

School of Informatics School IT strategy 2019-2022

December 11, 2018

1 Leadership in Learning

1. **Challenge** Improving quality of teaching and learning

Action We wish to make substantially more use of University infrastructure (particular learning technologies such as Learn) and less use of bespoke solutions within the School. We consider this in itself a challenge as we need to identify how to achieve this without negatively impacting on School business.

We appointed a Learning Technologist in early 2018 and .. Tim to complete ...

A working group has been formed to produce a strategy for increasing our use of Learn and other related tools.

We will consider more use of analytics to monitor performance of students through the academic year.

Students now expect to use Piazza for courses - we shall investigate what we can do to facilitate this further.

Building on the recent expansion of teaching space in the Appleton Tower, we are planning to further invest in teaching infrastructure, including IT provision, in response to evolving technologies and teaching methods.

We are reviewing the DICE desktop platform to determine whether it is still the most effective vehicle for supporting teaching course work.

2. **Challenge** Growth in taught student numbers. We have already grown substantially and don't expect any further intake in the medium term. However the volatility amongst student course choices is a big challenge - this leads to significant problems with resourcing at very short notice.

Action We need to identify solutions to the course choice volatility issue. However, the School is not entirely in control as some of these courses are delivered in partnership with other schools.

3. **Challenge** Distance learning - how to effectively support. There is considerable uncertainty over the growth areas for distance learning courses. How to resource compute intensive courses is a particular challenge for distance learning, particularly at scale.

Action

4. **Challenge** We have a growing requirement for computing power for both teaching and research. Housing this computing resource is an increasing challenge (see Section 5).

Action The School has formed a working group to produce a strategy for resourcing the compute and data intensive needs of the School. This strategy should be delivered in early 2019.

In early 2018, the School purchased a compute cluster with 200 GPUs for teaching machine learning. The School has recently approved funding for a further compute cluster with 80 GPUs for research postgraduate use.

5. **Challenge** We have a growing requirement for specialised practical lab provision (eg IOT, security and networks in addition to existing robotics). This requirement is shared with Research.

Action Consider what computing infrastructure is required.

6. **Challenge** We are hoping to be awarded a similar number of CDTs in the next round

Action Although we have attempted to identify the commodity computing requirements for these new CDTs in advance of the bids, and include in the costings, we have not been able to do so for specialised computing support.

2 Leadership in Research

1. **Challenge** The execution and expansion of research - the growth in the size of the School has made it difficult to keep track of developments within the School. As a result requirements are often discovered at the last minute impacting on the ability to meet the requirements in a timeous fashion.

Action We have some ideas, principally involving improved communication, to address this problem.

2. **Challenge** Finding sufficient space to locate research funded compute servers is proving challenging, and further growth will exacerbate this (see Section 5).

Action We have a programme of retiring older servers, but that is only a partial solution. We had hoped to encourage more use of virtual servers, but the growth has largely been in GPU servers. Encouraging resource sharing is one approach we will investigate.

3. **Challenge** Security accreditation is increasingly being required by partners, and perhaps even more so with industrial partners. We have achieved CyberEssentials Basic certification for our DICE managed systems. We expect to find it more difficult to achieve accreditation for those systems managed by individual research groups (known as self-managed systems).

Action

4. **Challenge** It is not possible for the School to be confident that the security of self-managed systems is adequate and that best practice is being followed. Systems with inbound firewall holes are of particular concern.

Action Mandatory training materials are being developed for those individuals managing such systems.

5. **Challenge** An increase in robotics research is expected with the move to Bayes.

Action Identify requirements.

6. **Challenge** CityDeal and Hubs - the requirements here are still rather unclear

Action Consider implications of these and how to resource any computing requirements

3 Digital Transformation and data

1. **Challenge** While the School has a good handle on what administrative data it holds and processes, there is no central record of what data is held by research groups and for what purpose. This is of particular concern with respect to GDPR compliance.

