IT Community update: December 2016

Martin Bellamy

Working together for excellence in education, research and operations through Information Services
UIS and the IT Community

• We need your involvement in the Information Services Strategy;
  ➢ implications for everyone in the IT Community.

• Our approach is to help and enable IT Professionals to do a great job for their college, school or department.

Challenges

• Delivering to timescales and quality expectations.

• Communication.
Information Services Strategy:
A framework for decision-making beyond the tactical horizon

Mark Ferrar
Strategy – long-term, overall goals

Tactics – shorter-term, specific goals
The University is good at making **tactical decisions** and taking **tactical actions**.

It carries **strategy** in people’s hearts and minds, through **shared values** and **collective aspirations**.

There are, perhaps, ~300 are ‘**movers & shakers**’, carrying **strategic influence** across the rest.

It operates like a **hive-mind**, adapting and changing in response to the **prevailing environment**.
Unrealised Strategy

Intended Strategy

Deliberate Strategy Process

Realised Strategy

Emergent Strategy Process

After Prof. Henry Mintzberg
The only constant is CHANGE
The IS Strategy focuses on seeking improved outcomes in six key areas:

i. Research  
ii. Teaching & Learning  
iii. Administration

These first three are the key operational functions of the university.

In addition, there are three key areas of IT operations:

iv. Infrastructure  
v. Cyber Security  
vi. User Experience
How it looks

• A great user experience
• Agile
• Secure
• Green (natural resource efficient)
• Integrated
• Automated
• Offering Universal Core Services (consistent ‘basics’ in all institutions)

How it feels

• Supporting more local innovation (to meet local needs locally)
• More sharing of value-adding ideas
• Less ‘reinvention of the wheel’
• More effective risk management (supporting greater agility and an increase in pace)
Because the University is...

Publicly funded

Determined to remain world-class

Diverse, devolved and dynamic
We must...

Demonstrate **value for money**

Prioritise outcomes for **research**, **teaching** and **student experience**

Sustain a **strategic dialogue** with the “Movers & Shakers”

Become **agile, flexible & responsive** to meet **continuously evolving** needs

Develop a **culture of service excellence and continuous service improvement**
By...

- Maximising value transfer from suppliers through joined-up vendor management
- Improving understanding and reporting of cost and value
- Ensuring Services enhance user productivity and happiness through user experience-led design
- Driving organisational competence through maturity models
- Delivering open & agile (information) systems through service orientation
Focusing on...

Understanding **value** as much as **price**
Aligning **outcomes** and **co-ordinating** action

What do we **add** (start)?
What do we **optimise** (improve)?
What do we **take away** (stop)?

Always starting with **user needs**
**Personas** capturing understanding of users
Evidence-based **usability** & development **agility**

**Infrastructure**
**Cybersecurity**
**Platforms**
**Services**

Developing **people** & **processes**
Choosing **technology** & **services**
Because the University is:

- Publicly funded
- Determined to remain world-class
- Diverse, devolved and dynamic.

We must...

- Demonstrate value for money
- Prioritise outcomes for research, teaching and student experience
- Sustain a strategic dialogue with the “Movers & Shakers”
- Become agile, flexible & responsive to meet continuously evolving needs
- Develop a culture of service excellence and continuous service improvement

By...

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Focusing on...

- Understanding value as much as price
- Aligning outcomes and co-ordinating action
- What do we add (start)?
- What do we optimise (improve)?
- What do we take away (stop)?
- Always starting with user needs
- Personas capturing understanding of users
- Evidence-based usability & development agility
- Infrastructure
- Platforms
- Services
- Cybersecurity
- Developing people & processes
- Choosing technology & services
So, we need to focus on…

- **Service Rationalisation**, improving the value for money.
- Using **User-Experience Lead Design** to ensure services enhance user productivity and satisfaction.
- Delivering open and agile systems through **Service Orientation**.
- Driving organisational competence by using **Maturity Models** to set improvement priorities.
- Maximising the value transferred from suppliers through **Joined-Up Vendor Management**.
Our existing programmes include (in alphabetical order):

- Business Systems Development Programme (“ERP Strategy”) [Ref. 3]
- Cybersecurity Strategy & Programme [Ref. 4]
- Data Centre Strategy (& Development Programme) (In development)
- Digital Strategy for Education [Ref. 5]
- End User Compute Strategy (In development)
- Identity & Access Management Strategy (In development)
- Research Computing Strategy [Ref. 6]
- Storage Services (Strategy) [Ref. 7]

Plus we’re making significant investments in…

- IT Community Development Programme
- Service Desk Tooling (HEAT)
- Groupware (for UIS and the wider University)
- Refreshing, upgrading & expanding the Network
Our focus on User Needs and User Experience (UX) will rely on…

