Planning and Budgeting 2014/2017
Final Submission March 2014

“A Knowledge Management and Information Service appropriate for supporting and enabling learners, researchers and teachers in a world-class University”

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Executive Summary
This plan sets out the key strategic goals for Information Services over the period 2014-17. In identifying those goals, Information Services has considered the University of Edinburgh Strategic Plan 2012-16 and the more recent discussions at PSG and Court on the main developmental areas for the University over the next 10 years. Some of those discussions are ongoing, but it is clear that the next three years will be a transition period as we set the foundations for the shape of Information Services into the longer term.

Strategic Goals
Our aim has been to identify those strategic imperatives that will drive the necessary changes to support the University’s strategic ambitions, whilst sustaining and enhancing what is a complex and valued portfolio of existing services. In doing so, we identified 6 strategic goals which will begin to lay the foundations for achieving those ambitions:

1. Innovative technologies and spaces for learning and teaching
   Technologies and content that enable academic staff to deliver a modern learning experience for students, within both on-campus courses and those fully online;

2. World class digital and physical library collections and services
   Rapid and seamless discovery, access and use of digital and physical collections;

3. Expanding support for digital research
   Robust and secure digital research data storage for all and support to manage it for the longer term; best-of-breed online tools to support collaborative research;

4. Excellent network, telecommunications & server infrastructure
   Resilient and robust IT infrastructure for a University that is distributed in space and time;

5. Robust IT and Information for a digital university
   Large scale enterprise IT applications; mobile computing; extracting and interpreting management information; help for users to make the most of all our services; and ensuring operations through adverse circumstances;

6. Security and privacy protection
   Underpinning the University’s risk management and legal compliance; protecting individuals and the University’s reputation.

Priorities
During the period of this Plan, 2014-17, much of our development work will be focused on the key areas of data science and online learning. Whilst both these areas are supported more generally by goals 4, 5 and 6, data science is supported specifically by goal 3; and online learning specifically by goals 1 and 2.
We have already invested heavily in the Research Data Management and Storage service and this will continue with further injections of capital proposed in 2014/15 and 2016/17. We also propose to create an IS data science support service to provide direct support into new research and teaching.

Information Services has been closely involved with the development of online education through the Distance Education Initiative (DEI) and more recently the creation of MOOCs. DEI will enter its last year of the Phase 1 initiative with £1m being invested in ongoing and new projects. The proposal for Phase 2 recognises the need for Online Distance Learning programmes to become an integral part of School and College decision making, whilst maintaining the opportunities provided by a centrally run competitive bidding process. The drive to increase online participation requires investment not only in those things related directly to the technology but also in the areas that facilitate the creation and delivery of the online course. The contribution of the digital library collection to the delivery of online courses should not be underestimated.

Almost 85% of the current £5.2m library materials budget is spent on born-digital acquisitions. As the University moves towards increased provision of on-line education, the requirement for supplying digital resources will intensify. Unlike physical books and journals, e-versions attract 20% non-recoverable VAT; and licensing costs are significantly higher than the cost of a physical copy placed on a shelf.

During the Round Table consultations all 3 Colleges emphasised the need to place the funding of library materials on a sustainable footing that does not require annual re-negotiation. It is not lost on the Support Group that the proposed increase in funding represents a significant step change for the University. The main driver of that step change lies in the provision of the digital resource that enables integration of materials into online programmes and provides access to online materials from wherever staff and students are at home, on-campus or while travelling.

For these reasons, Information Services considers that the proposed increase to the library materials budget is a key priority for this plan.

There are a number of strategic investments proposed throughout the plan. In each case, these are beyond the current capability of IS to fund from its existing budget. Efficiency gains amounting to 10% over the period of the plan are required simply to maintain existing services at their current range and quality.

In conclusion, the proposed strategic direction of the University is an ambitious one. Areas such as online education and data science are demanding of the services we in IS deliver as part of the core business. In this Plan, we have focused on where we believe the impact of those ambitions will fall most heavily and where IS services are best placed to contribute to the achievement of the University’s strategic aspirations. As a consequence, our Plan is also an ambitious one; but one that we are confident will deliver an IS capable of delivering the support required by a world class university in the 21st century.
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IS Plan 2014-17
The University of Edinburgh Strategic Plan 2012-16, sets out an ambitious path that looks ahead 4
years, and sets the foundations for the University’s longer term growth and success. It states the
University’s mission as:

“the creation, dissemination and curation of knowledge”.

As with our 2013-16 Plan, we have interpreted that University Strategy into the services and facilities
we in IS must provide to support the University in the achievement of its objectives.

We anticipate that the University will continue to expand, in student and staff numbers and in the
diversity of learning and teaching, in research, and in knowledge exchange. Our existing services
must expand appropriately, and in some cases transform, to keep pace and maintain quality, whilst
always seeking economies of scale and efficiencies through automation. Enhancement of our
services will be continuous, always against need but also against the benchmarks being set by our
peers amongst the world-leading universities; incorporating, and where appropriate setting,
recognised professional standards for IT, library and online learning services. The services we offer
to national and international communities through the work of Digital Curation Centre and EDINA
bring us deeper knowledge of activities in the higher education sector. We shall evaluate our
progress through feedback from our user communities, value-for-money measures and benchmark
reports.

Over the next 3 years we shall set the foundations for the shape of Information Services into the
longer term, ensuring that our services meet the needs of the academic communities as they change
and develop. This will be effected through major projects that will enable us to undertake the large
scale investment necessary to transform both our own services and those of other academic and
administrative business areas.

