

North-South Co-operation on Information and Communications Technologies (and related areas)

A Mapping Study

by [Patricia Clarke](#) 10 July 2000

This mapping study was drawn up to inform the discussions of the Centre for Cross Border Studies' specialist Study Group on existing co-operation, and the scope for further co-operation, between organisations in the two Irish jurisdictions around information and communications technologies. **Although the final draft of the mapping study will be presented at the Study Group meeting in September 2000, the Centre is willing to incorporate any additional information, especially factual corrections, notified to it.**

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1. INTRODUCTION

Information is rapidly becoming the driving force of economic growth, social development and employment and also the primary source of competitiveness in the world market. The emerging Information Society is one that uses information intensively and in a way that significantly reduces the traditional constraints of time and space. ICT has become a inclusive term for the convergence of 'Information Technologies' and 'Communication Technologies'. The information and communication technologies (ICT) revolution is set to transform business practice and reach into every aspect of life in the future. Those countries with the infrastructure, institutions and programmes to develop and use these technologies will become the world's major players.

The recognised need by both the Republic of Ireland and Northern Ireland to embrace the Information Age has resulted in prolific development over the past couple of years. Central to these new developments is the prospect of engaging locationally disadvantaged areas with the diffusion of telecommunications infrastructure beyond core economic centres. The changing economy is based on evolving global solutions, which transcend borders. The prospects of peace and of a devolved government in Northern Ireland have permitted certain areas of North-South co-operation to be officially ratified. However the true extent of North-South/cross border co-operation and integration in the field of ICT has not yet been documented.

This paper serves to facilitate discussions by anchoring current levels of co-operation so that future mutually beneficial developments can be directed.

2. POLICY and DEVELOPMENT

Industrial policy has traditionally been the main instrument used to promote information technology innovation and development within Ireland, North and South.

Republic of Ireland

The establishment of [Forfás](#) in 1994 as the policy advisory and co-ordination board for industrial development and science and technology in Ireland marked the beginning of a focused drive towards dealing with the Information Society. Forfás advises the Minister for Enterprise, Trade and Employment on the development of state policies designed to stimulate enterprise and employment. It is the body in which the State's legal powers for industrial promotion and technology development have been vested. It is also the body through which powers are delegated to [Enterprise Ireland](#) for the promotion of indigenous industry and to [IDA Ireland](#) (the Industrial Development Agency) for the promotion of inward investment.

During 1996 a number of key Irish policy documents were published. Firstly, [Forfás](#) published a document entitled *[Shaping Our Future: a strategy for enterprise in Ireland in the 21st century](#)* which represented the first attempt in Ireland to establish a long-term strategic public policy framework for promoting the development of the enterprise sector. In November 1996 the first ever Government *[White Paper on science, technology and innovation](#)* was launched. It marked a new beginning in the national approach to science and technology, locating it firmly within the framework of wider industrial, economic and national development policies. Also in 1996, under the aegis of Forfás, the Minister for Enterprise and Employment announced the formation of the Information Society Steering Committee, which brought together representatives of industry, trade unions, telecommunications and relevant Government departments. The report of the Committee, *[Information Society Ireland—A strategy for action](#)* (March 1997), set out a comprehensive policy framework and set of recommendations to harness the benefits of the new technologies to increase employment and living standards.

Recommendations arising from these reports saw the establishment of a number of additional bodies under the auspices of Forfás. The National Competitiveness Council and the [Irish Council for Science, Technology and Innovation](#) were established within a short time period to consider specific issues critical to economic performance and job creation. The [Information Society Commission](#) was established under the auspices of the [Department of the Taoiseach](#) to spearhead the implementation of a national strategy to ensure that the benefits of the Information Society were accessible to all, not only those who could afford the technology. In its first annual report the National Competitiveness Council developed the *[Statement on Telecommunications: A key factor in electronic commerce and competitiveness](#)*. Published in November 1998, this Statement sets out the role of telecommunications in sustaining Ireland's economic growth into the future. The Statement also reinforces the broad thrust of the recommendations in the Forfás policy, *[Broadband Investment in Ireland](#)* (March 1998).

The Irish Department of Public Enterprise has been very active in pushing forward the legislative and infrastructural changes required to foster electronic commerce in Ireland. In July 1999, Forfás published the strategy report, *[E-Commerce: the policy requirements](#)*. The report was prepared at the request of the Tánaiste and Minister for Enterprise, Trade and Employment, Mary Harney TD, to advise on the actions required to develop Ireland as a world-centre for e-commerce. The resulting (May 2000) Irish *[Electronic Commerce Act](#)* is an extensive formal legal framework for e-business and has provisions relating to the equivalent recognition of electronic signatures and electronic forms of writing, the fraudulent use of digital signatures and the admissibility of electronic evidence in court. The Act is intended to create legal equivalence between the traditional world and the electronic world, and is the most comprehensive legislation of its kind in Europe.

A number of recent announcements have served to highlight the government's role in encouraging global telecommunications operators to locate in Ireland. The announcement in

March 2000 of the establishment of a £560 million [Technology Foresight](#) Fund and a dedicated [Research Foundation](#) to evaluate research projects and to manage and allocate funds will serve to substantially enhance the Republic's profile and status in the world of R&D. This strongly supports the strategy of the [Industrial Development Agency](#) (IDA) to secure more high level R&D alongside the production and services operations of overseas companies. Both the Fund and the Foundation are significant additions to the other high technology initiatives taken by the Irish government in recent times, such as MediaLabEurope (MLE) and the Dublin multimedia village. [MediaLabEurope](#), modelled on the highly successful MediaLab at Massachusetts Institute of Technology, will specialise in multimedia, digital content and internet technologies. It is expected to attract major international interest and sponsorship and to lead to new start-up companies and increased entrepreneurship. The multimedia village will be a central location for domestic and international companies engaged in multimedia and digital industries.

