IT Strategy 2014–2016

About
This document outlines the Information Technology Strategy for the University of York for 2014–2016. The strategy is an appendix to the University Information Strategy and focuses on the technical requirements to support the University’s information needs. A more detailed Information Systems Plan will be provided as a separate appendix.

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Introduction

The IT infrastructure is a fundamental part of all University activities. It is now impossible to deliver any of the University’s key functions without using some facet of information technology to either gather, create or transmit information. This dependence upon IT will increase as technology becomes more and more ubiquitous and new generations of students and staff, who have only known a technology enabled world, come to study and work in York. The implication of this dependency is that IT needs to be seen as a key strategic asset for the University and managed and resourced accordingly.

The IT strategy provides an overall framework and vision for IT for the next 3 years. It forms part of the University’s Information strategy and is aligned with the University’s overall policies, aims and objectives. It was developed by reviewing the major University strategic plans in Teaching and Learning, Research, Student Experience and Sustainability as well as from consultation with users via surveys, focus groups and a variety of other feedback mechanisms.

This document is divided into sections:

• Section 1
  Gives a brief overview of IT Services at the University, the key internal challenges, and the strategic and operational needs identified by the University community

• Section 2
  Outlines the overarching technology drivers and trends in the external environment

• Section 3
  Articulates the principles that will underpin IT choices and decisions

• Section 4
  Details the choices and the decisions made for this strategy period
1. Internal Analysis

1.1 IT Services at the University of York – an overview of the service, the key issues and challenges and strategic and operational needs

Broadly speaking, IT Services at the University of York can be categorised as either centrally or departmentally provided. Central IT Services is a support department within the Information Directorate and consists of approximately 70 FTE staff. It has an annual budget of approximately £5m, which includes expenditure for staff (£3m), capital (circa £1m, for both developing new services and supporting existing infrastructure) and recurrent spend (£1m, which covers licence and maintenance costs and a small operations budget). Central IT delivers the following core services to the University community:

- wired and wireless network provision and management
- compute power, data centre hosting, data storage provision and management
- desktop (both virtual and physical), print/copy/scan provision and management
- enterprise system support, system integration and software development
- advice, helpdesk and cyber security
- identity and account management

Locally provided IT in academic departments varies hugely, with some large science departments having teams of staff who provide and support everything in their department. Others have more modest provision limited to basic desktop troubleshooting, and in some departments there is no locally provided support, with all resources coming from central IT services.

Reliable costs for local IT Services in academic departments are not available but there is evidence of considerable duplication of effort, with some departments employing staff to manage desktops, provide network services, storage and compute power and support for administrative processes all of which could be delivered by central IT.

Most support Directorates have local teams of system managers devoted to supporting and enhancing the vast suite of enterprise systems used by the University, for example, the student record system (SITS), the Virtual Learning Environment (Blackboard) and the Finance System (Agresso). Licence costs for these systems are approximately £1.5m per year. Some Directorates also have staff who support the desktop infrastructure needed by staff, whilst others rely on support from central IT.

The lack of an overall strategy for Enterprise Systems coupled with the existence of separate system management teams within the support Directorates has led to a fragmented system landscape, complex integration patterns, and in some areas poor support for business critical activities.

1.2 Strategic needs

The University’s Teaching and Learning, Research, Sustainability, Student and Information strategies identify a number of requirements for the IT services at York. These have been summarised in the diagram below:
1.3 Operational needs
Direct feedback from customers of IT services (students, academic and administrative staff) indicates that our users desire:

- Administrative systems that are better integrated, easy to use and are designed to support departmental processes
- Support for mobile, tablet and other devices and for services that will run on them
- Centrally provided, cost-effective, easy-to-use and accessible services, i.e.:
  - Storage for research and administrative data
  - Computing power to support research
  - Facilities to back up data
  - Desktop services including support for non-Windows operating systems (eg OS X, iOS, Android, Linux)
  - Software – both for teaching and research
  - Highly available printing and scanning
- IT support and training enabling the effective use of IT
- Ubiquitous wireless connectivity across campus
- Project management provision to deliver IT projects

1 A paper detailing the issues with administrative systems was written by the Head of IT Services. See Operations Group Minutes OG.12-13/45

1.4 Internal challenges
IT Services face a number of internal challenges to meet the requirements of the University. These are summarised below.

