Ireland's digital citizens set for the future

HEAnet's Chief Executive **John Boland** says traditional nine-to-five network services are not viable anymore for students and researchers

John Boland, Chief Executive, HEAnet Maura Hickey

Providing ultra-high bandwidth, Internet connectivity and shared services to more than one million users across the country and beyond, HEAnet really is a national education network for shared ICT services.

Set up as a not-for-profit in 1983 by the Higher Education Authority and the country's Universities to provide high-speed resilient Internet connectivity, HEAnet has evolved massively over its 30-plus-year history.

Initially, servicing approximately 210,000 students and staff across the higher education and research sector, today HEAnet also provides connectivity and services to around 800,000 students and staff in the primary and post-primary sector, through its schools' network.

According to John Boland, HEAnet's Chief Executive: "Over a million people are using our network every day in Ireland, facilitated by the 60 full-time staff that work for us. A lot of our business involves brokering solutions and dealing with telecoms providers," said Boland. "It is our job to apply our commercial and technical expertise so that we can continue to broker the best deals and provide the best solutions for our clients."

"The organisation exists to implement the best possible deals for our education and research sector clients when it comes to Internet connectivity and associated shared services. In a world where cloud is becoming more and more relevant and our clients need to move more and more systems off campus, in many ways, we have become a key facilitator of this change," he said.

HEAnet currently works with 19 different telecoms firms in providing its services, meaning we work as a broker on behalf of the education and research sector. Its client base has grown from the seven Universities and DIT in 1983 to now encompassing the 13 Institutes of Technology and many third-level colleges and research organisations across the country, bringing the total number of its client institutions to 64.

"We operate as a not-for-profit. Any publicly funded education or research organisation can connect to our network for a fee, and the advantages of being connected are overwhelming," said Boland.

"Our ongoing challenge is to ensure that we provide access to the same sort of Internet connectivity for research as anywhere in Europe, and that students, researchers or academics working here are not in any way disenfranchised by being based in Ireland. HEAnet achieves this through the provision of its very high bandwidth, multiple gigabit network, which is dedicated for use solely by our education and research clients. We also leverage this capacity to connect every school in the country to the same network," he said.

Through the school's network, every post-primary school in the country now has a 100Mbps high-speed broadband connection.

"This gives teachers the opportunity to confidently use their electronic white boards and use activities on the Internet for teaching. It is one thing for the teacher to describe from a book the ceiling of the Sistine Chapel, but it is another to navigate right around it on the white board."

