



**ICT STRATEGY**

**2014-2017**

Version 3.0

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## **Executive Summary**

The success with which the university delivers its business over the next 3-5 years will rely heavily on how the university relates to, and inspires its students in both the physical and virtual world. The ICT Strategy (2014-2017) aims to address this challenge, with approaches to the delivery and support of ICT in a web centric environment. A web-enabled world is the only ICT environment that the majority of current students have experienced and, to succeed, the university must adopt the best of web-based approaches to communicate with, engage, and inspire present and future students.

The ICT Strategy adopts an overarching enterprise architecture (EA) framework in which ICT infrastructure can develop, grow, and adapt to the changing HE environment with minimum impact on the university. EA recognises that the use of ICT is a socio-technical phenomenon that must meet, and where possible exceed, the expectations of those that use it. Training, support and targeted investment are all key to the strategy, to ensure that customer expectations are met and exceeded.

Initial steps have already been taken towards web centric ICT within the university, demonstrated through projects including student led timetabling, e-assessment and online assignment submission projects. All of these projects are, and will have a significant impact on current university processes, that will appreciably improve levels of service to students.

But this is merely the beginning of a process advocated in this strategy to put web centric ICT services at the forefront of university ICT developments. During the plan period there will be a refocusing of ICT staff skills to enable the development of 'lightweight' app based services. This approach will capitalise on the growth in mobile devices and student device ownership, enabling straightforward, anytime, anywhere access to university ICT systems and services.

Higher student expectations of ICT services provided by the university will inevitably demand improvements in digital and information literacy skills in the organisation. The SDR process and staff development programmes have a key role to play in ensuring that these skills are developed.

Of particular relevance to this strategy is the fact that during 2012 the level of laptop, tablet and smart-phone ownership grew exponentially, enabling the consumerisation of ICT. Recent reports show that multiple mobile device ownership for a significant proportion of the population is already a reality and is growing<sup>1</sup>. This trend suggests that more and more

Universities, and their ICT service departments, will come under increasing pressure to connect with the 'Mobile' student or workforce through mobile computing devices<sup>2</sup> that has the capability of delivering a customised and personalised service directly to the hands of the user. This strategy aims to make the University of Gloucestershire a web centric organisation, enabling easy access to information through a range of university based apps, that will provide an effective and improved communication channel between the university and its users.

## 1.0 Context

- 1.1. Approximately 20 years ago the first version of the World Wide Web became available providing direct access to documents that were mainly text available on a small number (*less than a hundred*) of web sites distributed around the world. The web is not just a technology but is a socio-technical system that has had a fundamental impact on many people's lives that cannot be overestimated. Today the web consists of millions of web sites with billions of pages of information that are accessed 24/7 by billions of people. It has significantly changed how many people work, learn, shop, bank, communicate and play. For most of today's students it is the only approach to ICT that they have ever experienced. The impact of the web on ICT has been enormous, bringing about a radical change from the approach on the left in the table below to the approach on the right:

### ICT before the web

Centralised corporate computing  
A focus on systems  
Text based information  
Desktop computers

Large complex software  
Quantitative data  
Local data analysis

### Web centric ICT

Distributed personal computing  
A focus on service  
Multimedia information, text, video, image  
Mobile devices – laptops, tablets, smartphones and wearable devices  
Small focused 'apps'  
Qualitative information  
Distributed data synthesis ('Big Data')

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<sup>1</sup> March 2013, Sophos report, User weighed down by multiple gadgets

<http://www.sophos.com/en-us/press-office/press-releases/2013/03/mobile-security-survey.aspx>

<sup>2</sup> May 2013, Business Insider, by 2017 we'll have a minimum of 5 devices each

<http://www.businessinsider.com/cisco-predicts-mobile-2013-5>

November 2012 – The average mobile worker carries 3-5 devices

<http://www.forbes.com/sites/sap/2012/05/11/average-mobile-worker-carries-3-5-devices-heres-the-downside/>

For most higher education institutions the adoption of the web has to date focused largely on its use for marketing and some aspects of communication. This strategy goes beyond superficial use of the web and defines the direction for ICT developments at the university over the next 3 years acknowledging the changes dictated by the web centric world in which we live.