- Support for research – a framework of services, supported by a sustainable funding model is required. This includes improving and reducing the cost of centrally available services, for example, research compute resource and managed storage, as well as specialist software and user support. With sustainable funding in place we will provide the following services:
  - A managed research computing infrastructure of compute and storage. This will provide a software development and application facility for enabling research that departments can utilise, without the burden of managing the equipment
  - Support for the use of York’s share of the N8 HPC facility
  - Advanced computing training for research staff and postgraduate students
  - An advice and support network for postgraduate students and researchers.
- Need to develop an overall strategy for enterprise systems to enable better support for teaching and learning – as mentioned above, there is a fragmented approach to the provision of administrative systems. Funding for system development and system support staff are managed locally by different areas. Integration has evolved over time and is now complex and time consuming to support, and does not provide a joined-up service to users. In addition, the University has a large number of legacy applications; although these systems often provide vital services, they are difficult to support and integrate. In most cases, because of their outdated architecture, legacy systems are not able to manage heavy load and this presents considerable operational difficulties, for example, for exam result reporting.
- Sustaining the physical infrastructure – the University estate of centrally provided data centres, servers, storage and network equipment amounts to an investment of over £8 million and requires significant recurrent investment to sustain it. The network infrastructure, in particular, has not received sufficient investment over recent years, and the huge growth of the Heslington East campus – which has added around 12,000 data outlets – has compounded this issue. A separate paper on the resources needed to sustainably fund the IT infrastructure is currently being prepared.
1.4 continued...

- Transition to Voice Over Internet Protocol telephony (VOIP) - the analogue telephone system used across older parts of campus will reach its end of life in 2017 and must be replaced with a new service based on the IP/data network in this period. As noted above, the data network has not received sufficient investment, and the transition to VOIP will require significant funds of approximately £1.5m to replace/upgrade the cabling and switch infrastructure to a standard that will support VOIP.

- Development capacity and lack of standardisation - there is insufficient capacity to support the high demand for enterprise system developments, and therefore strong prioritisation has been required to maximise benefit from the available resource. This has led to some areas not getting the development support they need. For example, systems and processes to support teaching and research administration lag behind competitor institutions. As a consequence, departments with the capacity to do so have invested in developing their own bespoke systems. Not only is this a drain on departmental resources, it has created a situation where there are few standardised processes. This in turn makes it more complex for central services like Registry Services and Admissions to provide systems that meet departmental need and increases the need for development capacity.

- Identity Management – is a fundamental part of the University infrastructure and supports the creation and management of user accounts, and the systems and services users have access to. Without identity management nobody would be able to access any University IT systems. Our current identity management solution will no longer be supported by the supplier after July 2014. An updated identity management system is required to streamline account provisioning and enable more sophisticated, fine-grained and modular access to University services. The funding needed for this replacement is in the region of £70k, with recurrent cost of £25k.

- Modernisation of business processes – many IT system issues are actually caused by poor business processes. Changing processes is complex and timing consuming and requires a high degree of trust between business areas and IT Services. If we are to fully leverage the benefits of IT systems, it is essential that we take the opportunity to review and streamline business processes at every opportunity, but particularly when new systems are being implemented.

1.4 continued...

- Service monitoring – further work is required to improve the automated monitoring of services. This will enable:
  - better fault detection to minimise service disruption
  - more sophisticated load monitoring and management abilities
  - better planning of service changes
  - generation of service performance statistics

- Business continuity – IT services need to have strong representation in University Business Continuity (BC) discussions, given the importance of the network and other IT services for business critical activities. Although some progress in this area has been made, there is no overarching strategy for IT BC and an incomplete understanding of the needs of the business should a major incident occur.