Our strategic objective is that, by the end of 2017, we shall have substantially enhanced the current
wide range of IS services and facilities, to enable staff, students and collaborators to teach, study
and carry out research more efficiently and more effectively at any time, in any place and with any
device. Consequently, other service providers in the University will be enabled to transform their
services by taking maximum advantage of the digital technologies provided by Information Services.

We have reviewed our 2013-16 plan analysis of ‘Run’\(^1\) and predicted ‘Grow’\(^2\) activities to ensure that
the core allocation, plus uplifts combined with income earned from internal and external sources,
remains sufficient to operate within a sustainable financial environment. These activities and their
2013-14 budgets are set out in our Service Catalogue Appendix 1. We will assess these activities
continuously to ensure they represent good value for money and expect to achieve efficiencies in the
coming years. Evidence of our efficiency gains leading to absorption of growth, without
commensurate additional costs for 2013/14, can be found on page 19.

\(^1\) ‘Run’ comprises keeping existing services and facilities operational, compliant with legislation & reporting
and capable of supporting current user numbers

\(^2\) ‘Grow’ is the expansion needed in current services and facilities to absorb increased demand. This may
emanate either from more or different users as University business changes and expands; or from existing
users requiring enhanced or additional service functionality.
We aim to fund as many **Grow** activities as possible from our core allocation and realised efficiencies. However, given our current portfolio, it is likely that in the medium term this will be insufficient and unsustainable, as the requirements of the University increase and the impact of **Grow** and current **Transform** activities become part of **Run**. **Grow** and **Transform** developments of a larger scale are beyond the capability of IS to resource from its annual funding allocation. These strategic developments are highlighted within the plan alongside the additional investment required.

To develop this plan, we carried out a series of consultation workshops with academic staff, support group staff and students; in addition to round table planning meetings with the three Colleges and the Support Groups. Based upon those inputs, and taking into account the recent discussions at PSG and Court on the main developmental areas for the University in the next 10 years, the following goals and supporting priorities are proposed that will enable us to support the University’s strategic ambitions for 2014 and beyond; and begin to lay the foundations for the work which will be needed to achieve the vision. They will be delivered through collaborative working within IS; with the Schools, Colleges and Support Groups; and with external audiences and partners including the Jisc.

1. **Innovative technologies and spaces for learning and teaching**
   Technologies and content that enable academic staff to deliver a modern learning experience for students, within both on-campus courses and those fully online;

2. **World class digital and physical library collections and services**
   Rapid and seamless discovery, access and use of digital and physical collections;

3. **Expanding support for digital research**
   Robust and secure digital research data storage for all and support to manage it for the longer term; best-of-breed online tools to support collaborative research;

4. **Excellent network, telecommunications & server infrastructure**
   Resilient and robust IT infrastructure for a University that is distributed in space and time;

5. **Robust IT and Information for a digital university**
   Large scale enterprise IT applications; mobile computing; extracting and interpreting management information; help for users to make the most of all our services; and ensuring operations through adverse circumstances;

6. **Security and privacy protection**
   Underpinning the University’s risk management and legal compliance; protecting individuals and the University’s reputation.

The scope, targets and progress measures for these six areas of our work are detailed in the following pages.

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3 **‘Transform’** is the introduction of new services and facilities to enable new activities; or to convert existing services and activities into new forms (e.g. paper to digital, classroom learning to online learning).
1. Innovative technologies for learning and teaching

Context: over the coming years we know that the use of IT in learning and teaching will continue to grow, may grow rapidly and may be even more far-reaching in its impact than heretofore. The range of applications and devices brought by teachers to their teaching and by students to their learning will expand, so that what we provide within the University will only be the core of the online services being used. We shall need to ensure that our core services are those that are needed, in both scale and range, and that we support, rather than provide, best-of-breed applications on the internet.

We anticipate that VLEs will remain at the core along with blogs, e-portfolios, virtual classrooms, e-assessment and wikis, integrated together and accessed by either single sign-on through MyEd or independently. We shall increasingly gather data from these systems to provide the basis for learning analytics to support individual students, individual teachers and the University to achieve the most from their efforts. Teaching rooms will increasingly be equipped with AV beyond the simple data-projector and PC, to support routine use of event capture to video, and hybrid physical and virtual classroom teaching. Solo and group study spaces in libraries, microlabs and study centres will similarly need to be well equipped, and sufficient in number.

The steady expansion of taught, fully online learning will continue with more staff and students teaching and studying in that mode. Hybrid programmes will begin to emerge with both on-campus and off-campus programmes.

To support these developments, we shall:

- Continue to maintain and enhance the core technology services such as the VLEs and associated applications, increasing capacity ahead of demand especially for online distance courses. With IAD we shall continue to offer training for staff and students, through self-help online and on-demand as well as face-to-face courses. This will enable us to maintain our support for MOOCs as well as use of technology in on campus programmes (Run/Grow).
- Continue to work with eLearning Professionals and Practitioners Forum (the very active community of practice we established to support those working with technology in education) to ensure that new applications are added as they reach maturity or can be supported with agility (Run/Grow).
- With funding from Estates Committee as part of the IT infrastructure and building fabric renewal, we shall maintain AV technologies in teaching rooms, including videoconferencing facilities for virtual classroom expansion, lecture capture, and personal response systems (‘clickers’) (Run/Grow).
- Again with Estates Committee, we shall ensure the quality of open access study spaces, libraries & microlabs is maintained at the right level for the aspirations of students and staff. A replacement cycle for equipment originally funded from building project budgets, will be key to ensuring quality is not allowed to fall (Run/Grow).
- Expand video & multimedia production, capture, storage and replay for online and on-campus courses. This expansion is needed to keep pace with demand from Schools for facilities to make short videos (e.g. for MOOCs), to capture lectures and other events, and make them available to students, and open to the world (as OER) via YouTube and iTunesU. At present capacity is limited, and the equipment is ageing and not widely distributed. The service will provide a secure location for video files, captured from equipped teaching rooms.
and from mobile devices, and give a searchable repository for long term archive. The service will commence in 2014-15 and expand through 2015-16 to steady state (Grow/Transform).