The strategy is informed by:

- the objectives and strategic priorities of the university Strategic Plan 2012-2017
- the university's Learning & Teaching Strategy 2011-15 & Research Strategy
- consultation with staff and students of the university through feedback and focus groups and UMG/Executive led consultative working groups
- 'Strategic Challenges for IT Services 2013' published by the Universities and Colleges Information Systems Association (UCISA)
- a review of a small number of other university IT strategies

1.2 Developments outlined in this strategic plan are based on the following assumptions gathered from market and HE sector intelligence and the sources in 1.1 above:

1.2.1 Personal computing devices will continue to grow exponentially with further improvements in 3 and 4G smart-phones and tablets and the emergence of wearable technologies such as Google glass playing a significant role in access to ICT services during the plan period

1.2.2 Levels of student expectations will continue to grow following the increases in tuition fees. Seamless access to intuitive university ICT systems of a quality comparable to commercially available services will be part of those expectations

1.2.3 Fast and efficient internet connections that support anywhere anytime access to digital information, teaching materials and messaging services will be part of the raised expectations mentioned above. Both speed of access and quality of resource will impact student opinion of the service provided by the ICT service and the university.

1.2.4 Constrained or reduced capital funding will demand that ICT departments demonstrate what efficiency gains can be achieved, and what improvements in Return on Investment (RoI) are possible.

- 1.2.5 There will be increased availability of a wide range of outsourced 'Cloud' based services for the sector enabling ICT departments and organisations to deliver better levels of service at reduced costs.
- 1.2.6 The use of MOOCs (Massive Open Online Courseware), such as Futurelearn in the UK, is now becoming well established. University ICT services (and Media Services) must ensure that the institution has the technical capability and capacity to participate in this new method of delivery as required and also that capacity is scalable.
- 1.2.7 At the heart of the device revolution mentioned above, and the web centric world of current ICT, is the 'app' industry. As a result the ICT landscape has shifted from an emphasis on central systems to personal tools, in the form of apps that access and use resources.
- 1.2.8 The need to reduce carbon over the plan period through the imaginative and innovative use of ICT is an overarching issue for all organisations and their ICT departments.
- 1.2.9 ICT has become an essential part of all knowledge based organisations and an important source of considerable expenditure. Consequently ICT governance has a higher priority than ever before in order to ensure that there is value for money and that a high return is realised from the investments made in systems and services.
- 1.2.10 Increased collaborative working between departments in the university is key to delivering an integrated and joined-up service that improves the overall student experience and staff satisfaction.

## 2.0 Vision

*“To provide an ICT service for students and staff that creates an efficient, effective and inspirational environment for learning and working that exceeds expectations and provides an excellent student experience ”*

- 2.1 The delivery of this vision requires a changed emphasis that moves the focus away from technology itself to the benefits of ICT as a service, supporting all staff and students in their work and learning, and the institution in achieving its objectives for transformational change. This shift of emphasis encompasses:
  - 2.1.1 ICT as a key enabler to improve the delivery of services in the university through a re-engineering of business processes over the plan period to provide an explicit focus on the student experience.
  - 2.1.2 Ensuring that university ICT resources are part of the portfolio of the ‘essential services’ of the university and are available 24/7.
  - 2.1.3 A recognition that a tipping point has been reached at which personal devices such as laptops, tablets and smartphones far outnumber university provided client devices and that these user owned devices are preferred for access to systems and services by students.
  - 2.1.4 That the further development of web technologies over the plan period, such as the maturation of MOOCs, social media (such as Twitter and Facebook), and educational apps, will support and accelerate the paradigm shift from teaching to learning providing enhanced virtual learning and opportunities for real time feedback and evaluation.
  
- 2.2 The ICT Strategy takes an enterprise architecture (EA) approach that enables growth and development of the ICT infrastructure over the plan period that is agile and can adapt to the changing HE environment with minimum impact on university service continuity. Factors essential to this agile EA approach include:
  - 2.2.1 A shift from investment in client devices enabling increased investment in infrastructure and services.
  - 2.2.2 Better alignment between ICT and core business objectives, through business process re-evaluation and design that helps to improve operational efficiencies through the effective use of IT.
  - 2.2.3 A recognition of the socio-technical nature of IT systems and services.
  - 2.2.4 A programme of training and support for provision of ‘IT as a service’ to ensure that student and staff expectations are met and exceeded.

2.2.5 Continued investment in the development of organisational levels of digital and information literacy and media fluency, to exploit the opportunities presented by technology ensuring that maximum benefit is possible from the capital investment in ICT.