Furthermore, the strategic plans for the development of the next wave of Irish high technology business, as outlined in Enterprise Ireland's report [Internationally Traded Sector](#) (ITS 2007), have tried to address the regional imbalance in telecommunications. The development of a series of technology hubs known as 'Webworks' in regional towns (e.g. Sligo) and the location of an eBusiness Learning Centre in the Border Midlands West region are two initiatives which should serve to develop the border region of the Republic.

The Irish government has publicised itself as a "flexible, business-focused administration highly responsive to change, and capable and committed to facilitating joint initiatives with businesses". The planned delivery of electronic government should serve to reinforce these perceptions. However, a recent opinion poll by Volta Consulting of 50 Irish politicians (TDs) on their own personal use of the Internet casts a shadow of doubt on this account. Approximately 1 in 4 (24%) TDs personally use e-mail to communicate with their constituents or use the Internet to research material. It thus appears that most TDs probably do not have a practical day-to-day grasp of e-mail and the Web and can only discuss the Information Society in abstract terms: can they be entrusted to legislate about the digital domain?

Northern Ireland

The 1998 Competitiveness White Paper [Building the Knowledge Driven Economy](#) and the 1999 Cabinet Office report [e-commerce@its.best.uk](#) provide a detailed programme of action designed to achieve the goal of developing the UK (incorporating Northern Ireland) as the best place in the world for e-commerce by 2002. Key policies to help achieve that aim include:

- connecting all schools, [libraries](#), colleges and universities to the National Grid for Learning by 2002,
- creation of [IT for All](#) access centres in local communities,
- launch of the [University for Industry](#) in 2000 (using new technology to deliver lifelong learning at home, work and in the community),
- the work of the [Internet Watch Foundation](#) in establishing a self-regulatory response to illegal and harmful content on the Internet,
- draft legislation to ensure legal equivalence of off-line and on-line business practice,
- £20 million to expand the [UK-wide Information Age Initiative](#) to promote SME uptake of e-commerce technologies,
- target of 90% of [routine government procurement](#) to be conducted electronically by 2001.

In July 2000, the UK government published the [*Electronic Communications Act 2000*](#) to improve trust in electronic trading, including modernising the law to recognise electronic signatures and removing existing laws which require the use of paper. Over time the ambitious government targets have been reviewed and accelerated so that plans for e-government should now be 100% achieved by 2005. While the overriding policies of the UK have served to accelerate the position of Northern Ireland to that of equivalence with the rest of the UK, direct rule under the Northern Ireland Assembly will allow the North to focus more directly on achieving ICT growth through the establishment of local partnerships.

The March 1999 report on Northern Ireland's economic development strategy, [*Strategy 2010*](#), identified the ICT revolution as a key priority area and recommended the establishment of an Information Age Commission reporting directly to the First and Deputy First Minister in the new [*Northern Ireland Assembly*](#). Following the Good Friday Agreement, this report marked the first systematic attempt to take the local economy through the first decade of the new millennium. Although telecommunications regulation is a reserved matter within the UK under the auspices of the [*Department of Trade and Industry*](#) (DTI), e-commerce legislation is Northern Ireland specific and can be developed at a local level by the Northern Ireland Assembly. An [*Information Age Initiative*](#), representing a wide range of private and public sector interests, was established in September 1999 by the [*Department of Enterprise, Trade and Investment*](#) (DETI). This advisory group, which was established as an interim step towards the development of a fully functioning Information Age Commission, aims to develop a strategy framework and comprehensive action plan aimed at ensuring that NI takes maximum advantage of opportunities for e-business. [*Leapfrog to the Information Age*](#), the first report and action plan of the Information Age Initiative, is essentially a summary of work already undertaken within Northern Ireland alongside specific proposals for further work which are presented within a framework of 25 action areas. The proposed strategic framework has identified three key issues: the use of ICTs by all businesses and organisations, the rapid development of the ICT sector in Northern Ireland and the enhancement of an environment supporting the knowledge economy. The proposals, which were reported in April 2000, are now open to comments and discussions before implementation is agreed.

The [*Department of Enterprise, Trade and Investment*](#) is taking the lead in supporting the Information Age Initiative and, through an extensive range of programmes such as the [*Training and Employment Agency*](#) (T&EA) Buttons programme and the [*Local Economic Development Unit*](#) (LEDU) connectivity chain initiative, is encouraging the development of the knowledge-driven economy and e-commerce. The T&EA's training programme entitled [*Buttons—E-commerce Made Easy*](#) aims to inform SMEs about benefits of e-commerce and assists them to overcome any fears. Originally 1,500 places on a one-day workshop were announced, but this was subsequently increased to 2,500 places to reflect demand (currently 1,900 awareness days have been completed).

Sponsored by the Department of Enterprise, Trade and Investment, [*LEDU*](#) is the lead agency in Northern Ireland for local economic development. It helps businesses in the manufacturing and tradable services sectors which employ up to 50 people. LEDU's staff, who are drawn from industry and commerce, work closely with a range of organisations to provide support for small businesses. These organisations include the [*Industrial Development Board*](#) (IDB), the Training and Employment Agency (T&EA), the [*Industrial Research and Technology Unit*](#) (IRTU), the Northern Ireland Tourist Board (NITB), local councils, other economic development bodies and the private sector. LEDU's Corporate Plan, [*Unlocking the Potential*](#), for the period 1998-2001 states its vision is to "be sought out and respected as a leading force in economic development as a result of our contribution to a small firms economy, which has become vibrant, confident and outward looking". LEDU has played a key role in promoting e-commerce within Northern Ireland, with 1,300 of its core clients registered as on-line users by June 2000. This achievement has been a direct response to LEDU prioritised actions in dealing with clients over the Internet. This practice of encouraging connectivity, although extremely intensive to sustain, is seen as the kick-start to e-commerce within

Northern Ireland and is now being strengthened by the provision of electronic services. LEDU's web presence now extends to facilitation of good practice (e.g. checklists for effective websites) alongside a programme of fast-track funding and intensive six-week e-commerce courses for companies.

