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Data quality, cyber culture, and the post-pandemic future of university IT

This document summarises a roundtable discussion among IT leaders from universities in the UK and Ireland about how the pandemic has affected and continues to challenge their work.

The virtual event, organised by UCISA and run under the Chatham House Rule¹, addressed the findings from research conducted by UCISA Corporate Member InterSystems among 150 IT leaders from higher education institutions across the UK and Ireland during the summer of 2021.

This explored the biggest IT challenges institutions had faced during the pandemic, their expectations for the year ahead, and how it affected deployment of technologies including data management analytics, AI and machine learning (ML).

The research is supremely relevant to the future of higher education IT. The Covid-19 pandemic compelled institutions and students to adjust rapidly to new ways of working, teaching, researching, and learning. Few would have foreseen the length of the disruption, let alone its scale.

Dispersed student and staff populations presented universities and colleges with significant challenges. Within a matter of days IT teams had to implement fully remote, online learning and working, while simultaneously ensuring enhanced cyber-security along a vastly expanded attack surface. A spate of cyber-attacks against higher education institutions before the 2020/21 academic year was a major concern, however. University IT departments overcame these difficulties in a short space of time. . The discussion summarised here explores the main topics arising from this challenging environment.

¹ When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed." <https://www.chathamhouse.org/about-us/chatham-house-rule>

Data – difficulties of sharing across legacy systems

Almost six-in-ten IT leaders in universities and higher education institutions (59 per cent) who participated in the research reported that secure sharing data internally and externally was their greatest challenge over the previous 12 months of disruption.

At the roundtable, however, a contributor from an Irish university believed this was more likely to be the view of the consumers and users of data within institutions. Several participants agreed that sharing data internally was and remains a significant issue, given the varied legacy systems their institutions employ. One contributor said their organisation employed 344 different systems. Other participants took the view that data and processes were more significant challenges than systems. One participant noted how the NHS is more advanced in the implementation of standards that govern the secure and efficient sharing of data.

A further, ongoing difficulty cited in the discussion is the copying of data by staff rather than accessing it from source, creating added complications for IT. General consensus among participants was that this was often exacerbated by academics copying and sharing data on shadow IT, which has security implications.

Simplification of IT

Several participants said cloud-migration is enabling them to eliminate elderly, poorly integrated or underperforming systems. The use of data platforms enabled them to reduce “data mess” and simplify their IT. “We got rid of ten systems this year,” one participant said, highlighting the subsequent work involved in educating staff about new process requirements and the evolving nature of systems in the cloud. This contributor said the management of student records required a balance to be struck between the need to consolidate, and the demands of users, perhaps through bespoke development around the edges of platforms.

A participant from Scotland said their organisation had pushed for systems to use the same code to talk to one another. They had also implemented master systems to eliminate siloed spreadsheets for student data, HR and finance. On top of master

systems were reporting levels for, respectively, higher-end institutional data and operational data, the latter more visualised for ease of comprehension and use.

Another participant said the points covered in this section of the discussion emphasised the now-essential demand for healthy data – the need to keep it fresh, up-to-date and interoperable with the various systems institutions employ, or with which they interact.

Data use and data quality – the issue of trust

Quality was also cited as a major challenge by participants, who said users in their universities were often unable to put their faith in the data available. InterSystems research found IT departments to be the biggest users of data to inform decision-making, demonstrating that institutions are constantly looking to improve their infrastructure. Yet only 22 per cent of institutions in the research were using data to enhance the overall student experience.

However, in the roundtable, almost all participants said their respective organisations are now using data to enhance the student and business user experience, the aim being to provide services that match post-pandemic expectations.

Adapting to the pandemic and its effect in the longer-term

All agreed that when the pandemic erupted, they were entirely focused on meeting immediate requirements for remote working.

One contributor from an institution in London said that as his organisation had started consolidating its systems before the pandemic, he felt it had been at an advantage and did not have to struggle greatly once the coronavirus restrictions started. They found securing their single VPN was relatively straightforward, for example. This was accompanied by much effort on training and digital skills acquisition among staff and students.

Participants agreed universities had adapted to the long-term reality of hybrid working, moving to SaaS applications in many instances. This met student demand for a mix of face-to-face, on-site and online learning.