- The following four items are all ‘Transform’ and are detailed in the separate proposal on a more digital education portfolio (Appendix 4).
  - DEI phase 2 – embedding and sustaining progress – marketing and enrolment expansion.
  - Fully online courses for on-campus students.
  - Development of joint online courses in partnership with preferred peer universities.
  - Infrastructure and training/support for online PGR – selection of applicants/support through studies/thesis prep and submission/viva exams.

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<tr>
<th>Strategic Investment Proposal 2014-17</th>
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<tr>
<td><strong>DEI Phase 2</strong>: £100k pa for direct investment in Schools developing new, or extending the enrolment on existing, ODL programmes through a competitive bidding process and targeted investment. £50k pa for investment into central support services to maintain training, student support and technology expansion. <strong>Total cost p.a. £150k from 2015-16.</strong></td>
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<td><strong>Online Courses</strong>: - Development of fully online UG courses, development of joint online PGT programmes and online PGR training and technical services: <strong>Total cost p.a. £100k from 2014/15.</strong></td>
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<td><strong>Video Service</strong>: - Provisioning and operations for video capture, storage, search &amp; publication service, software based, from users mobile devices and with hardware systems in major teaching rooms (subject to Estates Committee allocation of refurbishment budget) <strong>Cost per annum</strong>: £550k for equipment and support in 2014-15; £245k in 2015/16; and £150k in 2016-17.</td>
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**Strategic Benefits:**

- Enables flexibility of study.
- Expands and enhances the distance education provision.
- Enables staff to embrace new technologies as part of enhancing the learning experience.
- Through MOOCs, provides open access to educational resources.

**Measure of success (for the University):**

**DEI**: 6,000 students enrolled on online Masters level courses by start AY2017-18; at least one ODL course in each School/subject area; 5 new examples of online Masters programmes with total student enrolments of >300.

**Online Courses**: - at least 1,000 UG students taking internal taught online courses as part of their degree programmes by start of AY2016-17.

**Joint online courses**: - at least one new joint online programme ready to launch by AY2016-17.

**Distance PhD supervision**: - training and facilities to support selection, enrolment, academic supervision and examination for an ‘unlimited’ number of off-campus PhD students.
2. World class digital and physical library collections and services

The University’s Library, Archive and Museum collections and services are at the heart of teaching, research and engagement at Edinburgh, with an international reputation for innovation, quality and excellence. Our goals will be to maintain, develop and make available high quality collections, excellent services and study spaces while pursuing first-rate engagement.

i. Library Materials Purchasing Power

Following on from Round Table Consultations, all three Colleges emphasised the need for the funding of library materials to be on a sustainable footing that does not require renegotiation on an annual basis; and that is sufficient to provide a growing quality collection that meets the needs of local teaching and research needs. It is therefore proposed that the existing materials budget be extracted from the IS annual budget allocation, currently £5.2m4, and be treated as University top slice of £7m per annum, for each of the 3 years of this plan. It is not lost on the Support Group that this represents a significant step change for the University. However, it reflects a step change that is already impacting on academic libraries across the world.

The library plays a significant part in the learning experience of the on-campus student. Results from 2013 PTES indicate an overall dissatisfaction with the electronic and print collections. Students from all 22 Schools rated the print collection as insufficient for their needs with scores ranging from 53% to 78%; whilst students from 16 Schools rated the electronic collection as insufficient with scores ranging from 67% to 84%. A similar pattern is illustrated in the PRES results with students from 18 Schools considering the electronic collection insufficient (49% to 82%); and students from 21 Schools considering the print collections insufficient (41% to 76%). From the International Student Barometer, students from 7 Schools cited dissatisfaction with on-line library (they were not asked about the print collection).

Staff comments on the collections were collected via the LibQual+ survey, and for both print and electronic collections, indicate that these are "perceived as less than the minimum required". These are the only staff responses which fall into this red zone category.

Access to electronic resources has changed the way much of the academic community works. With the advent of online courses, the concept of "library without limits" is no longer an aspiration but a necessity. This allows the integration of digital resources into course programmes and enables access to online materials from wherever staff and students are at home, on-campus or while travelling.

Almost 85% of the current £5.2m is spent on born-digital acquisitions. As the University moves towards increased provision of on-line education, the requirement for supplying digital resources will intensify. Unlike physical books and journals, e-versions attract 20% non-recoverable VAT; and licensing costs are significantly higher than the cost of a physical copy placed on a shelf.

The move to a £7m p.a. budget will enable library purchasing to make the step change necessary to support the move towards more courses online.

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4 2013/14 Library materials budget stands at £5,217,131
This solution assumes that publisher inflation is no higher than 6% per annum for the period of this plan. Should this element increase beyond 6%, an assessment will be carried out to advise on whether or not an additional adjustment may be required before the end of the three year period.