- Staff recruitment – well qualified and experienced IT staff with the right skills and attitude are always a challenge to recruit. The Enterprise Systems team in IT Services face particular challenges in this area. Firstly, because Higher Education uses many sector specific business applications and secondly, because we invest less in this area than commercial enterprises, and therefore need staff who have a very broad range of skills.

- Central vs Local IT provision - according to a benchmarking study conducted by Tribal in 2008 York spends more on local IT provision than its comparators (38% outside central IT compared with 27% for comparators). Although this situation is shifting slowly, with departments like Computer Science now working in partnership with central IT Services, there is still significant resource in departments duplicating commodity services. Central IT has developed significantly over that last five years and is now in a position to provide departments with commodity services, but is unable to do this in a sustainable way without resource reallocation from local to central budgets.

- Compliance – increased scrutiny and legal requirements mean that Information Security is a key element of risk management for the University. There are two aspects to this. One side is that some aspects of compliance are necessary for the University to function: Research funders now demand compliance with Information Security standards such as ISO27001 as part of contractual terms around data handling and compliance with PCI/DSS is required to take card payments. The other side is that the reputational risks and fines associated with data breaches are increasing. The Information Commissioner’s Office now fines up to £500,000 for a breach and there is an associated risk that a data breach would deter partners from sharing research data with the University.
2. Technology drivers and trends in the external environment

Recent technological and social changes have affected both the solutions available to IT services, and the expectations of users of those services. A brief outline of the major trends are:

2.1 Cloud-based storage and compute power

Cloud services and business models are maturing rapidly and now offer another option for some types of storage and processing needs. They are not, however, a ‘silver bullet’ and are never likely to be a universal solution, nor are they as cost effective as many vendors claim. Careful consideration is needed before using cloud services to ensure they meet resilience, security and ‘portability’ needs.

2.2 Growth of Software-As-A-Service (SAAS) model for enterprise applications

Vendors are increasingly using a cloud-based SAAS model for distributing their software, rather than offering on- or off-site hosted solutions. This model can allow for faster software updates and a reduction in onsite administration, but also poses challenges for integration and data security.

2.3 Network integration wireless/4G/5G

More pervasive and higher bandwidth, high density wireless combined with emerging 4G/5G telecommunication industry technologies will enable much larger volumes of data to be transmitted over the radio frequency spectrum. High density network connectivity with high bandwidth is one of the keys enablers to true mobility.

2.4 A move from desktop to mobile/tablet

Our users, particularly students, typically interact with our services using a range of devices (sometimes concurrently), with access to services on mobiles or tablets becoming increasingly more common. Full desktop-like functionality is not yet available on tablets but the move away from fixed desktop devices is inexorable and coupled with other changes like SAAS web client delivery models, and wireless and mobile connectivity will result in a fundamental change in how our services are delivered and consumed.

2.5 Big data

The exponential increase in data generated has led to challenges for data management, processing and analysis, but also presents opportunities for integrating disparate and novel data sets to discover trends and relationships. To date, few Universities have leveraged this development in either research or administration, but as tools and techniques develop for mining, storing and visualizing the information big data provides this is likely to change.

3. Principles that will underpin IT choices and their implications

Based on feedback from customers and taking into account technology changes, new IT services or projects should aim to meet and be evaluated against the following principles. We recognise that some of these principles can conflict - for example, ease of use and security - and we will therefore use a pragmatic approach to balance risk and the user experience.