2.3 It is acknowledged that this strategy review has taken place at a time when the university and the Higher Education sector in general face significant financial challenges. The strategy proposes a long-term strategic approach to capital investment that supports and maintains the existing technical infrastructure, and also enables the development of new areas of technology to support innovative ways of working, learning and understanding. The aim of this approach is to not only meet, but exceed, student expectations in a cost effective way.

### **3.0 Principles**

Underpinning the ICT vision and strategy are the following principles:

- 3.1 The ICT service will enable the achievement of the objectives and priorities as outlined in the university's portfolio of strategies, in particular the university Strategic Plan, Learning & Teaching Strategy and the 2012-13 Research Strategy.
- 3.2 Developments in ICT systems and services are driven by user needs and aspirations. Established user groups around core areas of business activity, will work in collaboration and partnership to identify system and service improvements that input into the capital investment programme, overseen by the ICT Governance Group.
- 3.3 ICT provision will continue to be customer focussed providing easy and secure access to university resources and electronic forms of information, made accessible through a variety of mobile devices including PCs, laptops, tablets, smart-phones, and other devices as they become available.
- 3.4 Priority will be given to providing ubiquitous wireless network access across the whole estate with provision being reviewed on an annual basis as new standards emerge and a greater range of personal devices becomes available.
- 3.5 Standardisation and integration of information systems will be adopted wherever possible to help reduce costs and improve operational efficiencies without compromising access.
- 3.6 ICT services will seek to improve return on investment through the replacement of centralised business information systems that capitalises on the opportunities of

web technologies, the 'Cloud' and app development.

- 3.7 High priority will be given to the training and up skilling of staff in the area of mobile devices and social media, that aligns with a priority in the University's People & Culture Strategy to improve digital literacy levels in the institution.
- 3.8 A central digital repository, based on Microsoft Sharepoint, will be used to promote collaborative working, and reduce the amount of locally held data and databases through simplified and secure access to key university documents.
- 3.9 Energy costs will be reduced through the deployment of solid state technologies, reduction in numbers of client devices and deployment of cloud based services in support of the university's sustainability agenda as opportunities arise.
- 3.10 Investment in ICT and the effectiveness of ICT Strategy will be monitored through an ICT Governance Group, that receives representation from all areas of the institution and reports to the Executive team through the ICTGG Chair.

#### 4.0 Aims of the ICT Strategy

This ICT strategy aims to provide an effective ICT environment that not only supports but also enables and enhances the implementation of University strategies particularly its Strategic Plan (2012-17), Learning & Teaching Strategic Plan (2011-15) and Research Strategy 2012-13 in the following ways:

- 4.1 The university of Gloucestershire as a **'learning-led research-informed university'** aims to **'provide students with excellent learning experiences through outstanding teaching and support for learning'**. The importance of networked information and learning services to support students cannot be overemphasised. Through the continued improvement of network coverage, excellent network availability, and the 'shift' to app based development that provides access from a wide range of student-owned devices ICT services aims to provide the **outstanding support** for learning that the university seeks to achieve.
- 4.2 To support the **measurement of success with teaching and learning** (P.9 university Strategic Plan), and also the measurement of the overall student experience and satisfaction, ICT services will explore the development of 'real time' app based feedback mechanisms to improve timeliness and quality of feedback and provide better response times. Such leading edge development of 'real-time' feedback and evaluation is currently being proposed elsewhere in the public sector (NHS) and holds the promise of significant gains in customer

understanding and improved speed of complaint resolution leading to higher overall levels of satisfaction.

- 4.3 To ensure that the university remains a successful and sustainable organisation, ICT Services will, through the capital replacement programme, work in partnership with departments to develop and streamline business processes through a structured 'Review and Replacement' programme of ICT systems. The use of an enterprise architecture approach not only supports a web centric mode of delivery, but will also serve to maximise the return on investment in IT.
- 4.4 Recognising that much modern research is also web centric, the EA approach to systems development, information access, service distribution and ubiquitous network provision, will provide excellent support for university research activity and funding opportunities.
- 4.5 ICT services will contribute to a sustainable approach to energy consumption and reduced carbon footprint by shifting the focus on expenditure from client desktop devices to infrastructure and services in recognition of the increasing importance of user owned mobile devices. In addition at the relevant points in the system replacement cycle, ICT services will encourage exploration and evaluation of outsourced cloud opportunities as opposed to in-house systems to help reduce energy costs further. Where continued in-house provision is deemed necessary priority will be given to the acquisition of energy efficient solid state technology where possible.