**Strategic Investment Proposal 2014-17**

1. The library materials budget be extracted from the IS annual budget allocation, currently **£5.2m**
2. **£1.8m** be added to that sum giving a total library materials budget of **£7 million per annum** to be top sliced from the University budget. Over the 3 years of this plan, this will provide sufficient resources to deliver a growing collection that matches those of our comparators, while addressing the needs of our researchers and learners.
3. The library materials budget allocation to be **reviewed during 2016** to ensure the needs of the University community continue to be met; and to advise on any adjustments to the £7m per annum that may be required.

**Strategic Benefits:**

- **Addresses systemic underspend in Library Collections in comparison to Russell Group peers (see Collections Review (2012)).**
- **Allows the Library to keep pace with publisher uplift and VAT erosion due to large-scale shift to digital content (no VAT exemption).**
- **Irrigates DEI, provides new content for Chancellor’s Fellows and supports rise in new courses (UG/PGT/PGR).**
- **Develops and maintains the rich and varied assets of the university’s collections.**
- **Contributes to outstanding student experience on-campus and on-line.**
- **Increased satisfaction with collections contributes positively to student survey responses.**
- **Supports new and emerging areas of research, including cross-disciplinary research.**

**Measures of success:**

By **2017**, satisfaction with the library collection is **90%**, as demonstrated through surveys and comparisons with our competitors.

By **2017**, the unmet demand for new content is reduced considerably (2013/14 unmet demand as of Jan 2014 is equivalent to 30% of budget).

**ii. Next Generation Library Management System**

The 15-year old Voyager Library Management system is no longer fit for the purposes of efficient management of a growing collection with an increasing emphasis on electronic materials. A new ‘next generation’ Library Management System (LMS) based in the cloud will manage print, electronic, subscription and local materials, whilst being fully integrated with the enterprise systems. Most of the effort required to implement this large-scale system will be absorbed within IS although there will be an additional cost whilst both systems are run for a period in parallel. IS had planned for the replacement of the Voyager system as a reserves drawdown.
**Strategic Investment Proposal 2014-17 (Reserves drawdown)**

**Library Management System:** A total draw down from IS reserves of £300k to fund the cost of migration to the new system **Cost per annum:** £200k in 2014/15; £100k in 2015/16.

**Strategic Benefits:**

- *Puts in place technology with the power and resilience to provide easy access to resources and supports on-campus education and research; DEI development and delivery; and mobile working.*

**Measures of success:**

The new system will be procured and implemented ready for the 2015/16 academic year.

After implementation 10% to 20% efficiency in processing and workflow operations, including synchronisation with Finance, IDMS and external suppliers.

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**iii. Other key performance areas for library services during 2014/17**

**a) Digital Asset Management (DAM):** Creation of a comprehensive digital asset management strategy that includes aspects such as digitisation, management, discovery, and preservation, along with the delivery of systems to support these goals. Synchronisation with emergent services such Research Data Management.

**b) Supporting Scholarly Communications:** Support for all aspects of the scholarly communications environment, from hosting of open access journals and provision of copyright advice, through to funder open access compliance and post-publication bibliometric analysis services.

**c) Academic Engagement:** Development of internship, volunteer and studentship programmes and the facilities to support these, extension of teaching and academic liaison programmes, establishment of outreach service with widening participation initiatives, and development from internships to fellowships.

**d) Research Support and Projects:** A combination of physical, curatorial and digital facilities and expertise directed towards the exploitation of information-rich assets for research, including the rare and unique material contained in the University’s cultural and heritage collections.

**e) Public Engagement:** Assisting the university to achieve its strategic themes of lifelong community, social responsibility and equality and widening participation, using collections-based activity to interact with the public and generating mutual benefit through the sharing of knowledge, expertise and skills.
3. Expanding support for digital research
One outcome of the recent discussions at PSG about major research directions for the University has been agreement that the University should become a world leader in data science (‘big data’, ‘data-driven research’). This will build upon its recent gains of the Farr Institute, the Administrative Data research Centre and CHSS example, plus a likely Higgs Centre, which follow on from the national supercomputer ARCHER and the EPSRC Research Data Facility. At present IS is involved in the planning for data science, and we have developed ideas about how best to underpin University-wide support for research computing and data management/analysis. At present, we operate the High Throughput Compute facility (formerly ECDF) and offer a research data storage and management service; these services are for all staff and PGR students, and will form much of the basis of data science activity for many people in the University. These must be maintained and refreshed. In addition, a new data science support service could add value to that of academic activity in the big data centres by providing training, updating courses, advice and direct support for use of applications on a University-wide basis to staff and students who need to develop their data science skills. This service would draw on the expertise of those already skilled in these areas, and from outside the University. Between 2015 and 2017 we need to:

- Refresh the Edinburgh High Throughput Computing (HTC) equipment (2014 - £1m capital); without this refresh of a very heavily used central service, research groups will either have to acquire and run their own service or not have access to such a service if they cannot acquire grant funding.
- Anticipate that if data science expands across the University, there will be an increasing number of individuals who will exceed their current 0.5TB allocation of data storage, especially PGRs who are most likely to be at the forefront of this work. We invested £1m capital in 2014-15, and will acquire 1.4PB of storage from EPSRC RDF (value ~£0.6m) in 2015-16. In order to match the demands of users, ensure long term data security and access and to meet the target storage space of 1TB/user by 2017, we estimate that we will need to add another 1.0PB in 2016-17 - £1m capital.
- Create a data science support service, consisting of new specialist staff with skills in data handling/analytic methods/preservation/access/re-use to provide direct support into new research and teaching (at UG/PGT/PGR levels). The initial team will contain one senior member of current IS staff as lead; one new recruit to focus on the technology developments and University infrastructure requirements to enable large data flows to be managed, liaising with the big data centres, plus three postgraduate level recruits to focus on support for each College. In 2014-15, IS will provide the team lead, and would wish to recruit the technology specialist, adding the 3 College supports in 2015-16 onwards.