One of the main roles of the [Industrial Research and Technology Unit](#) (IRTU), an Agency within the Department of Enterprise, Trade and Investment (DETI) for Northern Ireland, is to encourage and support local companies to become more competitive through innovation and investment in industrial research and development. Located at Lisburn, the Agency administers a range of financial support programmes and provides scientific, technological and environmental services to industry and government. Through the [Technology Development Programme](#), which is funded and promoted by the IRTU and its partners, centres of excellence in Northern Ireland are establishing links between industry and academia. The recent report by the Information Age Initiative recommends that the IRTU undertakes a specific campaign aimed at promoting a significant increase in the level of ICT related R&D undertaken by both companies and the universities. This campaign, which is scheduled to start in October 2000, should include the work of the ICT incubators and the Northern Ireland Science Park.

Common features

There appear to be no fundamental differences in the principal development policies of governments North and South. Both jurisdictions have invested in the same processes of infrastructure, education, training and connectivity. While there has been more public investment in the South, this money has primarily gone to build the infrastructure that NI had already developed under the European STAR ([Special Telecommunications Action for Regional Development](#)) programme. Indeed, the main difference is that the Southern government has publicised its achievements better than the North.

3. TELECOMMUNICATIONS INFRASTRUCTURE

Republic of Ireland

The recent Republic of Ireland White Paper on Rural Development (1999) entitled *[New Ways of Living and Working—Teleworking in Ireland](#)* recognised the role of ICTs in opening up enormous possibilities for regional areas. It states that by 2010 everyone will have access to cheap high speed communications networks, allowing those living in rural areas to be on an equal footing with their urban counterparts. In parallel, the [Information Age Initiative](#) in the North has proposed that a strategic framework be put in place during autumn 2000 to ensure that all areas in Northern Ireland have equal access to new technology.

In the Republic of Ireland £2.6 million in initial funding was invested in developing a 100% digital backbone transmission network in the period 1995-1996. The high-grade broadband 2.5 Gbits links which are required by high-technology industries were installed mainly in the South and Eastern region. However, the policy of ensuring that the benefits of high-speed communications and the Information Age extend beyond urban areas was boosted by the allocation of £18.2 million in EU structural funds and match funding of \$43.3 million by seven companies in July 1999. The money is being used to roll out the [Global Crossing](#) high-speed telecommunications cable to two million people in 21 counties in Ireland. The Global Crossing Network seamlessly interconnects major cities worldwide in a continuous network of state of

the art undersea and terrestrial fibre optic systems. [Pan-European Crossing](#) (PEC) is a high capacity terrestrial network system linking major cities through Europe. The PEC network system will be fully integrated with the entire Global Crossing network. By summer 2000, a 40 Gbit backbone network serving major parts of the country (Dublin, Galway, Limerick, Waterford, Wexford and Wicklow, Mallow and Cork) will be in place. This network will be connected to the Global Crossing network by August 2000.

Additional developments (outlined below) will see other areas of the Republic (including border regions) connected by December 2000. This rollout of 20,000 kilometres of fibre optic cable around the country has been further boosted by the Minister for Public Enterprise's [recent announcement](#) that £150 million will be made available in October to fund work on unbundling the local loop. A second transatlantic cable project connecting Ireland with the United States, provided by the Canadian company Network360, will see Republic having 25% of all Europe's broadband capacity by the end of 2000. By spring 2001, it is anticipated that the Republic of Ireland will have access to all of the major business centres in the world. The announcement in July 2000 that Global Crossing data centre subsidiary GlobalCentre would open a massive data warehouse centre in the Republic has underlined the South's new profile as a major player in the broadband field. This profile is one which the Irish government has created by buying capacity on broadband networks and selling it on to companies in Ireland at affordable prices.

The provision of internal bandwidth to those areas outside the main economic centres in the Republic is being undertaken by six companies: [Esat Telecom](#), [Ocean](#), [HEAnet](#), [Cablelink](#), [Suir Nore Relays](#) and [Cable Management Ireland](#). This improvement in infrastructure is being concentrated mostly in the west and south-west of Ireland. [Esat Telecom](#) is investing £10.3 million to expand the broadband catchment area to local access networks by laying optical fibre from Athlone to Claremorris, Ballina, Sligo and the intermediate towns. [Ocean](#) is spending £18.7 million to provide independent cable access at 30 intermediate locations for other operators to use in the west. [Cablelink](#) will rollout fibre links to support small and medium-sized enterprises seeking high-speed Internet access and additional services within the west and south-west region.

Regarding the border region, telecommunication services in Donegal will gain most from the £18.2 million EU allocation. [eircom](#) has received the highest allocation of £6.4 million for two separate projects. It will provide optical fibre and broadband access nodes to 75 small urban centres between Sligo and Cork, ensuring that high-speed telecommunications are available to 70% of residents in the west of Ireland. In addition, optical fibre has been laid on 95 kilometres of the west coast of Donegal and to two Technology Information Communications centres, based at Lifford and Bridgend, to promote the use of the infrastructure on a cross border basis. In February of this year, eircom revealed plans to develop a 55,000 mile broadband fibre optic ring in Northern Ireland. The fibre ring, which will link into eircom's broadband network in the Republic and offer a robust all-Ireland communications network, should be completed by the end of the year. [eircom](#) described the move into the North as good strategic sense not just from a branding perspective but more importantly in reflecting their ambitious all-Ireland development plans for the future.

eircom's push north is the latest evidence in a burgeoning all-Ireland telecoms market. Since September 1998, [ntl](#) (a UK company also operating in Northern Ireland through a subsidiary Cabletel) has provided city-to-city direct connectivity from Dublin to Belfast using fibre links christened SIRIUS (SDH Integrated Resilient Ireland UK System). The 300km of cable allows customers to purchase flexible, managed connectivity from a single supplier through a single contract. In 1999, ntl gained a major strategic foothold in the Republic when it bought cable TV company Cablelink. In January 2000, BT successfully bid for mobile phone company [Esat Digiphone](#), making its presence felt South of the border.