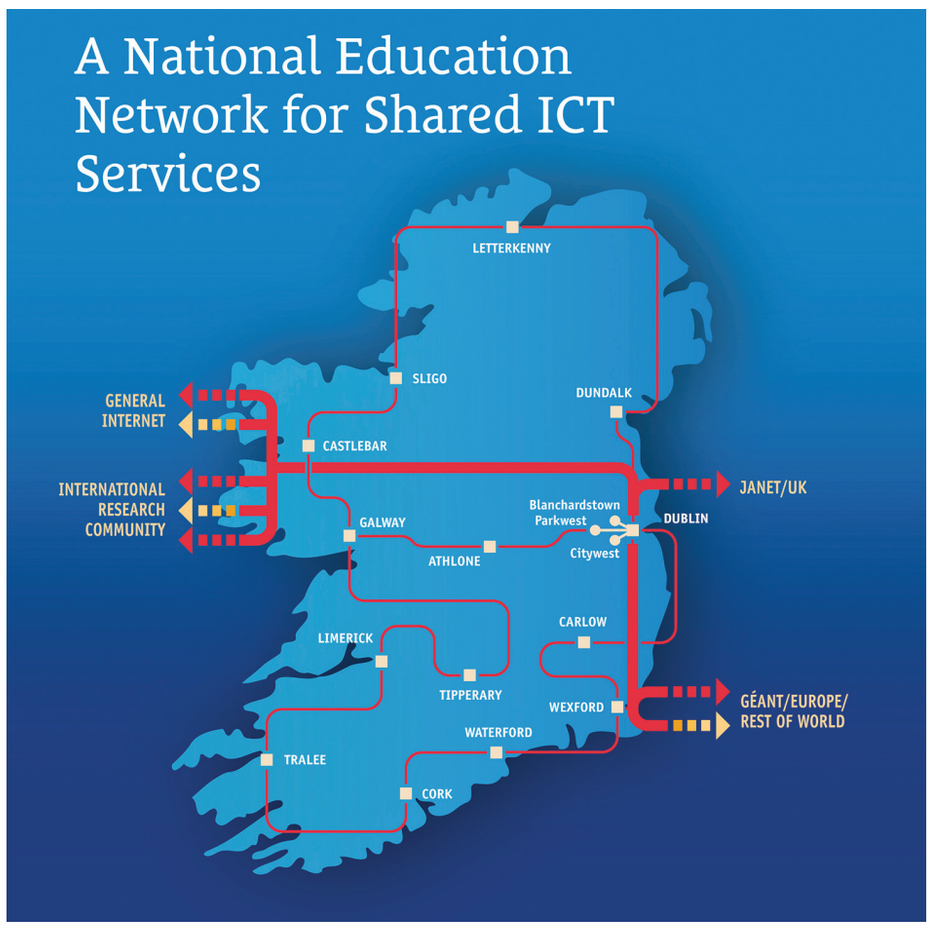
"We budgeted for it, we planned it, we oversaw the installation of it, we tested it and now we provide network support for it. There is a help desk set up by the Department of Education and managed by the Professional Development Service for Teachers (PDST), so schools can call them and, if need be, the PDST help desk can escalate to us," said Boland.

Internationally, HEAnet provides students and staff in the higher education and research sector with high-speed resilient Internet connectivity via GÉANT, the pan-European network which facilitates research collaboration around the world. "HEAnet and the global education and research community form a collaborative partnership, working together on innovative solutions and service enhancement projects for the benefit of all our clients," he said.

According to Boland, a major focus of their current activity involves moving more of its client services into the cloud, for both cost and logistical reasons. "In the current economic climate, our clients are facing major staffing and funding challenges, and are looking to move more and more services off campus and into the cloud."

"One example of this is in the area of email services. Historically, it has been a big challenge for computer services/IT departments in Universities and other third-level institutions to provide and manage email for students and staff. Nowadays, it is much more likely for email to be completely outsourced to solution providers such as Gmail or Office 365," said Boland.

"By moving these types of services into the cloud, our clients don't need to have the physical boxes on site anymore and therefore don't have to worry about space quotas," Boland said. "There are many other services we provide also moving into the cloud; these include library systems, finance systems and what is increasingly called the virtual learning environment or VLE," he said.



"The VLE is the beating heart of any education or research institution system because, increasingly, students expect to be able to work online, anytime, from anywhere, and not be limited to only working on campus. That means being able to look up lecture notes, stay up to date with course work and submit assignments, around the clock," he said.

Boland goes on: "It is a key challenge. Traditional nine-to-five network services are just not viable anymore. If students are doing course work or submitting assignments at two o'clock in the morning, the network has to be there for them."

"This is a significant ask in every way for us. It's all about providing value-for-money shared services, and wherever ICT is going in the future, that is where we need to be in order to provide these services for our clients", he said.

"Identity management is another key piece of the puzzle – providing a single sign-on which gives access to the VLE for lectures, downloaded journal articles, email, everything, in fact. Identity management is a very big deal, and our federated service, called Edugate, goes a long way to resolving these types of issues for our clients," said Boland.

The increasing ubiquity of the cloud brings more questions and issues for a body like HEAnet. "Is it reliable? Is it being backed up? Is it secure?" According to Boland, this is particularly true for academic researchers who have concerns about putting sensitive data into the public cloud.