### Strategic Investment Proposal 2014-17

- **Refresh HTC:** - £1m Capital Investment in 2014/15
- **Data Storage:** - £1m capital investment in 2016/17
Strategic Benefits:

- Supports new and emerging areas of research.
- Contributes to sustainable use of equipment and efficiency in research costs.
- Adapts the infrastructure to meet changing needs of researchers.
- Enhances the University’s reputation nationally and internationally by providing leading edge research support services to the Edinburgh academic community (e.g. aiding recruitment of high-quality researchers).

Measures of Success:

RDM storage, management and sharing services meet the needs of 80% of active researchers in the University.

The RDM services allow university researchers to comply with the policy requirements of research funders (e.g. RCUK).

An increasing number of research grant applications submit additional costs for storage above the minimum free allocation provided by the University.

The Data Asset Register provides a catalogue of the type, size and location of all significant research data produced at Edinburgh.
4. Excellent network, telecommunications & server infrastructure

IT infrastructure is a mission critical component of a modern university. It touches every part of the University’s business, underpinning its research, teaching and learning, and its administrative processes. It requires many kilometres of underground fibre, hundreds of wireless access points, large capacity and performance servers and data storage arrays, and telecommunications equipment. The scale of our infrastructure has increased significantly over the last decade and, as the University projects further expansion over the next decade, the resilience and agility of the IT infrastructure will be a key factor in the delivery of the core business.

The IT infrastructure for a large and dispersed university such as Edinburgh extends beyond these classic IT features to include the technology in teaching and the technology in study spaces for group work and presentations. The common thread is that these are intertwined with the physical estate – the buildings – and many are designed into these buildings when they are created or redeveloped.

To recognise this close relationship between buildings and IT infrastructure, we have agreed that provision of IT infrastructure, as defined above, will be made from the budgets overseen by Estates Committee. Estates Committee members need to be confident that the plan for investment in IT infrastructure is robust on a medium to long term timescale, is aligned with the Estate Strategy, and is value for money. To that end, there will be a review of the IT infrastructure commencing the second quarter of 2014. The outcome of the review will be a roadmap for IT infrastructure that can form the basis of funding proposals over the next 5 years. As such, the investment requirement for the capital elements of the infrastructure is not included in this plan.

IS will increase its investment to c. £2m p.a. in the run/grow non (or small)-capital elements of the infrastructure. This area has grown substantially over the last 5 years and includes software licenses (new and increased volume thereof); software maintenance; hardware maintenance; operating systems; the move to cloud hosted services; the refresh of computers in IS study spaces/libraries; and the acquisition/refresh of self-issue/return machines. During the period of this plan we will move the library management system to a hosted cloud solution. The move to cloud based solutions reduces hardware costs but incurs licence costs which are not considered as capital.

Strategic Benefits:

- Enables greater integration of IT infrastructure and major equipment procurement within the overall estates programme.
- Enables consistency and continuity in quality and experience across all elements of physical, IT and library infrastructures.

Measures of Success:

We will expand the capacity and capability of our virtual server infrastructure, continuing to reduce the number of separate systems to help reduce both costs and to improve our power requirements. We will continue to offer easily used virtual servers for school use to further improve power usage and reduce costly duplication in the institution.

As JANET changes we will work to ensure that the service we currently enjoy is preserved and will position ourselves to minimise the effect on University-facing services of the possible loss of the JVCS funding.
5. Robust IT and Information for a digital university

The vision for the future is that members of the University, our staff, students, alumni, applicants and visitors or associates, will have access to the services that they need ‘anytime, anyplace’ on a device of their choice; and that those services will be easy to use, integrated and secure.

Increasingly, we will move to external cloud hosted services to enable us to respond more quickly to changing needs whilst taking advantage of economies of scale, robust delivery mechanisms and freeing us from the burden of routine maintenance.

The landscape of enterprise applications is large and complex with more than 200 applications and a growing user base in excess of 250,000 people. Most of the applications are running from our premises. We have identified our top 12 highest priority services and established a governance process through the IT Committee for maintain that priority order. Our high priority services are dual sited to provide disaster recovery and resilience so that we can achieve availability approaching 99.9% i.e. less than 9 hours per annum of fault related down time. Many of these services require extended planned downtime to do maintenance e.g. applying security patches and manufacturers’ changes. Over the next 4 years we will implement new approaches and services for all our high priority services that will enable reduced planned down time and automated recovery in the event of disaster. We also expect to spread the use of these techniques into our lower priority services.

Working with our partners in Student Academic Services Group and Corporate Services Group there will be continuous improvement within the applications portfolio. As the portfolio has grown and as the external compliance agenda has significantly increased we have had an increasing burden of maintenance and compliance work. It is our aim to keep investing in this area so that we can keep about one third of our development and implementation effort available for improvements which are either related to growth in the University or are aimed at service transformation. In addition to this core funded activity there are a number of significant projects to promote major change where IS is the technology partner:

- Student record – self-service for students and a review of assessment leading to new processes and improved outcomes and ultimately student satisfaction. Partner Registry.
- Finance systems –This area is being reviewed at the time of writing, it is expected that there will be significant change in this area in the next 4 years. Partner Finance.
- Business Intelligence and Management Information – building the institution’s capability is being led by GaSP with IS providing technology components as needed.
- University web site - IS is working to deliver a next generation web site with a new information architecture and underlying content management system that will extend the current web site, deliver better to mobile devices and integrate more closely with MyEd.

