



DAMOVO PROVIDES FIRST CLASS COMMUNICATIONS SYSTEMS FOR DUBLIN INSTITUTE OF TECHNOLOGY

The DIT was established as an autonomous institution under the DIT Act 1992 and has grown to be Ireland's largest third level educational institution. Its origins go back to 1887 and the establishment of technical education in Ireland. The DIT Act 1992 provided for the formation of the Institute by bringing together six higher level colleges formerly under the City of Dublin Vocational Educational Committee (CDVEC) namely:

College of Technology, Kevin Street – founded in 1887

College of Music, Chatham Row – founded in 1890

College of Commerce, Rathmines – founded 1901

College of Marketing and Design, Mountjoy Square – founded in 1905

College of Technology, Bolton Street – founded in 1911

College of Catering, Cathal Brugha Street – founded in 1941

The characteristics of DIT as an organisation reflect its history: its educational mission to a particularly large number and wide range of students is both underpinned by technical expertise and in constant need of high quality technology because of the nature of most of its academic disciplines. The current informal DIT slogan "The City Is Our Campus" reflects the dispersed geography of its teaching and other units in over 40 separate sites. These are all elements which affect the strategic investment by DIT in its information and communications resources.

In recent years a new vision of 21st century education has been added with DIT as a multi-level technological institution offering programmes to a broadly-based clientele in a learner-centred environment and including a focus on responsiveness to society's lifelong learning needs. The DIT Strategic Plan specifically envisages state-of-the-art library, conference centre, multi-media and teleconferencing facilities, virtual classrooms and laboratories, modularised e-learning programmes, outreach centres, etc. For all of these objectives and needs, a first class ICT infrastructure is the essential element on which to build.

HIGH QUALITY MULTIMEDIA PERFORMANCE AND HIGH SPEED INTERNET ACCESS ESSENTIAL FOR A MODERN UNIVERSITY

The Business Challenge

As with any large organisation, the six colleges had a history of investment in various strands of ICT over time but almost entirely based on each college making independent decisions following specific needs or matching legacy investments. Essentially the first enterprise-wide project was the 1995 roll-out of a unified voice network and single PABX switch which for the first time united all major locations and staff. The LAN in each College developed at different paces and leased line connections between the principal locations. The resulting network topology had resilience issues and on one occasion an excavator severed a vital link which brought down many DIT systems for almost two days.

Examination of DIT's requirements showed that there were many special needs – or highly desirable features – over and above the basic requirements for a high performance network architecture linking all locations with reliability, security and resilience. Staff members often work in different locations, for example, high quality multimedia performance (lectures, demonstrations, teleconferencing) is basic for a modern university, as is high speed Internet access. In regard to the network architecture, the dispersed geography of the DIT facilities, the need for resiliency and other factors continued to dictate a mixed technology solution.

The Objectives

The DIT made the strategic decision to invest in a high performance network infrastructure that would deliver converged voice and data (including multimedia) with a standard quality of service to all users throughout the organisation. Resiliency was to be essential, together with high bandwidth availability and a level of 'future proofing' in the light of the rapid development of educational and other applications. It went to tender with the specifications for its network requirements in 2000.

The objectives were to create a high performance, robust and resilient network that would transparently deliver a high level of service to all students and staff – into the future and across current applications and potential new services.

“We had a complete set of service objectives and essential technical and performance specifications,” said David Scott, Chief Information Officer at DIT. **“But it is also fair to say that we had open minds in many respects for additional recommendations and different approaches. It was and is important that the new DIT network be capable of responding to and forming the platform for new technologies that are emerging in a rapidly changing education and e-learning world – just as our own visions for DIT's future are evolving, for the next decade and beyond,”** he continued.

“...network capable of responding to a rapidly changing education and e-learning world”



LEADING EDGE TECHNOLOGY WITH BUILT-IN CAPABILITY TO HANDLE TODAY'S CONVERGED APPLICATIONS

The Project

The initial contract was won through the DIT tender process by Damovo in 2001 and completed in late 2002 covering the major DIT locations. A number of elements of the present DIT network have been expanded or added to since that time. A measure of the success is that there has been no unplanned network downtime since the original project was completed, according to David Scott.