- Our Relationship Managers working closely with their respective communities and our Digital Transformation unit employing and evangelising User-Centred Design principles allowing us to understand:
  - The different roles that need different outcomes from our services
  - The different ways in which our services are used by different roles
- To support this, we are developing ‘proto-personas’ to help define “what good looks like” from each role perspective.
And our Relationship Managers have been gathering feedback from across the Collegiate University all summer. They (our customers) say we must*…

- speak with one voice and act as one organisation,
- keep our promises,
- publish roadmaps for all our services,
- establish clearer service change request processes,
- consider end user requirements and customer needs (in tandem) as we change services and develop new services (they are rarely the same),
- (should) not assume that our services will be used as intended,
- (should) use “Adoption” as the KPI to measure success.

* as per https://tools.ietf.org/html/rfc2119
And our customers are asking for…

(Student-specific)
- Support for Postgraduate application processing
- Automated Lecture Capture and Content Delivery System
- Exam Marks management system
  - Exam results input (for markers)
  - Results calculation based on tailored formula

(Finance-specific)
- Financial data for Academics (including GL accounts)
- Online expense claims
- Inventory system (asset register)

(Federated Infrastructure)
- Storage (and backup) service
- Managed Desktop service for Staff & Students
- Exchange Online (including cam sub-domains)
- VM self-service facility
- Mobile device (laptops/tablets etc.) backup service
- Managed Database service
- APIs for all services
- SharePoint - either federated or managed service (inc. standard templates)

(IT Staff-specific)
- Managed Active Directory service with delegated local administration
- University wide federated ITSM
- Managed Firewall service
- APIs for all services
- Enhanced (Certified) Professional Training
- Audio visual support (standardised installations)
- Enhanced help with Information Management and IT security
- Access to test accounts (for testing / configuring APIs etc.)
- Continual consultation with Institutions throughout new developments
We’ll have to place a number of Big Bets, focused on “what” and “how”…

<table>
<thead>
<tr>
<th>What</th>
<th>How</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytics</td>
<td>(Standard) Applications Architecture</td>
</tr>
<tr>
<td>Data Centres</td>
<td>(Ubiquitous) Cyber Security</td>
</tr>
<tr>
<td>End User Computing</td>
<td>(a coherent) Data Model</td>
</tr>
<tr>
<td>Hosting platforms (storage and compute)</td>
<td>Integration Standards &amp; Services</td>
</tr>
<tr>
<td>Identity &amp; Access Management</td>
<td>Integrated and Capable IT Community</td>
</tr>
<tr>
<td>Integrated Services</td>
<td>Institutional Support Shared Service</td>
</tr>
<tr>
<td>(the) Network</td>
<td>(Pervasive) User Experience Capability</td>
</tr>
<tr>
<td>Search &amp; Discovery</td>
<td></td>
</tr>
<tr>
<td>Visualisation</td>
<td></td>
</tr>
</tbody>
</table>
For each **Big Bet** – and for each **Service** – we now need to devise a **Roadmap** covering the next **five years**.

And **every year** we’ll update our Plans (**tactics**) – and check our **Strategy** – to ensure they all remain **current**.
Community involvement…

… in shaping the Strategy has **already begun**.

The RM discussions, the “data gathering” phase, through our existing “governance” and “liaison” meetings and here & now.

And we will **now also**…

- Schedule a series of **Working Sessions** through Lent Term.
- Create a space on the new IT Community Portal for **Forum Discussion**.
Microsoft Exchange Online: benefits and timeline

Chris MacLeod

Working together for excellence in education, research and operations through Information Services
Microsoft Exchange Online – Background

• The UIS was looking for a solution to meet its email and calendar needs in a single platform that enhanced collaboration. After assessing options, Exchange Online was chosen as the most suitable product.

• The UIS is the pilot institution to migrate to Exchange Online, starting in December and continuing into 2017.

• Following this pilot and taking learnings into account, early adopter institutions, which have specifically asked to use Exchange Online, will migrate.