Our estate of users, applications processes and PCs needs to operate in an integrated way, such that data are only entered once. We have well established golden copy rules that mean our data flows are generally good, however many are operating on overnight batch processes. Increasingly this does not deliver the expected user experience and over the next few years we need to both increase the speed of integration to ‘near real time’ and reduce the complexity by removing point to point connections and establishing data services that can be reused and consumed by many.
We currently support c.12,000 PCs with our managed desktop service for Windows, Apple OSX and Linux. As users adopt more mobile working and learning patterns these will lead to a more diverse range of devices from which people will want to access their services. We do not see this diversification reducing the need for supported desktops, more that the range and number of devices we deliver services to will increase. We will provide a wide range of teaching and learning software either virtually or physically to users’ own devices, where licenses permit. We expect to see a trend of delivering more desktop applications in this way giving us greater flexibility and improving services.

**Strategic Benefits:**

- *Ensures we have information we need to support learning, teaching, research and effective decision-making.*
- *Identifying future technological developments and positioning ourselves to respond to these rapidly and flexibly.*
- *Adapts our infrastructure to meet the changing needs, approaches and working patterns of our diverse communities.*

**Help and Advice**

The increasing trends for more mobile working on and off campus from both University-owned and personal devices, together with growing user communities⁵, and a gradual movement towards cloud and hosted solutions, will put added emphasis on the self-help and frontline help services.

Wherever appropriate, we should integrate our Help services with those of other support groups and Schools to enhance the user experience, simplifying the processes and establishing golden-copy of information. We anticipate closer working with Student Information Points, the student support network and enhanced interactions and communications with EUSA by closer working with their class representatives’ forum.

Our IS Helpline has pioneered new best practice in incident, problem and more recently change management developments on our Unidesk service. We will build on this platform to enhance further the processes on managing service changes and especially the user communication aspects around planned and unplanned events on the array of IS services. We will embellish the alert/announcement facility and ensure that we maintain consistency across all communication channels adopting language which is clear and concise and appropriate for the user communities affected.

We will maintain our face-to-face presence at the ten Help Desks at our Library sites around campus and extend the laptop clinic model to be available at multiple sites in recognition of the BYOD agenda (bring your own device).

Classroom style training will be maintained but with a bias towards taking specific training on location at a time when it is required as opposed to annual diary of standard courses provided

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⁵ namely, applicants, students (including online distance learners) and alumni
centrally. More development of worthwhile online materials is a primary requirement both for on-campus and distance learners.

Alongside these day-to-day help service improvements we will adjust our consultancy services to incorporate an improved relationship management agenda with Schools and support units. The inclusion of an SLA module (service level agreement) onto the Unidesk service in 2014-15 will provide a key building block in this respect. The exchange of information, re: developments within IS and on IT and Library initiatives and requirements within units, remains a priority in keeping awareness levels high among staff of any future changes.

**Strategic Benefits:**

- **Contributes to outstanding student experience on-campus and on-line.**
- **Increased satisfaction with IS services contributes positively to student survey responses.**

**Measures of Success:**

We have adopted the universally-accepted Capability Maturity Model Integration (CMMI) ratings that provides a measure of process maturity within an organisation and propose by **2014-15 to achieve a rating of 4.0** for incident management/Service Desk up from 3.0 in 2011 (1.5 in 2008) and **a rating of 2.5 for change management up** from current rating of 1.0.

Self-help pages – increase usage (average) each year 10%.

Satisfaction with the Help Services - 86% by 2017.

Calls received by phone no more than 10% by 2017.

Library material borrowed by self-service - 90% by 2017.

Library material returned by self-service - 80% by 2017.

Satisfaction of IS training courses delivered face-to-face - 95% by 2017.
6. Security and privacy protection

Data has to be held securely so that users have confidence that when they want to use it is available, and has not been modified or viewed by unauthorised people. The risks of attack continue to rise and the damage from either a significant breach of security or a significant loss of information, personal or otherwise confidential, can be extremely high from both reputational and legal perspectives.

There is a need to make an in-depth survey of our IT systems to give a clearer understanding of where specific risks may lie. Steps, such as a second factor authentication, can then be implemented for users who present a higher level of risk to the University. In conjunction with this enhanced level of user education will need to be performed so that individual users realise the risks to the institution that they are taking when not taking the appropriate security measures.

Intrusion Detection System (IDS)\(^6\)

By implementing an IDS, risk in the University's network environment can be better managed without impacting business processes. Similar to the University's physical security, an effective IDS can alert that an attack is taking place which enables necessary human intervention to prevent the attack from succeeding.

The total effort necessary is difficult to judge at this stage but it is estimated that a total cost, including staff effort would be £200k in the first year and a further £200k in the two years following.

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**Strategic Investment Proposal 2014-17**

**Intrusion Detection System: - Cost p.a. £200k commencing 2014/15.**

**Strategic Benefit:**

- Greater certainty that the University is protecting itself from Cyber Risks and hence potential damage to reputation and/or fines from the Information Commissioner.

**Measures of Success:**

We will benchmark the University’s success in reducing the incidence of compromised systems against peers through the JANET CSIRT aiming to be in the top quartile (successful reduction).

