Top Ten Working Party reduced the long list to a working list of 40 topics which the CAUDIT Executive Committee refined to a short list of 25 topics. These 25 topics were then ranked by CAUDIT Members.

To identify the nature of each topic primary and secondary keywords were assigned to each topic. This facilitates tracking of trends over time, particularly where the description of a topic has evolved.

## Overview

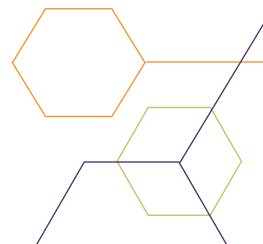
There were no new topics in the 2017 Top Ten. Every topic has appeared in a previous year's list.

Student Success Technologies remains at the top of the list. However, this was a close-run thing – Digital Strategy almost pipped it. The increasing significance of security matters is underlined by the appearance of two security related topics in the top five.

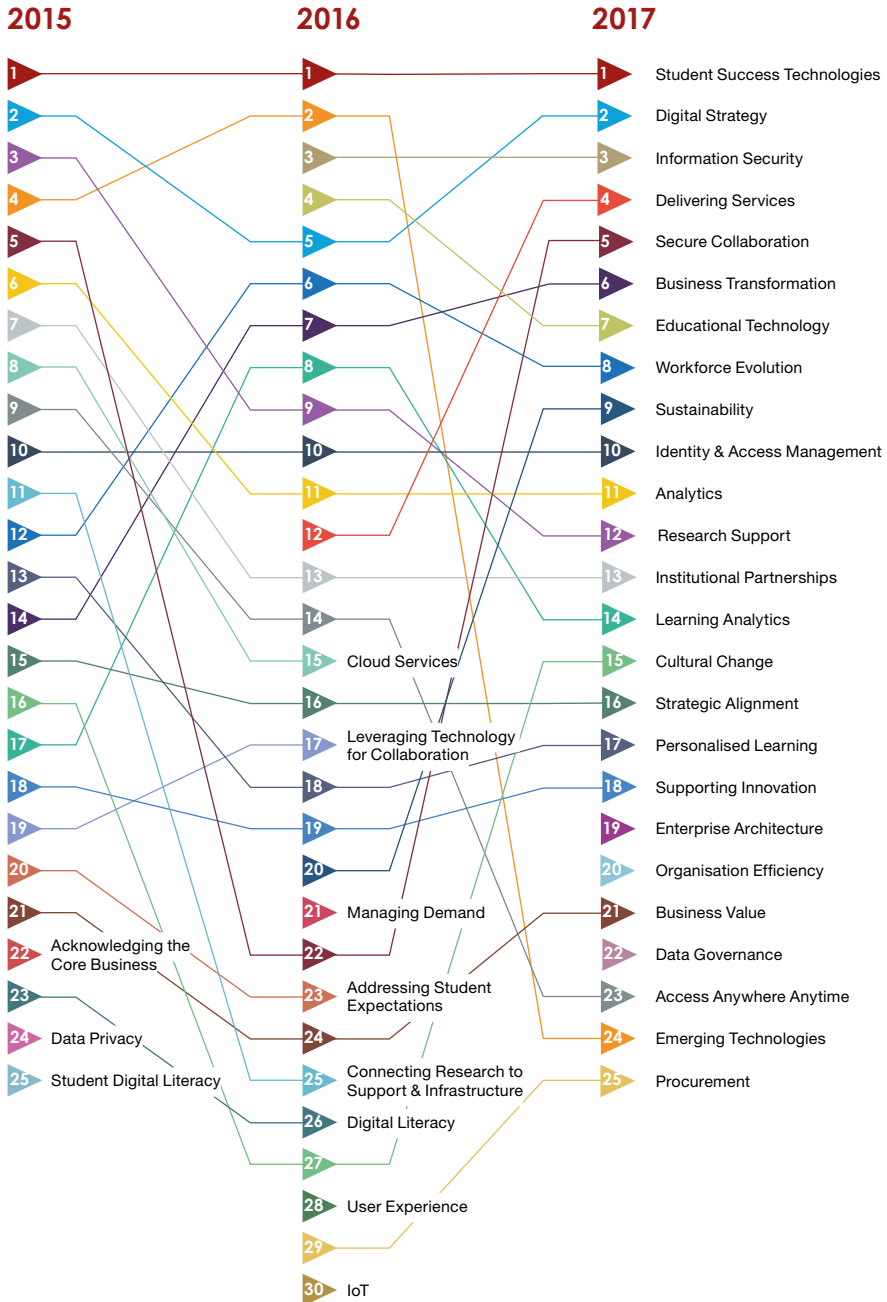
After dropping outside the Top Ten in 2016, three topics re-emerged in 2017: Delivering Services is ranked at #4 (up from #12), Secure Collaboration is at #5 (up from #22), and Sustainability is at #9 (up from #20).