• There are currently no plans to remove Hermes or to mandate that Exchange Online is the only email service available at the University of Cambridge.
What migration offers

- **Mailbox** – 50GB of mailbox storage
- **Messages** – Up to 150MB
- **Email client** – The same or similar
- **Web-based access** – Responsive for mobile devices
- **Mobile app** – Outlook for both iOS and Android
- **Collaboration** – Share directly from Exchange Online to OneDrive for Business
- **Personal calendars** – Easier to schedule meetings
- **Group calendars** – To help teams work together
- **Lists** – Global address list
- **Contacts** – Create external contacts that everyone can see and share
Microsoft Exchange Online – Benefits

• A single platform makes collaboration easier (e.g. shared calendars; emails; everyone listed in a single address book; meetings are easier to plan)

• Institutions running Exchange on premise can save money on hardware after migrating

• Migrating to Exchange Online will save institutions time as it is centrally supported through the UIS

• Syncing between work, mobile and home is easier

• Email quotas are much higher than on Hermes or Exchange on premise
<table>
<thead>
<tr>
<th>Date Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 2016</td>
<td>20 test UIS trailblazer staff migrate</td>
</tr>
<tr>
<td>December 2016 – January 2017</td>
<td>Work on feedback 2017</td>
</tr>
<tr>
<td>January /February 2017</td>
<td>Migrate remaining UIS users</td>
</tr>
<tr>
<td>February 2017</td>
<td>Address feedback</td>
</tr>
<tr>
<td>1st half 2017</td>
<td>Early adopters migrate</td>
</tr>
<tr>
<td>2nd half 2017</td>
<td>University institutions can migrate</td>
</tr>
</tbody>
</table>
The Data Storage project: benefits and timeline

Chris MacLeod

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Data Storage – Background

There’s a growing need for storage solutions at the University of Cambridge.

Researchers are producing more data and wanting to look at it in more detail, which means they need a place to collate and work on this information.

People working in teams have a growing need to share data and results, which is currently difficult to meet.

Current data storage options are limited and are at risk of corruption or loss simply because data is being stored on unprotected or external devices.
Data Storage – Benefits

- Secure storage located in Cambridge
- Highly resilient, with multiple copies stored in different locations
- Accessible from all university locations and home
- Designed specifically for institutions and individuals with large data storage requirements
- Competitively priced
- Provided through a specially designed portal
- Support available through the UIS service desk
- Accessible through third party apps (Filezilla, Putty, Cyberduck)
# Service features

<table>
<thead>
<tr>
<th>Features</th>
<th>Research Data Store</th>
<th>Research File Share</th>
<th>Research Cold Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Shared</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessible from UIS HPC service</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Accessible from CUDN</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Offsite back-up for disaster recovery</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Recovery point objective</td>
<td>24 hours</td>
<td>1 hour</td>
<td>24 hours</td>
</tr>
<tr>
<td><strong>Specific</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failover to secondary data centre</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Number of data copies</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Snapshots</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restore window</td>
<td>Up to 24hrs</td>
<td>Up to 1 month</td>
<td>Up to 24hrs</td>
</tr>
<tr>
<td>Additional data protection</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remote access protocols</td>
<td>SFTP, SCP, RSYNC</td>
<td>SFTP, SCP, RSYNC, SMB</td>
<td>SFTP, SCP, RSYNC</td>
</tr>
<tr>
<td>System performance (measured within data centre)</td>
<td>Up to 15GB/s</td>
<td>Up to 3GB/s</td>
<td>Up to 1GB/s</td>
</tr>
<tr>
<td>Minimum purchase</td>
<td>2TB</td>
<td>2TB</td>
<td>5TB</td>
</tr>
<tr>
<td>Licences available</td>
<td>1, 3 and 5 years</td>
<td>1, 3 and 5 years</td>
<td>1, 3 and 5 years</td>
</tr>
</tbody>
</table>
| Typical use case                             | Large active data sets, frequent access e.g. data processing on HPC. | High value data sets that require extra protection and frequent access | Infrequently accessed data. High latency access.
## Storage Services Cost – Departments

<table>
<thead>
<tr>
<th>Storage Services Summary</th>
<th>£/month/TB</th>
<th>£ 1 year/TB</th>
<th>£ 3 years/TB</th>
<th>£ 5 years/TB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research Data Store</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price – 5 year commitment</td>
<td>£7.72</td>
<td>£92.64</td>
<td>£277.92</td>
<td>£463.20</td>
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<tr>
<td>Price – 3 year commitment</td>
<td>£8.34</td>
<td>£100.04</td>
<td>£300.14</td>
<td>£500.20</td>
</tr>
<tr>
<td>Price – 1 year commitment</td>
<td>£11.12</td>
<td><strong>£133.40</strong></td>
<td>£400.20</td>
<td><strong>£667.00</strong></td>
</tr>
<tr>
<td><strong>Research File Share</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price – 5 year commitment</td>
<td>£16.53</td>
<td>£198.41</td>
<td>£595.23</td>
<td><strong>£992.05</strong></td>
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<tr>
<td>Price – 3 year commitment</td>
<td>£17.86</td>
<td>£214.29</td>
<td><strong>£642.87</strong></td>
<td>£1071.45</td>
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<tr>
<td>Price – 1 year commitment</td>
<td>£23.81</td>
<td><strong>£285.72</strong></td>
<td>£857.16</td>
<td><strong>£1428.60</strong></td>
</tr>
<tr>
<td><strong>Research Cold Store</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price – 5 year commitment</td>
<td>£4.83</td>
<td>£57.94</td>
<td>£173.82</td>
<td><strong>£289.70</strong></td>
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<tr>
<td>Price – 3 year commitment</td>
<td>£5.22</td>
<td>£62.58</td>
<td><strong>£187.74</strong></td>
<td>£312.90</td>
</tr>
<tr>
<td>Price – 1 year commitment</td>
<td>£6.95</td>
<td><strong>£83.43</strong></td>
<td>£250.29</td>
<td><strong>£415.15</strong></td>
</tr>
</tbody>
</table>