It's clear the pandemic had also accelerated pre-existing digital plans in many institutions. A contributor from Ireland said their institution had moved to end the "hero culture" of a single person as the sole possessor of expertise to resolve problems on specific systems or applications. This required a very important shift in mindset among all staff but had removed a potential single-point-of-failure. The downside was that some issues took a little longer to fix.

AI and analytics – use and ambitions

The research found AI was employed by 31 per cent of respondents and 21 per cent thought it would be the technology that would have the biggest impact on higher education in the next five years.

Participants agreed AI is not widely in use and tends to be employed for specific uses. One contributor from a university in London stressed how important high-quality data is, saying: "Analytics are only useful in so far as the data is useful."

A participant from a Scottish university said their institution planned to use analytics, including predictive analytics, pulling together data from several sources to examine and improve the student journey, for example, although academics would have to be encouraged to use it. One university employs three success officers to "support and nudge" academics to engage with learning analytics, the discussion heard.

There was consensus that implementation of AI would not be possible on current legacy systems. A participant from a university in the north of England said organisations still had much groundwork to do before they could use AI and analytics. His organisation had more urgent projects to tackle, but AI would help identify which processes they should automate. Participants suggested other cases could be for voice-activated HR applications via mobile phones, for automation in marketing, and for cost-reduction in routine processes.

The need for renewed focus on security

The research found universities and colleges are aware of the need to actively combat cyber-threats, although this varies from institution to institution.

Participants agreed IT leaders in most organisations had security as one of their top priorities with consensus that security is “a leadership issue and not an IT issue”. The IT director should be at the top table, so the question is taken seriously by the most senior decision-makers. Investment must also shift from capex to opex, contributors stressed.

Participants also said although organisations have changed the way they work, they are up against heightened end-user expectations of a slick, user-friendly e-commerce type web experience. This requires universities to provide the highest levels of security with push-button ease-of-use, even for sensitive personal business online.

A participant from Scotland said their university was beefing up its security, re-examining its Microsoft applications and moving to a SIEM system, but agreed with other contributors that obtaining qualified cyber-security employees remains difficult. This contributor also said institutions need to assess the zero-trust model and consider the role of cyber-insurance, which could have significant influence on security.

Another participant said cloud-migration provided relief from the day-to-day burdens of security and was a significant advance. Employees needed to adapt to changed practices and would do so over time, he added. Participants also agreed that focus for many higher education organisations remains on addressing the challenges of legacy systems and shadow IT.

Conclusion

As this discussion made clear, universities and colleges in the UK and Ireland adapted quickly to the shocks of the pandemic and the abrupt shift to remote working. The eruption of the coronavirus accelerated plans for digitalisation which organisations have now successfully embedded. Institutions have implemented hybrid patterns of work and tuition without jeopardising future provision of the full, on-campus experience most students still see as essential.

However, the underlying challenges caused by operating on outdated and multifarious systems continue to inhibit more dynamic institutions and forward-looking IT teams. Data quality and data sharing remain seriously hampered by poor data management and

the inability to transfer data between highly disparate systems effectively and safely. It is also apparent that IT leaders are actively seeking to end reliance on outdated systems.

The higher education sector must meet increasing student, staff and academic expectations of a more digital, streamlined experience similar to online commerce or other areas of the public sector, including the NHS.

Providing these experiences and services will require higher education institutions to make more effective use of both technology and data. Currently, only 10 per cent of institutions access the data they collect in real-time.

The path towards AI is also made extremely difficult by inadequate data quality, as roundtable contributors agreed, despite the large volumes of data organisations accumulate.

What is reassuring is that IT leaders in the higher education sector are cognisant of the issues and are actively pushing for improvements. In particular, the research findings show they are taking steps to secure investment where it matters. Almost a third (32 per cent) plan to increase investment in a data management platform over the next 12 months, for example, improving data quality and opening the door to much greater ease of data sharing.

After such dramatic change in the last two years, now is the time for higher education decision-makers to back their IT leaders and invest in the data management technologies that will future-proof their institutions, transforming efficiency and the everyday experience for students, academics, and staff alike.

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UCISA

Registered office: 30 St Giles,
Oxford OX1 3LE

Email: admin@ucisa.ac.uk
www.ucisa.ac.uk

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