Newcastle University
Review of Information Technology Expenditure

Background
In July 2011 Executive Board agreed to undertake a Review of IT Expenditure within the University. The objective of the review was to recommend ways to improve the University’s value for money over Information Technology (IT) expenditure. The following areas were identified as being in the scope of the review:

- Review IT expenditure and benchmark this against other universities;
- Consider the options for how each major element of IT could be performed;
- Identify areas for cost reduction where little or no detriment to service may result in improved ways of working;
- Review the IT strategy to identify potential areas for improvement;
- Review the approach undertaking to social media and mobile computing;
- Review the use of cloud, data storage, outsourcing and the approach to sustainable IT;
- Review IT procurement.

The review was undertaken by KPMG and ran from August to November 2011, with the Final Report presented to Executive Board on 15th November 2011.

Approach
The approach involved understanding how technology is used across the University through interviews with staff (over 100 were consulted) and a review of documentation therefore assessing both the maturity and effectiveness of IT capabilities, including ISS, the Library, Schools and Institutes.

A data collection exercise was performed with the University to benchmark the 2010/11 IT cost base, age/location/type of IT owned and the roles/numbers of staff undertaking IT functions.

The key activities of the review are outlined below:
Summary of Strengths and Weaknesses

University’s strengths
✓ Stable and scalable ISS provided core infrastructure.
✓ Examples of IT being used as an enabler to support effective teaching, learning and research.
✓ Skills and capabilities of some staff across ISS, the Library, Schools and Institutes.
✓ Examples of local responsive service delivery within Schools and Institutes.
✓ Examples of using outsourcing to deliver improved technology and services to staff and students.

University’s weaknesses
✗ The approach to IT service delivery is incurring unnecessary cost and does not represent good value for money.
✗ Inconsistent service delivery.
✗ Low IT maturity across the University is reducing the overall effectiveness of IT to support:
  - learning and teaching; and
  - research.

The Review emphasised the following as especially impressive:
- The core infrastructure provided by ISS is stable and scalable. Availability of the core infrastructure was 99.85% in 2010/11 which was determined as unique amongst our comparators.

The Case for Change
The Review highlighted the following:

Students
- The University’s current use of technology is impacting on the quality of learning and teaching. This increases the risk of the ability of the University to achieve the 2021 vision and incurs unnecessary costs which do not represent good value for money.

- Inconsistent student experience of IT provision and access to IT has impacted on the NSS feedback scores, which have declined from 92% in 2006 to 82 % in 2011.

- Students unable to obtain a financial statement from SAP

Services
- Inconsistent service delivery which exposes the University to significant operational, financial and legislative risk. Also there was evidence of inconsistent response to IT queries/support calls.

- Key University systems not working as expected.

- Duplicated systems are established, including service desks and content management systems.
- The variable nature of IT support resourcing arrangements throughout the University had led to some single points of failure within academic units.

- Low maturity of IT processes used across the University

**Financial and value for money**
- Spend on IT is low at 4.3% of total expenditure.

- The devolved procurement of IT equipment has led to significant price variances (£1317 in comparison to £640 for an identical laptop).

- The variety of IT equipment purchased (23 types in 2010/11) increased the cost and complexity of support.

- There are 18 server rooms in the University – the suitability of these rooms for this use is variable and unnecessary costs are incurred re power and air conditioning.

**Risk**
- The use of older hardware equipment in some Schools was causing disruptions to learning and teaching (e.g. 7054 desktops have no replacement cycle, 180 servers are over 4 years old and 42% of all laptops are out of support).

- Data is not always backed up, confidential data not fully protected.

- Information security and University’s Intellectual Property are being compromised through the uncontrolled use of external resources such as Google/Amazon. Research grants could be withdrawn for failure to comply with curation policies.

- Over 422 unsecured entry points exist to the University network.

- Systems lack robust testing and are being developed in programming languages that are difficult to support and maintain.

**Research**
- Only 19% of ISS research data storage capacity is currently used, however schools/institutes are contracting with third parties to provide similar services.

- Reduced research focused activity (research staff are involved in delivering IT systems and services).

- Research staff are unable to access key SAP research budgeting reports.

- Research grants may be withdrawn or lost due to the data storage and curation arrangements.
Key Recommendations
Five key recommendations were made which address the University wide use and provision of IT, not just that provided by ISS. They should not be considered in isolation and strong dependencies exist between each. Executive Board has accepted all five recommendations.

1 – Establish a common University Infrastructure:

How:
- Undertake a discovery phase to understand and agree the requirements of the infrastructure with each Faculty, ISS and the Library. It is expected this will last 3-6 months and focus on gaining an understanding of requirements, the costs and resources required.

- Migrate the responsibility for the provision of servers and data storage to the new Newcastle University IT team (NU-IT). This may involve re-using existing equipment and/or procuring new configurations.

- Establish and agree the IT disaster recovery arrangements that will be based on the University business impact assessment.

Benefits:
- University resources can be shared and accessed by all.

- Power and accommodation costs will be reduced.

- Staff and students will experience reduced instances of downtime.

- Data will be stored securely and back up regimes will be consistent.

- New University services can be developed and deployed more efficiently.

2 - Rationalise the IT staff model

How:
- Establish a NU-IT organisational model, including a number of important new roles such as Faculty relationship managers and an Enterprise Architect who is able to link the University objectives and processes to the IT strategy.