Northern Ireland

Northern Ireland has a first-class telecoms infrastructure, forming part of one of the most competitive telecoms markets in Europe. This achievement is directly related to EU regional development policy (typified by the cross border INTERREG programmes) to introduce structural changes in the poorer, less favoured regions and in particular to introduce equitable provision of, and access to, an advanced telecommunications service. The successful STAR ([Special Telecommunications Action for Regional Development](#)) programme has addressed the provision of telecommunications infrastructure and resulted in an advanced network with over 1,000 miles of optical fibre and 45 local switches in the Integrated Services Digital Network (ISDN). The all digital network can transmit and process every kind of communication – voice, data, text, still and moving video images at speeds from 128 Kbits – 2.4 Gbits. For inward investors this provides total flexibility with immediate high-speed access to the world's information systems. Indeed, past practice, which the Information Age Initiative intends to encourage, is the rollout of new technology in Northern Ireland in advance of comparable UK regions. One future proposal is the adoption of a specific strategy to influence and ensure that telecoms providers deliver a world-class service in Northern Ireland.

Both the Republic of Ireland and Northern Ireland have placed great importance on the development of a world-class telecommunications infrastructure. More recently, fuelled by strategic take-overs of private companies, an all-Ireland network has begun to develop.

4. TELECOMMUNICATION USAGE*

Personal use

The number of Internet users in the **Republic of Ireland** is increasing rapidly. According to a recent survey by [Amarach Consulting](#) (March 2000), 22% of all Irish adults now say they use the Internet, an increase of 33% in the past five months. It is predicted that the Internet is about to become a mass-market phenomenon in Southern Ireland with home access expected to be the main growth area this year. The equivalent figure for Internet usage in Northern Ireland is 13% of the population, with penetration in some urban areas as high as 16%. Quest Consulting analysts predict that up to 20 percent of households in Northern Ireland will have Internet this time next year. These findings currently rank Northern Ireland alongside France and Germany and ahead of Italy and Spain in terms of Internet penetration. The Republic of Ireland is currently equivalent to the overall UK figure while Scandinavian countries continue to lead the field with penetration in Sweden estimated at 40 percent.

Business use

The take-up of the Internet and related ICTs is an important indication of whether businesses are exploiting these technologies. The proportion of Irish businesses, both North and South, using the Internet is still low by international standards. Furthermore, the use of telecoms by businesses in Northern Ireland is underdeveloped compared with other parts of the UK and the Republic of Ireland. Recent work by the [University of Ulster](#), which was published in the *Irish Banking Review*, shows that only 3% of businesses use the Web in Northern Ireland. This compares poorly with 9% of businesses in the Republic of Ireland and 10% of businesses in other parts of the UK. Within both jurisdictions, the use of the Internet by small businesses is very slow to develop, with connectivity of micro enterprises (0-9 employees)

perceived to be even lower than that of small –medium enterprises (SME <50 employees). This has particular connotations for e-commerce in Northern Ireland, where over 85% of business are classified as microenterprises. Although the University of Ulster results conflict with other Internet surveys such as those conducted by the [Chambers of Commerce of Ireland](#) and the Information Societies (North & South), it is generally accepted that the level of Internet usage by businesses is lower than previously thought. The conflicting figures serve to highlight an issue that permeates all North-South co-operation – that of the lack of compatibility of data in the North and the South and the varying levels of rigour of adopted methodology. Reasons commonly cited for lack of business use include supply chain inertia, fear of security and legal issues, concern about local liability, lack of knowledge about technology and various business models and a lack of appreciation of the business benefits.

Cost

Prices for telecoms services in Northern Ireland are very low by European standards and are lower than in the Republic of Ireland. However while the cost of national and international calls has fallen dramatically in both the North and the South in recent years this pattern has not been repeated in the 'local loop'. This is the last mile of wire that connects homes and businesses to the national telecommunications infrastructure and so to the Internet. The cost of making a local call to connect to an Internet Service Provider (ISP) remains high, even though the Internet service (e.g. Freeserve) may actually be provided free of charge. The cost of local calls in the Republic is very high compared to other OECD countries, with the price of leased lines over 100% higher than in the US. Within both jurisdictions, the national operators ([eircom](#) in the South and [BT](#) in the North) still control access to the local loop, with both governments pushing hard for deregulation. However, it was expected that eircom along with other telecommunications operators will begin trials on long-awaited broadband digital subscriber loop (DSL) technology in July 2000. Within the North BT had scheduled July 2001, with the possibility of December 2000, as the date for unbundling the local loop. The European Commission has set a goal of full deregulation for member countries by December 2000 so it is highly probable that local loop liberation both in both jurisdictions will happen by the end of the year. This is expected to lead to the introduction of high-speed broadband services, including video and music on demand, along existing phone wires before the end of the year. Meanwhile the introduction of unmetered access such as [BT Surfetime](#), which allows continuous connection to the Internet for £19.99 per month, should see the number of businesses connected soar to a new high. Interestingly, as connectivity costs have fallen over the past couple of years, cost is no longer seen as a major factor in hindering business use of the Internet. However, much work is needed in raising awareness of companies to the existence of these reduced cost platforms and of encouraging companies to maintain their use (it is estimated that 10% of free Internet connections become redundant after one month).