Identity and Access Management maintained its place at #10 making it the third year in a row at this position. Other significant movements saw Cultural Change move from #27 to #15, and Research Support decline from #9 to #12. Emerging Technologies dropped from #2 to #24 signalling an understanding that the appearance of new technology is so frequent it is considered the norm.

CAUDIT analysis indicates that ICT leaders who have been in their post for 2-3 years ranked two different topics – Educational Technology and Cultural Change – in their top five.



# TRENDS FROM 2015 TO 2017



## Expanded explanation of topics (sorted alphabetically)

▶ <b>Access Anywhere Anytime</b>	Providing access to on-campus learning and research applications off-campus, anywhere, anytime	▶ <b>Information Security</b>	Developing a holistic, enabling approach to information security that reduces the risks associated with cybersecurity
▶ <b>Acknowledging the Core Business</b>	ICT workforce developing an improved understanding of teaching and research as the core business of the institution	▶ <b>Institutional Partnerships</b>	Assisting faculty and academic leaders' understanding of technological innovations and changes to optimise the use of these technologies in teaching and learning
▶ <b>Addressing Student Expectations</b>	Understanding and addressing the expectations of a new generation of students	▶ <b>IoT</b>	Update existing enterprise architecture and operating models to enable smart device usage developed through connecting things to capturing insights
▶ <b>Analytics</b>	Applying easily accessible analytics to support strategic initiatives and decision making	▶ <b>Learning Analytics</b>	Supporting improved student progress through establishing & utilising learning analytics
▶ <b>Business Transformation</b>	Positioning ICT as a catalyst to transform the business functions of the institution	▶ <b>Leveraging Technology for Collaboration</b>	Leveraging and providing easy access to technology to enable greater use and increased collaboration
▶ <b>Business Value</b>	Establish information management capability for analysis, cost effective data handling and ensure security of sensitive information	▶ <b>Managing Demand</b>	Managing demand to deliver high quality services and projects
▶ <b>Cloud Services</b>	Leveraging cloud services strategically for integrated services to students and staff	▶ <b>Organisation Efficiency</b>	Achieving organisational efficiencies through centralisation of ICT governance and resources
▶ <b>Connecting Research to Support &amp; Infrastructure</b>	Connecting the disparate research community to existing support tools and infrastructure by facilitating awareness and access	▶ <b>Personalised Learning</b>	Developing and supporting personalised learning delivered through pedagogical changes
▶ <b>Cultural Change</b>	Agility to change operating model to align with other organisational changes and objectives	▶ <b>Procurement</b>	Sourcing technologies and services at scale to reduce costs
▶ <b>Data Governance</b>	Improving the management of institutional data through data standards, integration, protection, and governance	▶ <b>Research Support</b>	Developing a sustainable research support model servicing the needs of all researchers
▶ <b>Data Privacy</b>	Managing the impact of new data privacy legislation	▶ <b>Secure Collaboration</b>	Balancing agility, openness and collaboration with security, risk and privacy in a hybrid environment
▶ <b>Delivering Services</b>	Developing and implementing enterprise ICT applications, architectures, and sourcing strategies to achieve agility, scalability, cost effectiveness and effective analytics	▶ <b>Strategic Alignment</b>	Ensuring effective governance structures to align information technology with the strategic direction of the institution
▶ <b>Digital Literacy</b>	Increasing the level of digital literacy of staff and students	▶ <b>Student Digital Literacy</b>	Increasing the level of digital literacy of students
▶ <b>Digital Strategy</b>	Supporting the institution's digital strategy	▶ <b>Student Success Technologies</b>	Improving student outcomes through an institutional approach that strategically leverages technology
▶ <b>Educational Technology</b>	Supporting innovative approaches to teaching and learning through appropriate applications of technology	▶ <b>Supporting Innovation</b>	Facilitating and supporting innovation, wherever it may occur
▶ <b>Emerging Technologies</b>	Ongoing demand to facilitate and support the application of emerging technologies (in a variety of scenarios)	▶ <b>Sustainability</b>	Developing a sustainable approach to the organisation's technology capability to meet changing needs
▶ <b>Enterprise Architecture</b>	Understanding and leveraging an enterprise architecture to maximise future value, integration and minimise duplication	▶ <b>User Experience</b>	Ensuring consistent interface for all technologies used on and off campus
▶ <b>Identity &amp; Access Management</b>	Effective and efficient Identity and Access Management to provision appropriate e-Services to students and staff	▶ <b>Workforce Evolution</b>	Continually reshaping the ICT workforce to ensure it provides agile technology capability that supports the institution's evolving needs