- Transition University wide IT staff to an NU-IT reporting line, however IT staff who support local academic systems could continue to be based locally. This should not include the transition of staff who support specialist equipment (e.g. microscopes and specialist scanners). All staff should follow NU-IT policies and procedures (e.g. information security, service and change management).

Benefits:
- Improved staff and student experience as a result of the collaborative approach to IT delivery across the University.
Learning, teaching, research and other University staff are able to focus on their primary role, as responsibility for IT delivery is removed.

Single points of failure are reduced. Staff have the opportunity to improve their skills through knowledge transfer and the provision of a professional development programme for all University IT staff.

3 - Professionalise service management

How:
- A service management framework should be implemented across the University. This needs to ensure that appropriate consideration is given to key service processes, including incident, event, service catalogue, service level, configuration and change management.

- New technologies should be considered and implemented. This should include remote assistance and increasing self service for staff and students.

- Consideration should be given to the purchase of a new service desk system and the establishment of a two tier service desk support model.

Benefits:
- Services provided to staff and students will be fit for purpose, consistent and reliable.

- Responsiveness to staff and student queries will be improved.

4 – Develop a University wide IT Strategy and Governance Model

How
- Agree an Executive Board member and develop a University wide IT strategy through detailed discussions with each Faculty, ISS and the Library.

- Provide a clear mandate and supporting budget for NU-IT, by clarifying the type of IT services that they should provide to the University.

- Develop an overall understanding of the University wide systems and how these support University activities. Develop a high level architecture vision and a supporting set of standards that should be adhered to by all.

- Strengthen the existing governance arrangements and establish a Change Control Board that is able to support SISG and effectively prioritise NU-IT effort in the future.

Benefits:
- Provides a more effective prioritisation of University resources, leading to a less disparate IT environment and a more integrated approach being taken to support learning, teaching, research and services.

- Opens more channels of communication for the University to discuss IT and understand the ‘art of the possible’.
- Provides a clearer process to obtain and prioritise funds for IT spend which minimises unnecessary debate at SISG, reducing the risk that the University’s investment in IT does not generate value and allows for more informed decision making.

- Delivers improved systems to staff and students through a robust understanding of how IT supports University activities (allowing the University to understand the impact of technology changes).

5 - Realise IT procurement efficiencies

How:
- Procurement to consult with each Faculty, ISS and the Library to agree a standardised list of IT hardware that is fit for purpose (e.g. Apple iPads and laptops), however allowing variation with justification. The University IT procurement policy should be enforced.

Benefits:
- Reduces the cost of procurement gained through economies of scale. This mandates the route by which academics and researchers must procure IT, although provides freedom to procure non-standard equipment with justification.

- Reduces the total cost of ownership through a smaller range of devices that are required to be supported and maintained. Furthermore, the staff and student experience is likely to be more consistent (e.g. standard University cluster and classroom machines).

- Fit for purpose equipment provided through ongoing consultation with University stakeholders.

Summary of Other Recommendations

1- Cloud Computing
- Establish a University wide management strategy that involves:

  a) Determining existing University solutions and utilising these where appropriate.
  b) Considering a modular design for University architecture to facilitate future outsourcing opportunities.
  c) Ensuring that contracts with third parties need to fully consider information security, data protection and intellectual property rights.
  d) Performing a risk assessment of the University’s existing use of cloud computing.

2 – Social Media and Mobile Computing
- Agree a mobile computing and social media strategy, developed in consultation with staff, students and other stakeholders.

- Consider the further installation of power sources and secure storage for staff and student mobile devices

3 – Green IT
- The draft Green IT strategy produced by ISS should be updated in light of this report.
- The rollout of Microsoft System Centre following the establishment of the common University Infrastructure and consider the rollout of Windows 7.

- Establish a single device policy and standard IT equipment catalogue that considers Green IT.

4 – Information Security
- Establish a senior information security owner and management framework to include the update of the University’s information security policies/procedures. The management of Information Security should be brought under the control of NU-IT and a supporting budget agreed.

- A periodic programme of network penetration testing should be performed to identify security weaknesses.

5 – Change Management
- Establish a NU-IT change management policy that includes common development standards, risk assessment requirements, the approvals process and testing regime.

- Introduce automatic testing tools for key systems to reduce the reliance on manual procedures.

6 – University Project and Programme Management
- Develop a high level project and programme methodology to include a suite of tools and templates.

- Ongoing training should be provided for all University Project Managers.

7 – SAP Management
- Establish a SAP strategy that clearly outlines how SAP will support the University’s objectives and develop a supporting roadmap.

- Procurement and NU-IT should perform a cost benefit analysis for the outsourcing of SAP support and development. The University should continue to discuss the option of a shared service with other organisations

Timescales
The likely timescales for implementing the recommendations are outlined below. The success of this implementation is dependent on strong Executive Board support.
IT Maturity

The review identified the collective strength or weakness of the maturity attributes across twelve IT capabilities. The assessment identified the University as operating between level 1 (Initial) and level 2 (Repeatable), which is comparable to other University’s who utilise a devolved IT service delivery model. It was viewed that a higher education institute should aim to achieve level 3 (Defined).

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<th>6 to 12 months</th>
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**IT Maturity**

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