Action As there has been no further sign of a College data registry, we have decided to implement our own registry. We have performed a one-off survey of what data is held by research groups and will record that in our new registry. The School's computing staff and Research admin staff are discussing how to keep this registry up-to-date. Holding Data Management Plans centrally at School level is likely to be part of the approach.

2. **Challenge** Data Science

Action We have appointed a Senior Data Scientist who will play a key role in growing and delivering data science expertise within the School and the wider University.

4 Influencing globally and contributing locally

1. **Challenge** Partnerships with other Bayes occupants. In particular, we expect tighter teaching and research links with Design Informatics and EPCC.

Action Identify IT requirements resulting from these partnerships.

2. **Challenge** School web presence - we have finished a simple content migration of the primary School web site to EdWeb, but many find the site difficult to navigate. **Need to update this...**

Action We are re-forming the School's Web Strategy Group in early 2018 to provide a stronger steer for the School's web presence. That group will engage with the new University Web Strategy where appropriate.

3. **Challenge** Many of the institute web sites are still hosted on a Plone CMS system and require migration to EdWeb. Some research groups maintain their own web technology - with the risk that best practice is not being followed. **Need to update this...**

Action We are re-forming the School's Web Strategy Group in early 2018 to provide a stronger steer for the School's web presence. That group will engage with the new University Web Strategy where appropriate.

4. **Challenge** Possible interaction with Farr 2

Action

5. **Challenge** Facilitating collaboration/international co-working

Action We are improving our video conferencing facilities - making VC more pervasive throughout our meeting rooms. We have shrunk a number of the printer areas in the Forum in order to create small meeting room pods. These are specifically for occupants of multi-occupant offices wishing to make video conference calls.

5 People, Finance and Estate

1. **Challenge** The increasing use of Office365 tools across the University is causing a upskilling requirement for, primarily, our administrative staff and the front line computing support staff.

Action We are considering appointing an additional computing support officer who already has good working knowledge of the entire Office365 tool set, but particularly Sharepoint.

2. **Challenge** The age profile of the computing staff is of concern, particularly with respect to data network expertise. There is also a growing concern that the current computing staff structure is no longer appropriate for the current IT staffing level.

Action The School has started succession planning, and is considering structure as part of this planning.

3. **Challenge** It is difficult to measure staff engagement with University and College security policy, particularly as so much data processing is done on systems which are self-managed.

Action

4. **Challenge** We are close to being unable to absorb any more growth in compute resource. We have fully occupied our allocation of space in the Appleton Tower and College server rooms and, whilst we have some physical space left in the Forum server rooms, we are reaching the limits of our Forum UPS provision.

Action We shall continue to encourage users to make use of centrally provided facilities wherever possible, but in almost all cases our compute resource provides functionality - eg dedicated GPUs, low level access, specialised hardware - that is unavailable centrally, unavailable in the capacity that we need or only available for research use.

5. **Challenge** Much of the IT infrastructure (network core switches, UPS, AV) in the Forum is now reaching, or is arguably past, end of life.

Action The Forum and Appleton Tower network core switches were replaced in summer 2018. They were 10 years old and the risk of delaying their replacement was considered to be too great. The School continues to incrementally replace the Forum AV equipment. It is now clear that Estates expect Schools to fund UPS system replacements. We are discussing the replacement of the Forum UPS systems with Estates and hope to fund the replacement in 2019 - this will allow us to make use of the remaining space in the Forum server rooms.

6. **Challenge** The University network replacement project will deliver over 2019 to 2021. It is not yet clear whether the School will continue to completely manage its own network, work in partnership with IS or hand over management entirely to IS.

Action Continue to engage with the procurement and implementation projects.

7. **Challenge** The continued growth in computing resource impacts on our ability to conform to the University's Climate Strategy.

Action

6 Others

1. **Challenge** The future of the network file-system used by our School systems (OpenAFS) is in doubt.

Action We are currently looking at alternatives.