# THE TOPICS EXPLAINED

1

## Student Success Technologies

**Improving student outcomes through an institutional approach that strategically leverages technology**

The profile of university students has undergone substantial change. Undergraduate enrolments accelerated under demand-driven funding, boosting higher education participation for students from lower SES backgrounds, Indigenous students, and students from regional Australia. Postgraduate student enrolments have increased steadily.

Universities are challenged to maximise student success, access, engagement and completion. Simultaneously, universities must acknowledge student success as a multifaceted phenomenon, defined and measured in many ways. In this complex environment, technology is frequently enlisted to support and accelerate achievement of these goals.

Learning Analytics and Academic Analytics are increasingly prominent applications for improving student experience and outcomes. Faculty and professional staff use these and other tools to gather real time evidence of learning progress and support needs. Predictive modelling guides early intervention where required. Multichannel communication boosts engagement. Technology provides trusted footings for new assessment design, whether deployed online, on campus, or in workplaces.

ICT leaders help shape coordinated institutional approaches that leverage technology effectively. A student-centered approach involves ICT leaders and their teams in dialogue with students and staff. Achieving student success relies on these interactions and strategically applying effective technology.

### Keywords:

Student Success

Teaching & Learning

Strategy

**Ranking Trend:** 2015 #1 ● | 2016 #1 ● | 2017 #1 ●

2

## Digital Strategy

**Supporting the institution's digital strategy**

It is unsurprising that digital strategy has featured in the Top Ten since 2014. It now ranks a close second. Digital technology profoundly influences innovation in teaching and learning, research and administration. It is transforming processes, organisational behaviour, external partnerships, student expectations and research collaborations.

As organisations mature their approaches to digital strategy, they move from digitising existing processes to traversing broader territory that embraces digitalisation, transformation and new business models. Current strategic and operational priorities will determine whether digital strategy is primarily a CIO accountability or is embedded as an accountability across the institution.

Fit-for-purpose digital strategies see universities well placed to compete with non-traditional education providers, to meet their current and future students' changing needs, and to respond to staff expectations. Well-designed digital strategy positions universities to adapt their business models and provide new revenue streams by directly supporting activities as diverse as mini-MOOCs, monetisation of MOOCs, 'try before you buy' classes, micro-credentialing, and Blockchain experiments.

Achieving benefits from executing a digital strategy requires recognition of the ever-increasing speed of change, and the need to continually adjust institutional plans. The digital acumen of ICT leaders is a critical enabler in each institution's achievement of its vision.