## **5.0 Key strategic themes**

Following a review of factors in the external environment and internal consultation processes, a number of strategic themes have been identified both within the university and the wider HE sector. These are:

### **5.1 Adopting an Enterprise Architecture (EA) approach to service developments**

The EA approach adopted by this strategy acknowledges the socio-technical nature of the use of ICT and aims to encourage partnership working between 'system owners' and ICT services during the system review/replacement cycle to enable a constructive dialogue around business process and the role of ICT in delivering effective services. More importantly such an approach provides the opportunity to overcome common difficulties, outside the remit of ICT that can have negative impact on the effectiveness of ICT development such as poorly designed business processes, poor information management, outdated pedagogic practice and low levels of digital literacy. Constructive dialogue presents challenges for all involved, but should also present opportunities for ICT services and departments to develop a clearer understanding of business processes and the

potential for ICT to be an effective enabler in transforming and changing the way the university conducts its business.

## **5.2 Creating a Web-Centric learning and research environment**

- Developing a ubiquitous wireless network to provide a 'deep-rich' media experience
- Aligning ICT system replacement and acquisition with a web-centric approach
- Connecting to, and enabling wider use of present and future mobile technologies
- Raising levels of digital literacy in the organisation to capitalise on the investment made in IT
- Developing 'apps' to deliver personalised and targeted business information

## **5.3 Developing excellent services informed by constructive dialogue and conversation**

- Ensuring that through SLA's or partnership agreements, student requirements and expectations are met and exceeded
- Continuing to use user groups, surveys and ICT feedback mechanisms as a rich source of information that contributes to effective system and service development
- Introducing a web-centric approach that enhances the student experience through personalisation and customisation of information in real-time
- Using an 'app' based approach to improve service delivery for all service providers

## **5.4 Enhancing student feedback and evaluation**

- Exploiting an 'app' based approach to real-time student feedback and evaluation
- Improving internal feedback and data quality to help improve NSS and institutional league table positions

## **5.5 Facilitating institutional efficiencies and contributing to a modernisation programme**

- Adopting an EA approach and working in partnership with the Project Office and Performance Enhancement Group, to ensure that ICT is a significant contributor to institutional change
- Exploiting and utilising the capital investment programme to improve operational efficiency and contributing effectively to an overall modernisation programme

**5.6 Ensuring that the technical infrastructure remains fit-for-purpose and is effectively governed, whilst recognising the need for greater flexibility in the estate to accommodate a variety of different learning styles and approaches**

- Ensure that there is sustained capital investment in the technical infrastructure to accommodate a diverse range of digital learning styles
- Work in partnership with estates and academic departments to support developments in a rapidly changing HE environment
- Ensuring that the technical infrastructure remains reliable, robust and responsive to the needs of the user
- Continuing to extend the reach of the network into all halls of residence and social learning areas, to provide a deep rich experience across the wireless provision

**5.7 Continue to be an effective contributor towards to the 'Green' agenda, that helps to reduce overall university carbon targets**

- Refocusing the computer replacement programme around more mobile, energy efficient devices e.g. iPads, and taking into account the impact of student owned devices
- Where possible, increasing the presence of more energy efficient solid state technology, reducing client devices in favour of portable devices, and reducing onsite server capacity in favour of Cloud and emergent technologies
- Raise the profile of online conferencing facilities in the university to help reduce national and intersite travel

6.0 Deliverables

Theme	Current Progress	Target
<b>Adopting an Enterprise Architecture approach</b>	<ul style="list-style-type: none"> <li>Investment is currently based around a collection of ICT requirements that is gathered on an annual basis between ICT and academic/professional departments that informs the capital investment programme.</li> </ul>	<ul style="list-style-type: none"> <li>The EA approach aims to encourage a partnership between IT providers, system owners and all stakeholders. It is intended to take more of a holistic long-term approach to investment and to the delivery of IT systems and services that will be monitored through the ICTGG</li> </ul>
<b>Creating a Web-Centric Learning &amp; Research Environment</b>	<ul style="list-style-type: none"> <li>The majority of core business applications are now accessed via a web enabled interface, that enables the delivery of services both on and off campus. However, developments have developed by default rather than by design in an integrated way</li> <li>Student email and storage is now provided through the Microsoft Office 365 cloud based service.</li> <li>Only 'enthusiastic' development of university mobile apps has occurred to date.</li> </ul>	<ul style="list-style-type: none"> <li>Integrate all the key business applications into a personalised information portal that is accessible through a range of mobile devices, that enables information to be 'pushed' rather than 'pulled' by the client</li> <li>Ensure there is an effective virtual working environment between staff and students <i>e.g. Office 365 for staff</i> that promotes conversation and improves support to students</li> <li>Work in partnership with external suppliers/Marketing &amp; Communications team to develop a range of new apps, but particularly in the area of recruitment, access to student data, and online feedback and support</li> </ul>