3.1 Designed to support the needs of students, lecturers and researchers

Although this should be a statement of the obvious, we wish to make it explicit that our purpose is to provide systems and services that are aligned to the needs of our customers, be they students, lecturers or researchers as well as all of those staff who support the activities our customers perform. The implications of this for us are that:

- We must ensure, by using as many mechanisms as possible, that we understand what our customers want from us and that we have a wide variety of ways for gathering feedback on whether our services are meeting their needs
- We must be open to new ideas and willing to support innovation in all aspects of our services
- We must be flexible in our approach to service delivery and accommodate diversity where necessary

3.2 Easy to use, easy to access and easy to learn

This is one of the most consistent pieces of feedback we receive from our users. Any systems we provide, either via third parties or developed in-house, should have the user experience as a core requirement. The implication of this principle is that we must:

- Test our systems more thoroughly for ease of use
- Involve system users more closely in the interface design from an early stage
- Design self-service into our portfolio so that customers can access commodity services like storage, or compute power without our intervention
3.3 Resilient

As our dependency on IT increases it is essential that all our services have a suitable level of resilience. The implications of this are that we:

- need closer working between different teams to ensure we understand the dependencies between our different systems and services
- need to improve our monitoring capabilities to spot and fix issues before they affect services
- design appropriate levels of resilience into all our services from the outset recognising that this will be more expensive in our budget requests.

3.4 Secure/compliant

Information security is an ever present threat and a large risk to the University. The implications of this are that we must:

- segregate our systems and network to reduce the impact of an intrusion and follow best practice in system design to secure all systems
- provide suitable training to all University staff handling sensitive personal/commercial data or developing systems that handle such data
- maintain legal compliance in all areas of Information Security, including PCI/DSS and Data Protection and develop policies and procedures in conformance with ISO 27001/2.

3.5 Energy efficient

The University has aggressive carbon reduction targets to comply with and IT equipment contributes approximately 20% of carbon production across the University. The implications of this are that we must:

- work closely with the environment team in Estates to ensure we are complying with carbon reduction activities and can take advantage of schemes aimed at reducing our carbon footprint such as Salix
- develop more sophisticated tools for managing the energy our systems use, and save
- where possible, source the most carbon efficient technology
- where possible, design carbon efficiency into our systems, for example, using power down and virtualisation technologies
- recycle all of our old equipment and provide services for easy recycling to other areas of University.

3.6 Agile and easy to maintain

Technology changes rapidly and the pace of change is accelerating. Customer need can also change rapidly either because of changes in the external environment, for example, new legislation, or because of internal changes to business processes. We must, therefore, have systems that can be quickly and easily adapted and have a short development cycle. We also need to ensure that system maintenance effort is kept to a minimum, so that as much staff time as possible is available for work that adds value to the customer. The implications of this are as follows:

- we need to further embed Agile development techniques into any system developments we undertake
- we need to ensure that the correct system tool, technology or technique is used to deliver a service and not just select from the tool set, technology or skill set we currently have available
- we must architect and engineer our systems so that they can be easily expanded or changed
- wherever possible we must use a ‘standards based’ approach which will help to make our systems easier to integrate and more interoperable
- we must ensure we are aware of trends and changes in technology so that any choices we make are as ‘future proofed’ as possible.

3.7 Cost effective

Budgets are always under pressure and we recognise the need to ensure that the investments we make in technology are as cost effective as possible. The implications of this are that we must:

- work closely with our colleagues in the Procurement office to ensure that we are using best practice when making purchases and that we are aware of the relevant frameworks and national deals the University can take advantage of
- ensure we take advantage of cross-institution economies of scale
- ensure we fully consider the total cost of ownership, which includes maintenance, power, staff costs, licensing and consumables for any new service or technology we purchase or provide
- monitor our expenditure closely and ensure we have a deep understanding of our costs and where opportunities for cost reduction exist
- negotiate more robustly with our suppliers when contracts are renewed to ensure we are always getting the best price.
4. Strategic choices

This section summarises the strategic choices we have made for this strategy period. These choices have been made in the light of technology changes, current budget availability and most importantly to ensure we can deliver the services our customers need in an efficient and effective way.

