



Technology whitepaper

The history of Identity Management in Higher Education

It is easy to forget that the first institutions on the Internet were universities. But sometimes those first to the party do not get the most benefit from it. The early days of universities online created some deep folk memories and a large technical debt. Nick Skelton has worked in Higher Education IT since the 1990s. He tells the story of universities online over the last 25 years.

Identity Management refers to the systems used to identify people online, and control who can access which resources. In the post-pandemic 2020s universities will serve new groups of students, including older, short course students, studying beyond the campus. Identity Management, to control who can access which resources, will be key to the strategy of digital universities.

Document Date: January 2021

Author: Nick Skelton



The 1990s: On the Internet, nobody knows you're a dog

In the early 90s almost everyone on the Internet was an academic. Everyone online was assumed to be essentially friendly, even if every September there was an influx of new, initially clueless undergraduate students.

In 1995 I was one of those clueless undergrads, arriving as a student at Bristol. I got my first Internet access via the university and so my university email account was my Internet identity. It was the only email address I had. Everything online was tied back to that. I then got a job at the same university even before I graduated, and then kept that Internet identity for the next 20 years.

What we now think of as Identity and Access Management was then simply provisioning and deprovisioning. People arrived on campus, they got a username, password and email account. When people graduated accounts were removed. This is easy enough, if we assume that each person has only one identity. But I was both a student and a member of staff. I didn't fit in a neat box, and this was liable to break the fragile provisioning scripts.

There's a cartoon from the New Yorker at this time: "On the Internet, nobody knows you're a dog". It symbolises the freedom early Internet users had. There were no Facebook profiles. People communicated by typing text, identified only by a meaningless username. Black or white, gay or straight, nobody knew who you were. For me, as a young gay man, this was hugely liberating. It certainly helped me explore my identity and come out.



"On the Internet, nobody knows you're a dog."

©The New Yorker Collection 1993 Peter Steiner
From cartoonbank.com. All rights reserved.



Janet Network

IT departments had no interest in browsing Internet logs simply to see what their students were doing online, and there were no algorithms that did this automatically. But "nobody knows you're a dog" wasn't strictly true within Higher Education. UK universities were connected to the Internet via JANET, the national academic backbone network. JANET's policies required traceability. If JANET received a complaint about behaviour from one IP address, that would be passed on to the university concerned to take appropriate action against the individual. The most frequent complaints were about sharing copyrighted music.

To achieve traceability every student had to log on before they could get online. Identity management was about controlling access to the Internet. Universities weren't very interested in controlling access to their own resources.

The 2000s: personal devices spur innovation in access management

By 2000 academic publishing was shifting from printed journals to online journals, transforming academic research. But how did the publishers identify who had paid for access? Most did this by IP address range: if you were using a computer on the campus network the journal let you straight in. This was incredibly easy if you're on campus, but ridiculously frustrating if you are not. And at the same time more and more students were owning computers and getting faster Internet at home. Students wanted to connect to academic resources when at home, and wanted Internet access for their own computer when on campus.

These twin problems spurred huge innovation in identity and access management. Eduroam was created to provide wifi secure access for visitors on campus with their own devices. Shibboleth was developed to provide access to journals and resources off campus. These were scalable federations of resource providers and universities. Both were community developments, led by universities and membership networks, who trusted and co-operated with each other.



Shibboleth



Blackboard

Through Shibboleth people could log on and access a journal in their web browser, from any location. It was web Single Sign On (SSO): once you had entered your username and password you could access multiple resources, without typing them in again.

SSO enabled aggregation and disaggregation of digital resources. Universities could give students access to different materials, depending on their course. Some universities launched personalised student web portals, and almost all universities adopted Virtual Learning Environments (VLEs) such as Moodle and Blackboard.

2010s: moving to the cloud

By the 2010s Internet connections were faster and more reliable. This led to a fundamental shift in IT infrastructure. Systems shifted from basement data centres to cloud providers. Universities were particularly early adopters of Google GSuite and Microsoft Office 365. By design these were available from any location. All you needed was a web browser.