Theme	Current Progress	Target
<p><b>Developing excellent services for students informed by constructive dialogue</b></p>	<ul style="list-style-type: none"> <li>Current student satisfaction is predominantly measured through the National Student Survey and a range of internal ICT feedback mechanisms and surveys</li> </ul>	<ul style="list-style-type: none"> <li>Over the plan period, work in partnership with student reps, Student Services and SU to develop a variety of online feedback mechanisms, that will help service providers provide a more interactive and responsive service that ultimately will help to improve overall student satisfaction</li> </ul>
<p><b>Enhancing student feedback and evaluation</b></p>	<ul style="list-style-type: none"> <li>Current student feedback and evaluation is reactive and retrospective, and does not effectively deal with student concerns at the point of delivery</li> </ul>	<ul style="list-style-type: none"> <li>As above, work in partnership with student groups to develop a range of online chat and feedback mechanisms <i>e.g. Facebook &amp; twitter</i>, that facilitate a quick and immediate response and helps move the university from a reactive to a proactive position in the areas of student support, feedback and evaluation</li> </ul>
<p><b>Facilitating institutional efficiencies and contributing to a modernisation programme</b></p>	<ul style="list-style-type: none"> <li>When new IT systems have been introduced in the university, the opportunity has been taken to review current business process and re-engineer service (<i>where appropriate</i>) to exploit the functionality of new technologies. However, due to limited resources this model has only had limited effect on the overall university modernisation programme to date.</li> </ul>	<ul style="list-style-type: none"> <li>Work in partnership with the newly established project team in F&amp;P, to implement an EA approach to the redesign of business processes to improve operational efficiencies. Also, develop a structured model to the review and replacement of key business information systems, that includes alternative <i>Cloud</i> based systems, where appropriate</li> </ul>

Theme	Current Progress	Target
<p><b>Continue to be an effective contributor towards to the 'Green' agenda, that helps to reduce overall university carbon targets</b></p>	<ul style="list-style-type: none"> <li>Power consumption through the use of IT in the university has reduced significantly over the past decade through investment made in virtualisation in the data centre, and through energy saving components in PC technologies. Some use has been made of university video conferencing facilities, however, there is now greater take-up of mobile Skype and Facetime applications, that is likely to increase over the plan period</li> </ul>	<ul style="list-style-type: none"> <li>Continue to reduce IT power consumption by a minimum of 5% per year</li> <li>Raise the profile of conferencing facilities through Office 365 applications, to help improve the delivery of online services to students, and also help reduce national and intersite travel that will actively contribute to reducing overall university carbon targets</li> </ul>
<p><b>Ensuring that the technical infrastructure remains fit-for-purpose and is effectively governed, whilst recognising the need for greater flexibility in the estate to accommodate a variety of different learning styles and approaches</b></p>	<ul style="list-style-type: none"> <li>The university estate currently has 80% wi-fi coverage, with a priority in 2014 being given to onsite halls of residence accommodation.</li> <li>The growth in mobile devices and the appetite for video-on-demand applications has put increased pressure to expand the bandwidth of all university Internet circuits, both inter-campus and to halls of residence</li> <li>Due to the needs of the digital learner outlined in the requirements above, data storage is a pressure point that will need addressing over the plan period. Intrinsicly linked to data storage to disaster recovery, backup and archiving, all of which will be reviewed over the plan period.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that the whole university estate provides a deep-rich media experience by 2016.</li> <li>Develop a replacement strategy for all telecoms circuits for replacement on a rolling 3 year programme.</li> <li>Due to the increasing reliance on the technical infrastructure to deliver university business, a closer working partnership will be developed with F&amp;P to ensure that there is a sustained and increased investment in technical infrastructure.</li> </ul>