4.1 Service delivery

- We will provide support for all major devices and platforms with the focus being to ensure customers can access our services from any location where an internet connection exists.
- We will provide managed storage and compute power to researchers and other staff free of charge, as budget permits, and self-service access to these services where technology permits.
- We will develop a portfolio management approach to our service development and delivery to ensure that we have an accurate picture of what new services we need and what is no longer fit for purpose.
- We will embed the principles of the ITIL framework into all aspects of our service delivery.

4.2 Partnerships

- We will develop partnerships with external bodies (including York City Council and the NHS) and better exploit existing ones (eg N8, UCISA, key suppliers) in order to gain better services, cheaper products or skills and expertise we don’t currently have.
- By aligning our services with departmental need we will become the partner of choice for all commodity IT services, ie, the network, storage, desktop, and core administrative systems.
- We will work to strengthen the partnerships we have with our internal service providers, for example, the Estates, AV and telephony teams.
- Working in partnership with business system owners and managers we will develop a roadmap for an integrated suite of enterprise systems, offering joined up services and fit for purpose information to both students and staff.

4.3 Technology

- In order to minimise environmental impact and improve customer service, where data protection and security allow, we will consider cloud-based software solutions before on-site hosting.
- We will reuse or adapt existing software where possible. Where this is not possible, we will seek to buy and integrate software, and only build when there is no alternative or local needs are too specialist.

4.3 continued...

- Our standard application development platform will be Grails supported by Oracle databases. We will continue to support existing ColdFusion applications while trying to minimise new feature development on this platform.
- When choosing new software we will review Open Source options first and only look at proprietary products if Open Source options are not fit for purpose.
- We will develop an integration model that allows us to comprehensively test and monitor solutions as well as lowering the overall maintenance burden.
- We will further exploit the benefits of our University-wide collaboration platform – Google Apps – either by developing systems upon the Google platform or by using Google marketplace software that integrates with Google tools and services.
- A single virtualisation platform will be chosen and deployed. We currently have a significant investment in VMware, but will evaluate Hyper V as an alternative.
- We will continue to virtualise services where this offers improved resilience, cost and efficiency without impacting the user experience.
- We will move away from Solaris as an operating system, using either Linux (Ubuntu and RedHat) or Windows as appropriate.
- We will develop a secure managed service for laptops and tablet devices but continue to develop our virtual and physical desktop services, offering Windows, Macintosh and Linux for both students and staff.
Appendix 1: Projects

Appendix 1 links the preceding sections of this document by specifying the major projects that we propose to undertake over the next three years together with the benefits that we hope they will deliver.

Projects have been grouped under 4 headings:

- Supporting Teaching and Learning
- Supporting Research
- Maximising Efficiency and Effectiveness
- Providing an Excellent IT Environment

It should be noted that many of these projects are dependent on sufficient resource being made available and are based on current priorities and needs, which may change over the strategy period.