The Damovo solution for DIT consists of the consultancy and design, installation, commissioning, equipment supply and maintenance for three separate but related elements:

- ▶ **The data network and LAN switching**
- ▶ **A digital voice solution over the same physical network**
- ▶ **Fixed microwave links between sites plus integration with existing and newly laid fibre optic and other connections including leased lines**

The ongoing costs of leased lines from telecomms carriers was one driver for the new DIT network, leading to the choice of microwave links for a major part of the communications between locations because of its inherent reliability and cost effectiveness. **“It is excellent for internal communications on an extended campus like DIT, offering a 34MB backbone – perhaps 20 times the bandwidth of alternatives other than expensive to lay fibre – to handle large data traffic volumes,”** pointed out John McCabe, managing director at Damovo. **“There is a single capital investment but then no ongoing costs other than simple maintenance. In DIT we also configured alternative links between locations so that there are in effect two microwave rings for resilience,”** he added.

The Damovo team stresses that the quality of service delivered by the DIT network comes from a combination of

the architecture and engineering and the high levels of automation and intelligence incorporated in the switching and network management systems. **“Damovo partners with global solutions providers which deliver proven, leading edge technology that has the built-in capability to handle today's converged applications – voice and data, video and so on – and any new digital application in the foreseeable future.”** McCabe added that telephony was the biggest challenge in DIT as in most large WANs because of the constant issue of user expectations, consistent quality and a dial tone at all times. Prioritising voice traffic while simultaneously carrying bandwidth-intensive data streams over a mixed network demands smart technology. Similarly, intelligent routing of mixed traffic over the microwave links was made possible by the development of multi-service platforms.

“...excellent for internal communications on an extended campus, handling large data traffic volumes”



DEMONSTRATED BENEFITS IN TERMS OF FLEXIBILITY AND EASE OF INSTALLATION

DIT has deployed Damovo's Voice over IP (VoIP) telephony solutions in certain locations. The School of Architecture is housed in leased premises in Green Street and now has 140 VoIP extensions in an Ericsson solution, seamlessly registered back to the central PBX over the network. A similar system has been added in Camden Row while some smaller sites have also been IP enabled. **“The VoIP systems have performed flawlessly,”** says McCabe, **“and have demonstrated benefits in terms of flexibility and ease of installation.”**

Wireless LAN access is another technology that was added to the original network specification – DIT was one of the first Dublin third level institutions to offer it – and has already more than proven its worth in a number of respects. **“We foresee student use of laptops or other portable devices growing with time,”** said Scott. **“We have made a start with WiFi in public and social areas and have proven that it is a flexible and relatively inexpensive technology to extend the reach of the network.”** Once again, the sophistication of the network is such that enabling WiFi users is quite simple. Visiting academics, for example, can be facilitated with temporary Internet access in a matter of minutes. This kind of location independent working is now, in fact, a standard courtesy in most European universities.

The Benefits

- ▶ The network has capacity for all currently anticipated data traffic growth and numbers of users. It can be extended relatively easily and economically when required
- ▶ Reliability is guaranteed by resilience (no single points of failure) throughout the network
- ▶ Every desk in DIT has a 10/100mbs switched network connection
- ▶ Every teaching area (lecture/class/meeting rooms, conference venues) has at least one data point

- ▶ DIT has a single unified telephone system across all major locations, including operator assistance and voicemail, with identical quality and features for all users. One view of all aspects of its management simplifies routine tasks such as adding/changing users and enables smart features such as diversion or ‘follow me’ routing, etc.
- ▶ Wireless LAN access is provided for staff and students in public and social locations e.g. reception areas, libraries, restaurants, conference venues.
- ▶ The DIT 140Mbs Internet connectivity is provided via access through HEAnet Irelands national education and research network
- ▶ International video links and multimedia content streaming can be delivered direct to any location in DIT. This enables valuable links with third level and research institutions abroad and will be a platform for international academic partnerships, notably planned collaboration with universities in China
- ▶ E-Learning, MIS and Email systems have centralised data storage and backup with a 4 Terabyte SAN connected to the Gigabit backbone
- ▶ Each major site has servers connected to the networks gigabit backbone

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