### Keywords:

Strategy

Digital

Vision

**Ranking Trend:** 2015 #2 ▲ | 2016 #5 ▼ | 2017 #2 ▲

### 3 Information Security

Developing a holistic, enabling approach to information security that reduces the risks associated with cybersecurity

Universities attract a multitude of potential cybersecurity threats to personal information and highly valued research and intellectual property data. There is increasing potential for cyber attacks to prevent universities from operating. With such a diverse student and staff body, there is a multitude of access points, many of which are not managed through standard ICT practices. As with any other organisational risk, there is increasing understanding that cyber risks are a 'board level' concern.

Security breaches can impact individuals, damage institutional reputation and incur substantial costs. Reducing the incidence and severity of security breaches has two facets: risk management and technical capability. Both require adequate investment of time and resources, appropriate governance and management attention.

Managing cyber risk must accommodate centralised and decentralised ICT environments, an array of technologies, operational silos and varying risk appetite postures. Cybersecurity must be 'designed in' at the outset and routinely updated. Supporting technical knowledge and access to capability are critical.

Threats succeed when they outpace defences. Institutions need the capability to monitor emerging threats, continually review cybersecurity risks, act rapidly on lapses in cybersecurity policy and processes, and communicate proactively with Councils, senior executives, and the broader university community.

**Keywords:**

Security	Risk	Culture
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Ranking Trend: 2015 — | 2016 #3 ★ | 2017 #3 ●

### 4 Delivering Services

Developing and implementing enterprise ICT applications, architectures, and sourcing strategies to achieve agility, scalability, cost-effectiveness and effective analytics

Continuous improvement is essential in delivering institutional technology services that meet the needs of students, and the expectations of academic, research and professional staff. Changes in operating environments and user demands are leading to increased pressure on ICT to continually reassess and reconfigure services.

Growth in student numbers, and the ubiquity of technology in teaching, learning and research, lead to substantial shifts in service requirements. A key component of digital environments is access to and use of data. Learning analytics, personalisation of the student experience, collaborative research and big data initiatives all require services linked to the governance and management of complex data requirements. Data access and use underpins, and assists in integrating, administrative and support functions as varied as planning, student services, finance, property management, marketing and alumni engagement.

Responsiveness to demands for integrated, diverse services hinges on innovative, fit-for-purpose models. To balance legitimate service expectations with cost-effectiveness and scalability, ICT leaders must adopt pragmatic approaches to planning ICT capability.

Collaborative engagement between ICT teams and service users, and shared understandings of constraints and options, is central to establishing reliable, sustainable, enterprise services.

**Keywords:**

Strategy	Service Provision	Enabling Infrastructure
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Ranking Trend: 2015 — | 2016 #12 ★ | 2017 #4 ▲

# THE TOPICS EXPLAINED

## 5 Secure Collaboration Balancing agility, openness and collaboration with security, risk and privacy in a hybrid environment

Successful outcomes increasingly depend on collaboration, on campus, within Australasia and globally. The challenge for universities is to balance cybersecurity with the ability to collaborate efficiently and productively, both internally and externally.

Academic and professional staff, and students, all need frequent access to collaboration tools that acknowledge and support the 'anywhere, anytime, any device' paradigm. If secure collaboration capability is unavailable, students and staff may meet their needs by using readily available platforms not managed by ICT.

Ad hoc sourcing of tools for collaboration potentially exposes personal and institutional data to heightened risk. That risk arises because many of the tools available have been developed for individual personal use. Counteracting the risk to institutional and personal data requires accessible, easily understood, trusted and secure institutional IT platforms that enable students and staff to collaborate and share.

Institutional risk management needs to balance defensive actions related to security, risk and privacy compliance, with support for agility, openness and collaboration. Achieving this balance depends on ICT staff reinforcing and supporting shared responsibility for risk management across the institution.