1. Supporting Teaching and Learning

<table>
<thead>
<tr>
<th>Project title/description</th>
<th>Expected Benefits</th>
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<tbody>
<tr>
<td>Wireless expansion</td>
<td>• Improved student and staff experience in teaching and research</td>
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<td></td>
<td>• Streamlined business processes, for example enabling instant online module feedback in lecture theatres</td>
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<tr>
<td></td>
<td>• Providing wireless connectivity to study bedrooms</td>
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<tr>
<td>Years 1-3 of strategy</td>
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<tr>
<td>Module choice system</td>
<td>• Standardisation of module choice process for students</td>
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<tr>
<td></td>
<td>• Optimisation of module diet to fit student choice</td>
</tr>
<tr>
<td></td>
<td>• Reduced departmental burden therefore more available time for value adding activities</td>
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<tr>
<td>Year 2 of strategy</td>
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<tr>
<td>Programme and Module catalogue</td>
<td>• To simplify and streamline business processes associated with curriculum approval and programme and module maintenance</td>
</tr>
<tr>
<td></td>
<td>• Allow all module and programme information to be collected, stored, updated and maintained (by a number of data custodians), in one place</td>
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<tr>
<td></td>
<td>• To create sophisticated, searchable web outputs which display the necessary module and programme information to students (both prospective and current), staff and central departments</td>
</tr>
<tr>
<td>Years 1 and 2 of strategy</td>
<td></td>
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<tr>
<td>Technology enabled learning spaces</td>
<td>• Enabling students to study effectively</td>
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<tr>
<td></td>
<td>• Supporting different teaching delivery methods</td>
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<td></td>
<td>• Providing attractive and inspirational learning spaces that match or exceed competitor facilities</td>
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<tr>
<td>Software provision and licensing</td>
<td>• Economies of scale for software licensing</td>
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<tr>
<td></td>
<td>• Clarity and transparency on the budget available for software</td>
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<td></td>
<td>• Sharing of best practice between communities of software users as more clarity over who software users are and how they use specialist software</td>
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<tr>
<td>Years 1 and 2 of strategy</td>
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### 1. Supporting Teaching and Learning continued

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<tr>
<th>Project title/description</th>
<th>Expected Benefits</th>
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<tr>
<td><strong>E-assignment</strong>&lt;br&gt;Working with academic colleagues and staff in e-learning support, we will develop and integrate systems to support the end-to-end process of assignment submission, marking and feedback of student assignments. Years 1 and 2 of strategy</td>
<td>• Improved student experience as feedback available online with assignment, and printing costs removed&lt;br&gt; • Reduced departmental burden, providing more available time for value adding activities&lt;br&gt; • Easy tracking of student progress as marks and feedback are available in one location&lt;br&gt; • Automatic disposal of assignments in alignment with University Records Management policy</td>
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<tr>
<td><strong>E-assessment</strong>&lt;br&gt;Working with the ELDT we will develop a robust online assessment service to enable departments to offer students examinations online. Year 1</td>
<td>• Quick turnaround of feedback from assessments&lt;br&gt; • Reduced administrative burden on departments, therefore more resource available for value adding activities</td>
</tr>
<tr>
<td><strong>Mobile ‘app’ for accessing student information and services</strong>&lt;br&gt;For example, location of free PC classrooms or study spaces Year 1</td>
<td>• Improved student satisfaction as students are able to access relevant information quickly and easily via mobile phone or tablet devices</td>
</tr>
<tr>
<td><strong>Replace the accommodation system PAMS</strong>&lt;br&gt;Working with colleagues in Campus Services College Offices and other stakeholders we will replace PAMS with a suitable alternative taking every opportunity to review and streamline the business processes for accommodation choice, booking and management Years 1 and 2 of strategy</td>
<td>• Improved experience for entrant students when choosing and booking University accommodation&lt;br&gt; • Reduced administrative burden in Colleges, Campus Services and Conference offices therefore more time for value adding activities&lt;br&gt; • Better visibility of accommodation position for financial planning&lt;br&gt; • Improved services for conferences and other external bookings</td>
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### 2. Supporting Research