Mobile access

One advantage of mobile phones is that they bypass the local loop and its associated costs and controversies. New standards such as Wireless Application Protocol (WAP) allow mobile phone users to access the Internet. Population penetration by mobile telephony currently stands at about 33% for Northern Ireland, compared with 46% for the Republic of Ireland. There is evidence that the mobile Internet is catching on in the South with about 2% of Irish adults already using WAP-enabled mobile phones to browse the Net (predicted to rise to over 5% by Christmas 2000). Issues concerning cross border mobile telephony are currently being researched in a separately commissioned project by the Centre (see footnote). Suffice to say that the use of mobile phones across the border on a [day to day basis](#) proves extremely

costly with different mobile phone licences in the North ([BT Cellnet](#), [Vodafone](#), [Orange](#)) and the South ([Eircell](#), [Esat](#) and [Meteoric](#)). During their campaign to obtain the third mobile phone licence in the Republic (finally granted to Meteoric in July 2000 following a 2-year legal battle) Orange had claimed that if successful they would reduce the cost of cross border calls.

Common to both jurisdictions is the shortage of skilled personnel to service the telecoms industry and past difficulties in retraining graduates. A key factor in the future development of the telecoms sector in both regions is the availability of a suitably trained workforce.

* The Centre for Cross Border Studies has commissioned work, with sponsorship from [eircom](#), on mobile telephony links in Ireland. This project, entitled *Developments in Telecom Technologies taking place on both sides of the border*, is being conducted by two of Ireland's leading specialists in the fields of information retrieval, data analysis and image & signal processing: **Professor Fionn Murtagh** of the School of Computer Science at Queen's University of Belfast and **Dr John Keating** of the Department of Computer Science at the National University of Ireland, Maynooth. Because of this, mobile telephony links across the border are not covered within this discussion paper although they may be incorporated at a later date.

5. INTERNET SERVICE PROVIDERS

The cost of using the Internet has prohibited connectivity in the past. While the cost of telephone charges has dropped dramatically in recent years, it is only since the introduction of unmetered and free Internet access that the use of the Internet has begun to rise significantly. Within the Republic of Ireland the number of Internet Service Providers (ISPs) is gradually increasing, and includes [CableNet](#), [Connect Ireland](#), [Cork Internet Services](#), [Esat Net](#), [Ireland On-line](#), [Unison](#), [eircom Net](#) and [OceanFree](#). Some of these ISPs only offer services to parts of the country (e.g. Cork Internet services) and some ISPs, such as [OceanFree](#), offer a free service. Others have now moved to offer packages for off-peak use or at a monthly price for unlimited access. Northern Ireland is much better served with over 70 ISPs covering the UK, a large percentage of whom offer their services within Northern Ireland, most notably [BT Surftime](#) offering unmetered access for a fixed monthly payment and [Freeserve](#) offering free Internet service. From a cross border perspective, the use of a single ISP within both jurisdictions of Ireland can prove very costly, with international call charges and surcharges added when logging on in the alternative jurisdiction. One example of this would be the use of [CompuServe](#). Within the North customers can access the service through a single local-rate number but access from the South outside Dublin and Cork is charged on a national rate complete with surcharges. ISPs are beginning to provide equivalent services on a North-South basis (see below) but this has not been without problems.

Ocean, an Irish company jointly owned by ESB and BT, which is based in Dublin, employs in excess of 180 people. The introduction of Ireland's first free Internet service in June 1999 ([Oceanfree.net](#)) was expected to see a surge of Irish customers. Instead it highlighted concerns over joint, cross border working. While Ocean's technical, modem connection, marketing, sales, distribution and web-design teams are based in Dublin, the free internet service uses British Telecom as its internet connector. While the internet service provider calls begin in Ireland they terminate in BT networks, possibly in London. Concern was expressed that the creation of jobs to support and handle the calls would be based in London and that Irish users would be connected to an already congested system in the UK leading to a poor quality service with no incentive to improve the Irish infrastructure necessary for Internet access.

The establishment and launch of [UTV Internet](#) follows the acquisition of DNA Internet last March by UTV. DNA, Northern Ireland's largest local access Internet Service Provider, had

already moved into the Republic where it was providing Internet services to both residential and business users. The new Internet Service, which has its sights firmly set on both sides of the border, is 'free' with unlimited e-mail addresses, unlimited personal website space, local call Internet access and free ISDN capacity. The factor that distinguishes UTV Internet from other 'free' ISPs is the free customer support provided over a local line—most of the other 'free' ISP services charge quite a bit for their technical support calls, so as to recoup some of the cost. In addition, it was emphasised at the launch that access costs would be further reduced 'when the regulatory environment permitted'.

In addition, the cable companies have begun to provide access to the Internet through TV set-top boxes. This development is not provided on an all-Ireland basis. In the Republic [Unison](#) is actively recruiting people in all urban and rural areas to purchase its set-top TV boxes at £280. [ntl](#), which promised a similar system by summer 1999, has yet to unveil its product. Accessing the Internet through the TV has been hailed as a major breakthrough for the inclusion of rural areas in the Information Age, as it will allow connectivity where the underlying broadband infrastructure is not available.

6. ACCELERATING CO-OPERATIVE DEVELOPMENT

As early as 1998 the [Irish National Competitiveness Council](#) recognised the lack of spatially balanced development within the Republic. In their statement on telecommunications they recommended that a national policy framework should be developed taking account of the social and economic opportunities for development of broadband infrastructures in co-operation with Northern Ireland. This policy would address the development of competitive broadband services in the north west and border counties where there were no current plans to deploy advanced telecommunications infrastructures.