"In response to this concern, we see a role for a private cloud here as well, which is what we provide in our data centres – they are complete walled gardens of security for our clients. That's the place for somebody doing work that might have commercial or sensitive research value and which they really don't want to find on an Internet search engine," he said.

One of the most recent developments for HEAnet, according to Boland, has been the creation of a not-for-profit subsidiary company to look after management information systems for all of the Institutes of Technology.

"This not-for-profit subsidiary of HEAnet – EduCampus – manages finance systems, human resources, library access and student systems, so all of the Institutes of Technology have a single set of services which are accessed centrally. This has achieved great savings through economies of scale," said Boland.

"Our clients are customers, certainly – they pay fees for our services and, in turn, we must give good value for the services we provide. An independent study commissioned last year by the chairman of our board to establish the value-for-money proposition, bore that out from two perspectives," he said.

"Firstly, do we represent value for money for our clients when compared to what they could do themselves? And, secondly, in terms of the Irish taxpayer, are we value for money? In both cases, the findings of the 2015 study were very positive," Boland said.

This independent, value-for-money study found that, for clients using HEAnet services, the cost of replicating the agreements and services offered by them would be substantially higher than the existing arrangements. It also found that HEAnet can generate annual net savings for the Irish tax payer, calculated at €19.98 million.

Furthermore, the study found that, without HEAnet, it is very unlikely that broadband services to schools would be provided by an alternative provider or providers at the same level of capacity, reliability, security and cost as can be provided using HEAnet's existing network infrastructure and resources.

"One example of the considerable student discounts is that they get Microsoft Office for free. This is the sort of deal for education that we are at the forefront of negotiating. Brokerage at this scale is something that didn't exist a few years ago – it was all about the network and trying to build our network infrastructure," said Boland.

"Now that the network is built and in place, our clients want us to broker services that utilise the network. That is the challenge. Although we have to continue to maintain the network, and both reliability and resilience are critical, our clients are not as focused on the network anymore and see it as a utility. That being said, if the network should break down, it is all hands to the wheel to re-establish connectivity as fast as possible. Third-level institutions cannot tolerate downtime on their network," he said.

"Traditionally, Universities and education networks have been years ahead of the market because they have to be, to be at the leading edge for researchers. The people using our network are researching the next generation of the Internet and what will happen on it, so we must provide services that are way ahead of the curve. In many ways, it doesn't make commercial sense for a commercial company to provide the level of bandwidth that we do, as illustrated in the 2015 independent value-for-money study," said Boland.

HEAnet also receives European funding for its international connectivity and for international research. "While we're not competing commercially with the Telcos – in that sense, we're not commercial – we do provide services for a closed community of people at the leading edge of what's happening in networking, and you will find the market catching up every few years following the things that we do," he said.

While the average domestic broadband connection to the Internet is still operating in the tens of megabits, and businesses access speeds in the hundreds of megabits, many of HEAnet's academic clients routinely access data services at speeds of up to 10 gigabits per second.

"Home and business users will see the speeds offered to them jump a lot in the coming years, if our experience is anything to go by. Prices will come down and cloud-driven services will become even more pervasive. By 2020, it is believed that 70 per cent of all IT will be in the cloud rather than on your premises," Boland said.

"It is important for the academic community that students and graduates at all levels of education and research are working with technology that mirrors what they can expect to find when they finish their studies and engage with the working world," he said.

"It is equally important for Ireland's economy," Boland said. "In dealing with the large multinational companies that base themselves here, our students and graduates have to be internet savvy and right up to date with technology – so having access to highly sophisticated Internet services for the education and research sector is a vital part of making our students real digital citizens of the future".

John Boland has been chief executive of HEAnet Ltd since its incorporation in 1997. Before heading up HEAnet, John worked in DCU, and before that worked in industry for a range of international companies, including Marconi Communications Systems in the UK, Motorola Information Systems in the UK and US, and GE Westinghouse in Australia.

John represents Ireland on the GÉANT Policy Committee – a collaboration between the European National Research Networks and the European Commission, delivering advanced pan-European research and education networking.

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