**Authentication**

To ensure that our central authentication system remains secure and fit for purpose, we will add the facility to provide two factor authentication to EASE, in a manner that can be targeted to either particular systems or to a set of individual users. We would expect and encourage the use of Shibboleth and the UK Academic Federation to expand further and over a period expect most systems to support that authentication.

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\(^6\) An intrusion detection system (IDS) is a device that monitors network activities for malicious activities or policy violations.
Projected space Utilisation and Capital Investment Considerations 2014-2025

Information Services’ footprint continues to evolve aligned with the 3 main principles agreed by our Space Strategy Group, which state that our use and occupancy of space must:

- Provide first class facilities that enhance the teaching, learning and research experience of all our users;
- Provide the strategic flexibility to enable IS to meet the challenges of supporting a world class university in the 21st century;
- Provide an effective and efficient working space for all our staff.

To achieve this we will consolidate user access points and IS Staff at 2 main sites, Kings Buildings and the central area, and maintain a smaller number of satellite sites; ensure that co-location of activities and staff delivers improved efficiency and level of service; reconfigure our space to achieve higher occupancy levels – for example by creating open plan office space, shared office space and hot-desking where appropriate; review, and where appropriate, reallocate space annually so that space is put to the most appropriate use at any given time.

We are currently at full occupancy in terms of staff accommodation at all of our sites. Whilst we adopt a lean approach to staff accommodation (hot-desking, flexible working etc.) we have some pressures to reconfigure, and secure new accommodation in line with structure changes including the introduction of a new Division to the group.

Our user space currently accounts for over three quarters of our occupied footprint, and we face pressures as the landscape of the University evolves.

**Key Points**

**CMVM** – We expect to acquire circa 300m² of additional office space at Hugh Robson Building (HRB). The acquisition of a further 330m² adjacent to this space and currently allocated to MVM teaching may enable the consolidation of teams in the Central area. We are liaising with Estates on options.

**Main Library** – We are reviewing the allocation of space within this building and considering options that would increase available user space, in particular an increase in study spaces.

**DCC** – There is a planned decant of Appleton Tower which will impact DCC. A permanent and/or decant location is yet to be agreed.

**Buccleuch Place** – With the creation of the Learning, Teaching and Web Division, and the merge of CMVM IT staff into IS, we need to consolidate team locations in the central area. As a minimum, we require 30 additional spaces in the central area ideally using the MVM space in Hugh Robson.

**Darwin/Swann** – During 2014 it is estimated that we will have vacated our spaces in the Swann Building and potentially Darwin (subject to confirmation of dates). IS has informed both the College of Science & Engineering and E&B of the requirements for alternative space and for re-location of the library collection.

**KB Centre** - Refurbishment of the third floor study space in KB Centre will progress in 2014, with the second floor postponed to 2015.
JCMB – Plans are progressing to introduce Open Plan space which will accommodate staff currently located in number 4 Buccleuch, and allow sufficient flexibility for further alignment of critical support facilities.

Holyrood – On completion of Paterson’s Land Studio development the MOOCs team will relocate to the existing VC Support Offices. VC Support will relocate to the Ground floor next to the VC room.

Library2 – fully integrated off-campus storage and collections processing facility. World-class collections, such as those held by the University of Edinburgh, require world-class facilities. Rare and unique materials, ranging from musical instruments to fine art, historical archives to rare books, require care, conservation, and carefully controlled environments, while the developing general collection requires space to be stored and processed. The successful outcome of an Estates Committee funded feasibility study will result in the construction of ‘Library2’: a high-density, low energy storage and collection processing facility on University land (e.g. Easter Bush) to replace the existing Library Annexe facility in the Gyle Industrial Estate. This will allow the University to exit from the existing rented accommodation and consider the relocation of staff from the Main Library.

Measures of success
Robust plan for 50+ linear km store with processing areas for staff, digitisation and conservation activity. Target date: construction starts summer 2016.

St Cecilia’s Hall Redevelopment: The successful completion of a capital project to redevelop St Cecilia’s Hall, turning it into the single destination for historic musical instrument research, teaching, performance and outreach in the UK.

Measures of success
£6.5m raised (third university/third statutory/third philanthropic); Reid Concert Hall and museum store transferred to new St Cecilia’s and new CRC museum store by 2016; SCH redevelopment building work begins September 2014. St Cecilia’s museum and concert programme operational from March 2016; engagement programme results in 150% more visitors on 2013 figures.

Causewayside - A decision will be required prior to 2016 on whether or not the lease is renewed.

Capital Expenditure
Assuming the acquisition of space at HRB, capital expenditure will be required to support the redevelopment of that space to accommodate the currently dispersed teams. The logistics and associated costs will also have yet to be identified but will form part of the discussions with Estates.

We continue to utilise our Small Capital provision to support changes, primarily those aligned with user spaces e.g. current allocations include the KB Centre and Paterson’s Land projects.

Financing the Plan
The IS single line budget in 2013/14 was £24.8m. This budget (outlined in the service catalogue (appendix 1) cover the cost of running the services and the major element of Grow. In addition the University has funded Transform to the tune of £1.9m over the same period. It is anticipated that this level of funding, focused on transformation, would of necessity continue for the foreseeable in line with the University’s developing strategy.
Run, Grow – it is anticipated that in the main, with modest growth of University business, we should be able to contain costs within the existing envelop. During 2013/14, IS had absorbed over £1m of costs due to Grow in volume or Transform projects into service. See Table 1 below for examples.