### Keywords:

Security

Collaboration

Risk  
Management

Ranking Trend: 2015 #5 ▲ | 2016 #22 ▼ | 2017 #5 ▲

## 6 Business Transformation Positioning ICT as a catalyst to transform the business functions of the institution

Institutions are reviewing and transforming business functions more frequently than ever before. This ongoing cycle of refurbishment and renewal is prompted by political and economic pressures, social change, and evolving stakeholder expectations. Informed, smart investment in people and technology is at the heart of contemporary business transformation.

Every university is defining its place in society and reshaping its internal operations in order to support its goals as transformation invokes cultural change. Positive shifts in perceptions and behaviour are most likely to flourish when the institution's community understands, verifies and promotes the benefits of transformation.

An institution's ICT specialists are critical partners in this transformation. They have the technical expertise and knowledge to guide the application of new technologies so that institutions achieve the valued transformations. Their expertise and knowledge can be instrumental in stimulating awareness about how technology can shape and drive innovation in teaching, learning, research and administration.

Realising the benefits of technology-based transformation relies on ICT leaders and their team members engendering partnerships and collaboration across the institution. By reaching out to the broad institutional community they can assist in both formulating the case for, and implementing, transformative change.

### Keywords:

Business Value

Strategy

Collaboration

Ranking Trend: 2015 #14 ▼ | 2016 #7 ▲ | 2017 #6 ▲



## 7 Educational Technology

Supporting innovative approaches to teaching and learning through appropriate applications of technology

Technology is instrumental to every student's learning experience and every academic's teaching. Mobile devices have untethered learning from the campus, ushering in anywhere, anytime learning. Ubiquity of access makes higher education accessible to diverse and geographically dispersed student cohorts. On campus, educational technology is revolutionising learning space design.

At the same time, digital literacy cannot be assumed. Together, educators, instructional designers and ICT specialists must work to build student and educator proficiency in using technology to support learning in higher education.

ICT also fulfils a vital role in facilitating and supporting the use of innovative technologies used in universities today. That brief includes artificial intelligence, virtual and augmented reality, robotics, 3D printing as well as core operating systems.

ICT specialists privilege students as users. Through collaboration with academics, instructional designers and student support staff, they integrate ICT capability with learning and teaching goals, practice and support services.

### Keywords:

Teaching and Learning	Innovation	New Technology
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Ranking Trend: 2015 — | 2016 #4 ★ | 2017 #7 ▼

## 8 Workforce Evolution

Continually reshaping the ICT workforce to ensure it provides agile technology capability that supports the institution's evolving needs

The ICT workforce makes pivotal contributions to an institution's digital capability and services. Their work facilitates competitive differentiation by reinforcing convincing ICT value propositions for students and staff.

Analytical, engagement and negotiation skills underpin effective institution-wide collaborations necessary for planning and implementing new ICT processes, systems and platforms. ICT leaders and their teams must sustain positive approaches to disruption, embrace constant change, deliver outcomes and manage risk competently. The transition to cloud-based services and applications requires a flexible ICT workforce confident in a range of skills, including engagement and vendor management.

The disruptive influence of technology is multidimensional and constantly challenges the knowledge and skills of the ICT workforce. The current shortfall in ICT graduates produces fierce competition for ICT talent as all sectors of the economy seek to manage disruptive technology by maintaining advanced ICT expertise.

The task before higher education and research institutions is to retain and recruit ICT talent by offering desirable, challenging, innovative work environments. A key attractor for talent is access to continuing professional development that maintains the currency of knowledge and renews skillsets. Frequently updated know-how is a decisive ingredient in strategic foresight and agile service delivery.

### Keywords:

Workforce	Strategy	Collaboration
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Ranking Trend: 2015 #12 ▼ | 2016 #6 ▲ | 2017 #8 ▼

# THE TOPICS EXPLAINED

9

## Sustainability

Developing a sustainable approach to the organisation's technology capability to meet changing needs

Quality higher education and research outcomes are tied to efficient ICT service delivery. Among many efficiency challenges, legacy systems can be costly to reconfigure or replace. The purposes they were designed to meet have transformed with time. A sustainable approach to maintaining technology capability is pragmatic. It must closely align to business objectives.