*Note: Prices include storage, hardware maintenance and replacement, and user support and service.*
## Storage Services Cost – Colleges

<table>
<thead>
<tr>
<th>Storage Services Summary</th>
<th>£/month/TB</th>
<th>£ 1 year/TB</th>
<th>£ 3 years/TB</th>
<th>£ 5 years/TB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research Data Store</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price - 5 year commitment</td>
<td>£9.26</td>
<td>£111.17</td>
<td>£333.50</td>
<td>£555.84</td>
</tr>
<tr>
<td>Price - 3 year commitment</td>
<td>£10.01</td>
<td>£120.05</td>
<td>£360.17</td>
<td>£600.24</td>
</tr>
<tr>
<td>Price – 1 year commitment</td>
<td>£13.34</td>
<td><strong>£160.08</strong></td>
<td>£480.24</td>
<td>£800.40</td>
</tr>
<tr>
<td><strong>Research File Share</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price – 5 year commitment</td>
<td>£19.84</td>
<td>£239.09</td>
<td>£714.28</td>
<td>£1,190.46</td>
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<tr>
<td>Price – 3 year commitment</td>
<td>£21.43</td>
<td>£214.29</td>
<td>£771.44</td>
<td>£1,285.74</td>
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<tr>
<td>Price – 1 year commitment</td>
<td>£28.57</td>
<td><strong>£342.86</strong></td>
<td>£1,028.59</td>
<td>£1,714.32</td>
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<tr>
<td><strong>Research Cold Store</strong></td>
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<td></td>
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<tr>
<td>Price – 5 year commitment</td>
<td>£5.80</td>
<td>£69.53</td>
<td>£208.58</td>
<td>£347.64</td>
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<tr>
<td>Price – 3 year commitment</td>
<td>£6.26</td>
<td>£75.10</td>
<td>£225.29</td>
<td>£375.48</td>
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<tr>
<td>Price – 1 year commitment</td>
<td>£8.35</td>
<td><strong>£100.12</strong></td>
<td>£300.35</td>
<td>£500.58</td>
</tr>
</tbody>
</table>

Note: Prices include storage, hardware maintenance and replacement, and user support and service. College prices include VAT.
Data Storage – Timeline

November 2016 – Product infrastructure finalised

December 2016 – Beta testing on Research Data Store and Research File Share

Mid-January 2017 – Research Data Store available to purchase through the online self-service portal

End January 2017 – Research File Share available to purchase through the online self-service portal

Mid-February 2017 – Research Cold Data available to purchase through the online self-service portal
The Cyber Security project: overview

Chris MacLeod

Working together for excellence in education, research and operations through Information Services
Why it’s important

Cyber security is listed as a prominent risk on the University’s risk register.

To help protect the University, its staff and its assets, this phase of the programme has four separate areas:

1. Distributed denial of service protection
2. Introduction of intrusion detection system
3. Consultation about the introduction of an intrusion prevention system
4. Launch of managed firewall service
Who has been consulted?

We worked with a wide audience of experts and interested parties, including:

- Information Security Committee
- Information Security Management Sub-Committee
- Cyber Technical Review Group, ‘who said the programme was aligned to their assessment’
- Information Management Programmes Group
- External cyber security consultants
- Schools’ Liaison Meeting
- CITMG
Benefits

• Multi-layered protection against external attacks, making it harder to interrupt or destroy both information and services

• Protects intellectual property and data against breaches

• Helps protect the University against malware and ransomware

• Provides data on the number and level of threats the University faces

• Minimise impact in the face of an attack

• Protects the University’s reputation
Timeline

December

- DDOS protection for key University of Cambridge websites starts (continues in January)
- Install intrusion detection system (in monitor-only mode)
- Pilot UIS managed firewall service

January

- Subscription to managed firewall service available
- Introduction of intrusion prevention system to UIS starts (through to March)

April

- Engagement and consultation with institutions about implementing intrusion prevention system starts
Q&As
Working together for excellence in education, research and operations through Information Services

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