**Strategic Investment for “Transform”**
Throughout this plan we have highlighted the areas where strategic investment will be required. In summary these are:

**DEI Phase 2:** £100k pa for direct investment in Schools developing new, or extending the enrolment on existing, ODL programmes. £50k pa for investment into central support services to maintain training, student support and technology expansion. Total cost p.a. **£150k from 2015-16 onwards.**

**Online Courses:** Development of fully online UG courses, development of joint online PGT programmes and online PGR training and technical services: Total cost p.a. **£100k from 2014/15.**

**Video Service:** Provisioning and operations for video capture, storage, search & publication service, software based, from users mobile devices and with hardware systems in major teaching rooms Cost per annum: **£550k for equipment and support in 2014-15; £245k in 2015/16; £150k in 2016-17.**

The Library Materials Budget: **£1.8m to be added to the existing £5.2m, giving a total library materials budget of £7million per annum from 2014/15 onwards,** to be top sliced from the University budget. To be reviewed in 2015/16.

**Library Management System:** A total draw down from IS reserves of £300k to fund the cost of migration to the new, cloud based system. **Cost per annum: £200k in 2014/15; £100k in 2015/16.**

**Refresh HTC:** £1m Capital Investment in 2014/15.

**Data Storage:** £1m capital investment in 2016/17.

**Intrusion Detection System:** Cost p.a. £200k commencing 2014/15, for 3 years.

**Efficiencies Achieved**
We have made a number of efficiencies which have avoided costs; allowed for expansion with no additional costs; or have resulted in efficiencies elsewhere in the university.

**Virtual Servers**
Developments in IT have enabled IS to realise growth in IT capacity through the use of virtual servers. We currently have approx. 700 virtual servers which are available to schools to minimise the need for physical servers. The cost of a virtual server instance when compared with a physical server is £120 less per annum on energy costs and £240k every five years on replacement costs.

**Multi-Function Devices (Printing)**
The change in supplier of MFDs has resulted in the annual cost of devices being maintained at a steady rate of £700k p.a. whilst the number of devices has increased from 312 to over 600, all with greater functionality.

**On-Line Print Credit**
The on-line print credit facility allows students to load credit on to their cards without visiting a help desk. This has reduced the demand on help desks and enabled students to add print credit whenever
is most convenient for them. 80% of all print credit income has been received through the on-line payment system.

Merger of Libraries
At King’s Buildings and the Veterinary School we have merged a total of six libraries into two. This has resulted in a better service for students; a reduction in costs to the colleges in terms of space; and reception / security staff and an IS saving of approx. 2 fte.

Office 365
The introduction of Office365 has increased student storage to 50Gb at no cost to the University. The planned migration of staff email will remove hardware replacement costs of approx. £110k.

New services or changes to services

<table>
<thead>
<tr>
<th>Description</th>
<th>Type of change</th>
<th>Cost description</th>
<th>Cost / Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOOC's</td>
<td>New service</td>
<td>Equipment &amp; support for MOOC's</td>
<td>£170k pa unfunded</td>
</tr>
<tr>
<td>Timetabling software</td>
<td>New service</td>
<td>Maintenance costs for software</td>
<td>£65k pa funded by ISG</td>
</tr>
<tr>
<td>Pebblepad software</td>
<td>New service</td>
<td>Licence costs of new service</td>
<td>£58k pa funded by ISG</td>
</tr>
<tr>
<td>Turnitin software</td>
<td>New service</td>
<td>Licence costs of new service</td>
<td>£30k pa funded by ISG</td>
</tr>
<tr>
<td>Collaborate software</td>
<td>New service</td>
<td>Licence costs of new service</td>
<td>£73k pa funded by ISG</td>
</tr>
<tr>
<td>Self issue / return books</td>
<td>New service</td>
<td>Purchase and replacement of equipment</td>
<td>£230k over four years</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>£30k pa replacement</td>
</tr>
<tr>
<td>Main Library Opening Hours</td>
<td>Change of service</td>
<td>Increase in the opening hours</td>
<td>£200k pa funded by ISG</td>
</tr>
<tr>
<td>Website Team</td>
<td>Change of service</td>
<td>Implement &amp; maintain new website</td>
<td>£450k pa funded by ISG</td>
</tr>
<tr>
<td>E-Financials</td>
<td>Change of service</td>
<td>Increase in maintenance &amp; contribution to growth of licences</td>
<td>£60k pa funded by ISG</td>
</tr>
<tr>
<td>BI Suite Licensing</td>
<td>Change of service</td>
<td>Change of licence due to growth</td>
<td>£105k pa funded by ISG</td>
</tr>
<tr>
<td>BI / MI Consultancy</td>
<td>One off service</td>
<td>Report on BI/MI roadmap</td>
<td>£65k one off cost</td>
</tr>
</tbody>
</table>

Table 1: New services and changes absorbed by IS

Library Materials
As a result of the increasing amount of electronic materials purchased, we are now incurring an increased amount of VAT. The table below show the VAT paid as a percentage of total materials spend since 2010/11.

<table>
<thead>
<tr>
<th></th>
<th>2010/11</th>
<th>2011/12</th>
<th>2012/13</th>
<th>2013/14 (YTD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in the cost of VAT</td>
<td>280,047</td>
<td>415,246</td>
<td>739,457</td>
<td>537,194</td>
</tr>
<tr>
<td>VAT as a percentage of total library materials expenditure</td>
<td>5.83%</td>
<td>7.99%</td>
<td>12.18%</td>
<td>12.09%</td>
</tr>
</tbody>
</table>

Table 2: VAT as a percentage of Library Materials