The attractiveness of new systems and platforms must be tallied against opportunity costs. Funding priorities may not favour substantial ICT spends, or may defer them. This business reality does not diminish the importance of ICT capability.

Sustainability includes innovating with what we have, replacing where necessary, introducing new capability when required, and minimising the cost of change and consequential 'whole of life' costs. Part and parcel of maintaining a sustainable approach is maintaining a skilled, flexible, adaptable workforce.

Sustainable approaches also ask institutional ICT specialists to improve staff and student access to services through integrating and simplifying systems. A better end-user experience achieved through improved ease of use, for example, can bring returns through increased productivity and tangible reputational benefit.

### Keywords:

Funding

Sustainability

Innovation

Ranking Trend: 2015 — | 2016 #20 ★ | 2017 #9 ▲

10

## Identity & Access Management

Effective and efficient Identity and Access Management to provision appropriate e-services to students and staff

Ensuring seamless, appropriate access to university services is a primary ICT service responsibility. Effectively managing the digital identity of students and staff is fundamental to meeting that responsibility. Universities and research institutions have transformed their core businesses through anywhere, anytime access to services, mobile apps that invigorate learning and teaching, and data stores that enrich research inquiry. Students frequently pursue off-campus learning. Staff are less office bound.

These benefits are not without potential costs. Personal information, intellectual property and research data are increasingly vulnerable to security breaches. As security and compliance risks intensify, so too does the complexity of Identity and Access Management (IdAM). Effective and efficient IdAM seeks to protect ease of use and appropriate access, balancing these characteristics with an institution's risk appetite.

Attribute-based access controls and multifactor authentication are among measures institutions are adopting to counter vulnerabilities and enable productivity. Thwarting cyber attacks entails ongoing revision to IdAM policies and streamlining ICT processes.

It is an imperative for the sector to securely manage the digital identities of staff, students and others, and their access to enabling ICT services.

### Keywords:

Identity & Access

Service provision

Security

Ranking Trend: 2015 #10 ★ | 2016 #10 ● | 2016 #10 ●

# ON THE FRINGE

11

## Analytics

Applying easily accessible analytics to support strategic initiatives and decision making

Ranking Trend: 2015 #6 ▲ | 2016 #11 ▼ | 2017 #11 ●

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12

## Research Support

Developing a sustainable research support model servicing the needs of all researchers

Ranking Trend: 2015 #3 ▼ | 2016 #9 ▼ | 2017 #12 ▼

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13

## Institutional Partnerships

Assisting faculty and academic leaders' understanding of technological innovations and changes to optimise the use of these technologies in teaching and learning

Ranking Trend: 2015 #7 ▼ | 2016 #13 ▼ | 2017 #13 ●

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14

## Learning Analytics

Supporting improved student progress through establishing and utilising learning analytics

Ranking Trend: 2015 #17 ★ | 2016 #8 ▲ | 2017 #14 ▼

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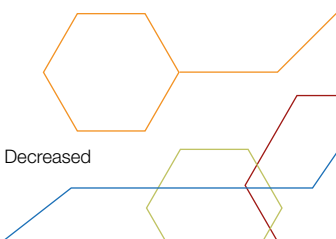
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## Cultural Change

Agility to change operating model to align with other organisational changes and objectives

Ranking Trend: 2015 #6 ▲ | 2016 #27 ▼ | 2017 #15 ▲

Ranking Trend Legend: ★ New ● Stayed the same — Not listed ▲ Increased ▼ Decreased



# CAUDIT

Council of Australasian University Directors of Information Technology Inc

[www.caudit.edu.au](http://www.caudit.edu.au)  
[caudit@caudit.edu.au](mailto:caudit@caudit.edu.au)  
+61 2 6222 7576

PO Box 9432  
Deakin ACT 2600  
Australia



ABN: 39 514 469 351



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