In parallel, the recently published [Strategy 2010](#) (March 1999) report on the Northern Ireland economy, and the NI Department of the Environment's consultation document [Shaping our Future: Towards a Strategy for the Development of the Region](#), mirror the Republic's policy of decentralisation and development of regional areas. It was recommended that a sustained effort should be made to concentrate new inward investment around nine hubs and to provide the telecommunications infrastructure to make this approach fully effective. The importance of pursuing co-operative initiatives that could have significant economic benefits for the whole island—such as the proposed Dublin-Belfast digital corridor, the introduction of short dialling codes and shared freephone numbers for the whole island and an agreed policy on cellular roaming—was emphasised. The peace process and the transparent development within EU policies were cited as two major factors which would allow development agencies and government departments to co-operate in the provision of an all-island network.

The Republic's [National Development Plan](#), published in November 1999, cements the Irish government's commitment to both promoting peace and economic development of key growth areas outside Dublin. A North South Common Chapter in the plan sets out areas of specific co-operation up to 2006. In line with the decision of the EU Berlin Council in March to continue the [Special Support Programme for Peace and Reconciliation](#) (SSPPR) in Northern Ireland and the border counties, the EU has allocated a further £400 million package of grants. Of the total package £80 million will be allocated to the six border counties of Donegal, Leitrim, Sligo, Cavan, Monaghan and Louth, a further proportion will be allocated to developing North South projects and the balance will be used to fund projects inside Northern Ireland. An EU Programmes Body, one of the [North-South 'implementation bodies'](#) set up under the Belfast Agreement, will monitor and promote the implementation of the Common Chapter. Another of these bodies, the [Trade and Business Development Body](#), is specifically involved in co-operation on business development opportunities, North and South, and is particularly well poised to influence the development of cross border e-commerce links.

Already, the body has held a cross border conference focusing on the benefits e-commerce can bring to border-based small and medium sized enterprises. This was attended by 100 companies from both sides of the border with influential keynote speakers from America. A cross border e-commerce workshop organised by the Trade and Business Development Body in June 2000 was attended by all the major public and development agencies from both sides of the border. At this meeting Deloitte and Touche consultants presented their findings from the commissioned work and facilitated discussions on North-South comparability and the identification of areas where the Trade and Business Development Body could potentially impact. This work is due to be published in Autumn 2000.

Three measures which were cited within the Common Chapter on the development of telecommunications infrastructure will serve to accelerate the establishment of an all-Ireland network. Firstly, three study groups have been established to advance the establishment of a digital corridor between Dublin and Belfast. The telecommunications infrastructure that runs alongside the economic corridor being promoted by the [IBEC-CBI Joint Business Council](#) is being evaluated with a view to enhancing links. The systematic exchange of information between the [eircom Information Age project](#) and the [Information Age Initiative](#) in the North is being instituted. The development of businesses both off-line and on-line is being enhanced. The report, which was published in July 2000, has been approved for funding and is currently being factored into the National Development Plan.

Secondly, the development of the North-West cross border strategy has seen the commissioning of a study with a view to developing an integrated, multisectoral cross border Information Society in this area. The [Digital Economy project](#), which is run under the auspices of ERNACT (see [ERNA](#)), has been undersigned by all of the local authorities, development agencies, health boards, tourism agencies in the North West cross border region and represents a unique opportunity to develop the socio-economic issues of the area. Joint development agency board meetings have already taken place and plans are underway to attract prospective IT companies from the Dublin region to expand or relocate into the North-West region. Concrete recommendations for accelerating the cross border strategy, which aims to identify and implement 16 high technology projects in the region over a 3-5 year period, are due to be published within the coming months.

The third example cited in the report is that of a proposed digital corridor between Monaghan and Armagh. Like the two previous measures, this initiative has the backing of the development and enterprise agencies from both sides of the border. However the specific details concerning the telecommunications infrastructure have yet to be developed. Although this initiative has been developing in a small way over the past two years, it is only recently that political backing has been sought. Funding has now been secured through the [SSPPR](#), [International Fund for Ireland](#), [LEDU](#) and the local councils with a target of attracting 75 jobs on both sides of the border. Plans to build the facilities are being progressed and a three-month publicity campaign to attract companies to the region will be held before December 2000. The lack of suitable workspace has been cited by companies in the past as the reason why they have overlooked the Monaghan-Armagh region. Fully serviced sites in Armagh city and Monaghan town, including incubation units for new technology business, will offer a full range of digital and analogue services including PSSTN, ISDN, DASSNET, Frame Relay and Internet with supporting technology services. There is some scepticism that companies may never be attracted to locate in the Armagh/ Monaghan region and that the accommodation should not be serviced by the necessary technology until concrete plans are in place to establish suitable companies. Initial discussions are centring on the establishment of a call-centre in the region. This development is seen as essential for the future development of a region which has in a sense missed out on the Information Society to date, and marks the current focus of both the IDA and the IDB of trying to attract high tech employers to the border regions.

Although the new global economy is one that does not recognise the border between Northern Ireland and the Republic, development and legal practices which underpin everyday

business still need to be refocused to reflect this concept. There are currently no arrangements for development agencies to encourage or facilitate cross border working. In economic terms, all the major players from the North and South have given their backing to the formation of technology links and information exchange.

7. TELEMATIC INFORMATION SYSTEMS

A key requirement of the new Information Society is the ability to manage data effectively. Niches such as data mining, data visualisation and multidimensional analysis are expected to experience high growth over the coming years. While there are many variations on the data management theme the underlying concept is the same – that of bringing the right data to the right person at the right time. The conversion of data into knowledge is crucial in a world where more people are being targeted to make informed decisions. The responsibility for informed decision making is being cascaded to include a much wider group of people. Outlined below are three regional cross border initiatives that are using advanced technology to aid decision-making and spatial planning of core central themes—BORDER, ERNACT and SHOW ME.