GSuite and Office 365 worked brilliantly for internal collaboration within the organisation. But academics often work with people at another institution more than with colleagues at their own. How should people collaborate with some who isn't a student or staff member? There were three options, none of which were ideal:



G Suite

Office 365

- You could share files with anyone else who has a Microsoft or Google account, e.g. a consumer Gmail or Outlook.com account. But when you share a file with an external collaborator you probably don't know which account is best to use.
- You could generate anonymous sharing links to documents. These links are so long that guessing them is essentially impossible. Anyone with the link can click it and gain access, whichever account they are or are not signed into. An anonymous sharing link is much better than attaching a file to an email and sending that. Once sent that document has left the organisation and can't be retrieved, but a document shared by a link can be easily unshared.
- You could issue full university IT accounts to NHS consultants, visiting lecturers, external examiners and others. As a result it is common for universities to have as many honorary staff on their systems as they do salaried staff. But it isn't a great solution for your external partners, as you're giving them the burden of handling yet another account. And with Microsoft's latest Knowledge Worker licensing, universities now need to pay licenses for some of these associates. So now is a good time to overhaul the identity management of associates.

The big access management problem of the era is phishing. Phishing emails have become quite convincing, and it's far too easy for an attacker to get hold of a username and password. This is so great a problem that Multi Factor Authentication (MFA) has finally caught on. Many universities implemented MFA in 2019-2020. If you haven't yet done so, do it!

The 2020s: the post-digital university

In this history of universities and the Internet, we've explored identity management from the perspective of existing staff and students. In the next part we will explore what a digital university will need for the 2020s, and we can rebuild with stronger foundations.

In a networked world people don't need to visit a campus to experience a university's teaching and research. The biggest opportunities will go to universities who can successfully manage the relationships with people outside the institution. We need easy logon options for prospective students, alumni, commercial partners and everyone else we interact with. This enables personalisation and the ability to charge for online resources, creating new HE business models for the 2020s.



About the author

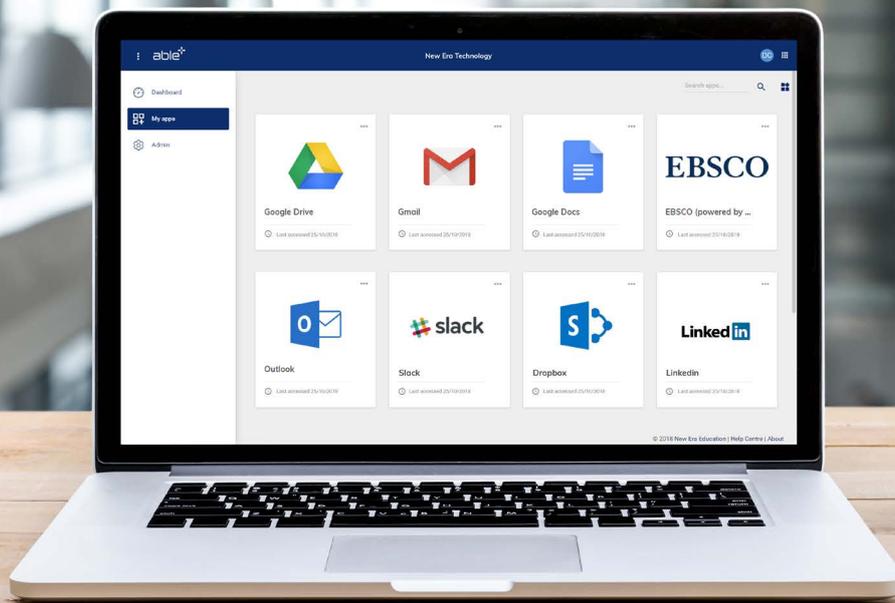
Nick Skelton has worked within Higher Education IT for over 20 years. In 1998, while still a student at the University of Bristol, he founded ResNet, the first broadband Internet access for students in halls in the UK. He went on to be Head of IT Platforms at Bristol, and then to lead digital change programmes, helping organisations create digital-first, paper-light ways of working.

He is now an independent IT consultant, acting as a critical friend and experienced advisor for a number of universities and charities.

Twitter: @nick_skelton

nick@nickskelton.co.uk

<https://www.linkedin.com/in/nickjskelton/>



03334 559424

info@neweratech.co.uk • neweratech.co.uk

able  |  Powered by
newera
TECHNOLOGY