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<th>Project title/description</th>
<th>Expected Benefits</th>
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<tr>
<td><strong>Research computing funding</strong>&lt;br&gt;Working with the PVC Research, Academic Coordinators and colleagues in Finance and Planning, develop a sustainable funding model for research computing. Year 1 of the strategy</td>
<td>• Sustainable infrastructure and support service for research computing&lt;br&gt; • Ability to plan for investment&lt;br&gt; • Improved research output as infrastructure for research computing is put in place</td>
</tr>
<tr>
<td><strong>Tier 3 research computing facility</strong>&lt;br&gt;Develop a centrally-managed and supported computing facility for research computing needs that are not big enough for regional facilities, but too big for desktop computing. Years 1 and 2</td>
<td>• Economies of scale on purchasing of shared computing resource&lt;br&gt; • Ability to provide support to postgraduate students in departments where no expertise or resource is available&lt;br&gt; • Reduced environmental impact as inefficient departmental data centres are no longer needed&lt;br&gt; • Improved research output as RAs and postgraduate students do not need to manage local computing facilities&lt;br&gt; • Reduced departmental support burden as departmental technical staff do not need to support computing infrastructure</td>
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<tr>
<td><strong>Data storage</strong>&lt;br&gt;Centrally provided high capacity data storage, backup and archiving facilities Years 1, 2 and 3</td>
<td>• Economies of scale on purchasing of storage&lt;br&gt; • Improved research output as RAs and postgraduate students do not need to manage storage facilities&lt;br&gt; • Infrastructure for research data management in place&lt;br&gt; • Reduced departmental support burden as departmental technical staff do not need to support storage infrastructure&lt;br&gt; • Reduced environmental impact as departmental data centres are not needed&lt;br&gt; • Self-service management for all common tasks</td>
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## 2. Supporting Research continued

<table>
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<tr>
<th>Project title/description</th>
<th>Delivery timeframe</th>
<th>Expected Benefits</th>
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<tbody>
<tr>
<td><strong>Research Data Management</strong></td>
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| As part of a cross-University project, work with relevant stakeholders to implement a RDM solution that meets Research Council policies. | Years 1, 2 and 3 | - Enabling continued grant income  
- Compliance with research funding policies  
- Improved data management practice across the University |
| **Specialist computing training** | | |
| Build a community of practice and training resources to support researchers in use of research computing facilities. | Years 1, 2 and 3 | - Improved research output as postgraduate students and academic staff are better supported and able to effectively use computing resources in their research  
- More efficient use of local, regional and national computing facilities |

## 3. Maximising Efficiency and Effectiveness

<table>
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<tr>
<th>Project title/description</th>
<th>Delivery timeframe</th>
<th>Expected Benefits</th>
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<tbody>
<tr>
<td><strong>Partnership IT</strong></td>
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| Working with departmental IT teams we will migrate commodity IT, for example, storage, compute, network and desktop services currently provided in departments to central IT. | Years 1-3 | - Reduced duplication of effort, therefore more efficient resource utilisation, i.e people, technology, power, space  
- Cost savings due to purchasing economies of scale  
- Cross-fertilisation of ideas between departmental and central IT teams |
| **Enterprise integration** | | |
| We will develop a framework and transition strategy for enterprise integration. | Years 1 and 2 | - Reduced resource needed to maintain, upgrade and integrate business systems, therefore more resource is available for system development  
- More effective system integration to support business intelligence, reporting and reduce duplication of data entry and storage  
- Improved staff and student experience as information is aligned around users’ needs rather than a reflection of the University’s organisational structure  
- Improved services for departments as they no longer need to wait for a VM to be provided  
- Reduced technical administration in IT services, therefore more resource available for value adding activities  
- Ensure that our current system is fit for purpose  
- Streamlining of business processes to reduce bureaucracy  
- Improved integration with Agresso and reporting systems  
- Use of an IDM solution with long term vendor support  
- Improved self-service facilities for user accounts  
- Streamline account provisioning and support faster deployment of SAAS solutions  
- Enable more sophisticated, fine-grained and modular access to University services  
- Provide a central authority for access to services with comprehensive auditing |
3. Maximising Efficiency and Effectiveness continued

<table>
<thead>
<tr>
<th>Project title/description</th>
<th>Expected Benefits</th>
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<tbody>
<tr>
<td>Implementation of a Research Management system</td>
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| Working with academic colleagues and support staff in the Research Finance office, we will implement systems and processes to support the research lifecycle. We will focus not just on the technology but on reviewing and streamlining business processes. | • Reduced administrative burden for academic staff, therefore more available time for research  
• Improved management information to support financial planning and performance management of academic staff  
• Reduced administrative burden in the Research Finance office, therefore more time for value adding activities  
• Reduced risk of non-compliance with research funders requirements, for example, in the areas of financial, ethical and output management |
| Years 2 and 3 | |