7.1 BORDER (Business Opportunities for Regional Development and Economic Regeneration)

Project BORDER was formulated as a direct response to the expressed needs of groups, organisations and enterprises in the border region of Ireland. The development phase (March 1998 – December 2000) of the project received £900,000 funding under the economic development measure of the EU INTERREG II programme. The project involves the collection and collation of spatially referenced data relating to the themes of business and economic activity, the environment, tourism and population & social infrastructure in the border region, to create a comprehensive regional knowledge base. An Internet-based GIS front end allows access to the BORDER Data Warehouse. The warehouse is comprised of 3 main sections: storage of data, models of the datasets used and a data dictionary. This integrated knowledge base aims to underpin a wide range of development initiatives in the border region. For example, in the Newry and Dundalk region, a business and population skills survey has been carried out in conjunction with the Dundalk Regional Development Centre and the data made available to BORDER. Once the data had been collated and verified by the Newry site it was uploaded into the regional BORDER office at the University of Ulster. The data was then geocoded and exported to the BORDER Telematics Information Service where it could be viewed spatially.

The project management committee is made up of the University of Ulster (lead partner) and Colin Stutt Consulting in Northern Ireland, the Local Government Computer Services Board and Connect Ireland in the Republic of Ireland, and Nexus Research, a consultancy based in both jurisdictions. A technical advisory group is made up of a number of key organisations on both sides of the border (e.g. the census offices, Ordnance Survey and telecoms providers—BT and eircom). Local user group committees are organised by Nexus Research and composite members from each of the associated partner sites. Eight strategically located access sites in Derry City, South Tyrone, Enniskillen, Newry, Leitrim, Monaghan and Dundalk are being used to evaluate the pilot phase. Each partner site receives all the necessary hardware and software for establishing a remote access site in a border location including ISDN lines and line usage costs. A financial contribution is also made towards the salary and time of an employee to service the site and to be available to the local community to give assistance and advice on how to use the service. These

sites are responsible for promoting the service in their local area as well as assisting in the collection of local data.

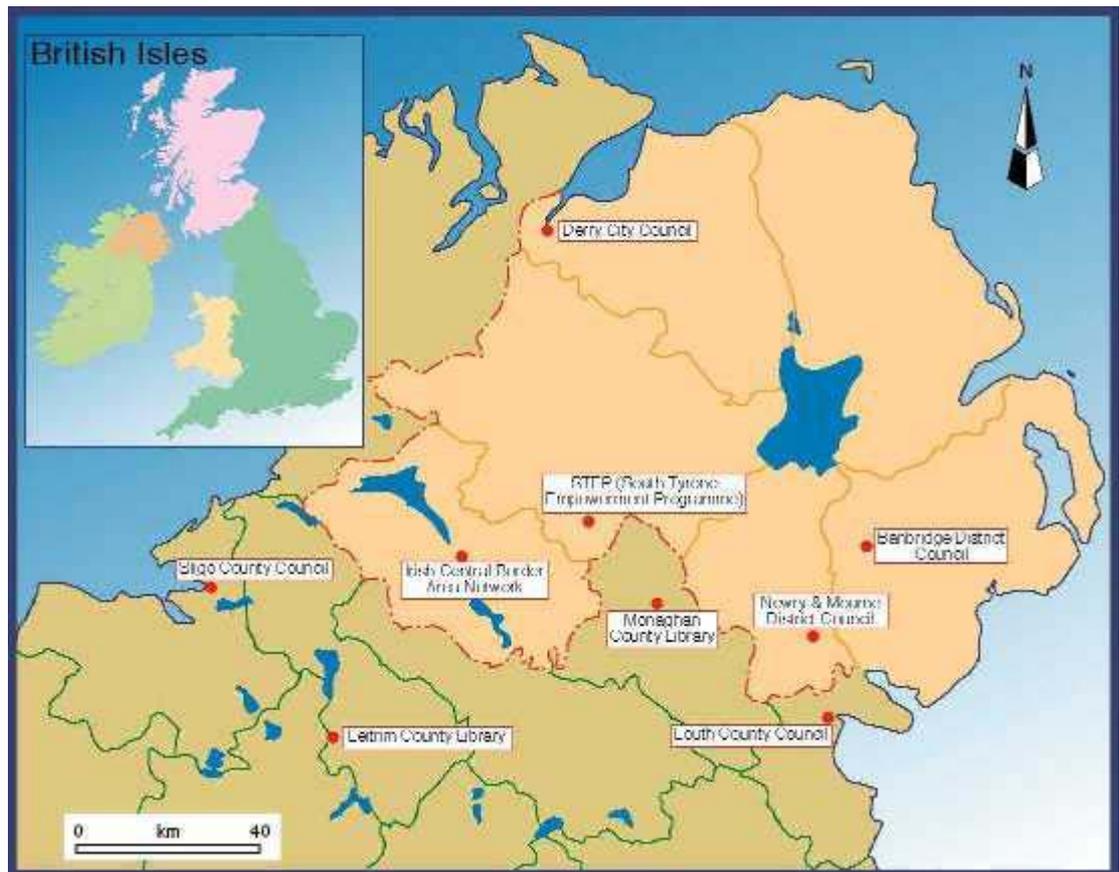


Figure 1. BORDER access sites

This spatial database, now established for access by user groups in the form of the BORDER Telematic Information Service, is made available utilising the latest GIS, multimedia and advanced telecommunications facilities (WWW, ISDN) for interactive query and analysis at access sites throughout the border corridor and beyond.