4. Providing an Excellent IT Environment continued

<table>
<thead>
<tr>
<th>Project title/description</th>
<th>Expected Benefits</th>
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</table>
| Expansion and upgrade of virtual desktop service | • Secure desktop off campus on non-university owned devices  
• Flexible delivery of bespoke desktop solutions  
• Ability for students to access IT resources and supported software on their own devices |
| Year 1 | |
| Network segregation | • Meets best practice in security  
• Minimises the effect of any breach by making it more difficult for an attacker to leap from one system to another |
| Years 1, 2 and 3 | |
| Guest network access | • Improved service for campus visitors at open days, or at public events  
• Improved reputation of the University as able to showcase other services via on-line services |
| Allow guests to self-register to get onto the campus wireless network. | Year 1 |
| Service monitoring | • Better fault detection to minimise service disruption  
• More sophisticated load monitoring and management abilities  
• Better planning of service changes  
• Generation of service performance and capacity statistics |
| Years 1, 2 and 3 | |
| Embedding ITIL principles | • Sets out service levels  
• Developing a service catalogue |
| Years 1, 2 and 3 | |
| Self-registration of devices on the network | • Reduced administrative burden for departmental and central IT Services staff |
| Removes or reduces the need for devices to be registered by IT Services staff before they can be used on the main campus network. | Year 2 |

4. Providing an Excellent IT Environment

<table>
<thead>
<tr>
<th>Project title/description</th>
<th>Expected Benefits</th>
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</table>
| Upgrade our JANET connection to 10Gb | • Providing sufficient network capacity for research and teaching activities  
• Enhancing the student experience especially for bandwidth hungry or sensitive applications application such as BBC iPlayer, Skype, gaming etc |
| Year 3 of the strategy | |
| Managed laptop, tablet and mobile service | • More secure devices with encryption, remote wipe, and security policies enforced  
• Standard builds for easier management and support, therefore using resource more efficiently  
• Better pricing on hardware and improved service from supplier including special pricing for student and staff personal devices |
| Year 1 | |
### 4. Providing an Excellent IT Environment continued

<table>
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<tr>
<th>Project title/description</th>
<th>Expected Benefits</th>
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</table>
| Upgrade the Heslington West data cabling infrastructure to a standard and capacity to support VOIP and other services Years 1, 2 and 3 | • Network infrastructure able to support Facilities Management devices such as IP phones, access control, CCTV etc.  
• Replacement of old and unsupported PABX for telephony  
• Ability to support higher speed devices                                                                 |
| Training for students and staff on effective use of IT tools Years 1 and 2                 | • Improved student experience as students able to leverage IT facilities to best effect.  
• Improved efficiency and effectiveness of staff as IT is used appropriately and to best effect in all aspects of activity |
| Completion of York Print Plus project Final year of a 3 year project to introduce a managed print, copy scan service to the University Year 1 | • Reduced cost of printing as devices are tailored to departmental need and economies of scale on paper and toner purchases  
• Accurate management information on printing needs and energy saving  
• Reduced burden on departments as devices are managed and supported by IT Services |
| Delivery of a desktop software application virtualisation service Year 1–2                | • Flexible delivery as application is not installed on PC but is streamed to it when needed  
• Quicker roll out of updates to applications  
• Potential for multiple versions of applications available  
• App Store to deliver supported applications to unmanaged PCs, including student Windows devices  
• More stable environment as applications are not installed |
| Continuous service improvement for desktops Year 1–3                                     | • Improve performance, faster log in times, better performance  
• Future OS upgrades (Win 8+)  
• More secure – firewalls, Malware protection  
• Proactive monitoring – prevent issues before they arise |

A roadmap illustrating the sequencing of these projects is provide in Appendix 2 overleaf.