7.2 ERNACT (European Regions Network for the Application of Communications Technology)

Derry City and Donegal County Councils established [ERNACT](#) in 1990 "to facilitate and develop the economic activities of both councils using Information and Communications Technology". Since then both councils have invested considerable political, managerial and financial resources in developing the organisation and ERNACT has become a network of seven European regions. The European management unit of ERNACT is located in Lifford, Co. Donegal, and co-ordinates the project activities of approximately 30 organisations. A board and a full time executive manage the organisation, legally constituted as a European Economic Interest Grouping (EEIG). Currently there are a number of major EU assisted Information Technology initiatives in progress in the north west border region of Ireland under the ERNACT umbrella, most notably [IRDDS](#), [CRISM](#), the [Digital Economy](#) and [ISIAS](#)

(see below). In addition, experimental videotex and teletext systems and interactive kiosk-based multimedia tourism promotion productions are being piloted throughout the north west region.

7.2.1 IRDSS (*Integrated Regional Development Support System*)

The [IRDSS](#) project (January 1996—December 1999), funded by the EU 4th Framework R&D Telematics Application Programme, developed and demonstrated an interregional telematics application/platform for delivery of general purpose services (spatial planning, business life, tourism, socio-economic and environment) from public authorities to citizens and businesses. Within Ireland the project partnership consisted of Derry City Council and the University of Ulster (Magee College) in the North and Donegal County Council, Galway County Council, the Local Government Computer Services Board (LGCSB) and Skylark Associates in the Republic.

Currently the web provides public access in areas such as libraries, community centres and local government offices. In the future the model is capable of incorporating emerging enabling technologies (IP telephony, Third Generation mobile, trust systems etc.). The design is transnational, enabling administrations, citizens and businesses from different regions to interact. Furthermore, the project designed a set of interregional and cross border multimedial data standards for the storage, transmission and interrogation of thematic data.

7.2.2 CRISM (*Creating a Regional Information Services Market*)

The main deliverable of the [CRISM](#) project is called a *Virtual One-Stop-Shop* (VOSS). CRISM arose out of a paper-based Enterprise Assistance Information Service in Donegal (established in 1997) which provided a signposting service to the people of Donegal on where the most appropriate information and advice was available. The partnership with ERNACT allowed this service to be taken one step further by providing this information on a dedicated web site (i.e. VOSS) and expanding to include other areas in the north west region. Further developments hope to see this service become more comprehensive and interactive.

7.2.3 *The Digital Economy project*

Following the launch of an Information Society Strategy for the North West Region, funding (£600,000) was secured under the EU INTERREG programme in 1999 to develop the [Digital Economy project](#). The development strategy aims to improve the capacity of the north west (Republic and Northern Ireland) to embrace the Information Age and to attract and create sustainable high technology knowledge-based ventures and jobs. The project set out to conduct a technology foresight study which would be used to develop an Information Society for the region taking into account future expected demand in terms of infrastructure, IT applications, education and training and research & development.

The phased strategy focuses on several of the North West's current employment creating sectors: government, health care, tourism, retail and the SME sectors. The main output targets of the Digital Economy Project are to identify, detail and implement 16 high technology projects, which in turn are expected to generate additional investment in new product development, broadband telecommunications services, research and development and new

high technology enterprises. Successful execution of the projects, with the allied financial and inward investment, is intended to create over 100 high technology jobs within a three-year period.

The Digital Economy project has been undersigned by the four cross border local authorities as well as development agencies, health boards, tourism agencies, chambers of commerce, third level education institutions, and telecom and cable operators. This project presents a unique opportunity for the constituent parts of North West Cross Border Region to act together at a level that was not previously possible in order to attract high technology inward investment.

7.2.4 ISIAS (Information Society Impact Assessment for Sustainability)

The [ISIAS project](#) (1998-2000), partially funded by the [EU Information Society Project Office](#), is working together with local development actors in five regions in Europe to assess the impact of the Information Society on their sustainable development and thus integrate their local Information Society, employment, environment and development strategies. Using simulation tools a common framework is being gradually refined through a series of five sets of parallel workshops in each region. The ISIAS project was seen as the perfect complement to the Digital Economy project and it was commonly agreed that a combination of the two approaches would be ideal for the north-west region. The two projects have been interlinked and synergies between the two projects have often arisen. While the [Digital Economy project](#) is concerned with designing strategies for a 3-5 year time horizon, ISIAS aspires to help communities to build for their long-term futures (approximately 20 years). The Digital Economy project focuses primarily on socio-economic concepts while ISIAS is strongly concerned with environmental and social issues. In addition, ISIAS uses an entirely bottom-up approach to reaching consensus while the Digital Economy adopts a more prescriptive top-down approach. The main purpose of ISIAS in north-west Ireland so far has been that of building consensus among the local partners. Further work will involve continuing to build the model and trying to use real data for the indicators and for the cross impact values as much as possible.

7.3 Show Me project

The [Show Me project](#) is a collaborative, interdisciplinary and international effort to develop community decision support tools in the border communities of Fermanagh in Northern Ireland and the Gaeltacht regions of County Donegal in the Republic of Ireland. The two communities were specifically selected to become involved because of their strong community networks. Community decision support gives local community groups the ability to access a wide base of knowledge about their region, to interact with that knowledge and, through technology, inform their planning and decision making processes.

The project, which is funded by the [EU SSPPR](#), is part of a planned multi-year relationship between the [University of Ulster](#), [Udarás na Gaeltachta](#), [Fermanagh District Council](#) and the [University of Missouri](#). In the first year of the project economic and social data were collected in the study areas to build an information base in both communities. The data was then analysed and crafted into databases and economic models. In the second phase the models created from phase one formed the basis of more customised community decision support systems. In the

third phase, which is due to start in summer 2000, community decision-making capacity will be enhanced by developing software and decision support systems bringing together informatics and economic models.

A number of mechanisms were created to deliver the project. A community advisory panel was established in each community. These panels bring together representatives from all sectors of the community to identify issues particularly pertinent to each community. A collaboration forum consisting of representatives of the different institutional partners was also established to address the co-operation of cross border public bodies. In addition an interdisciplinary research team from the two universities underpins the project with expertise in economics, sociology, and informatics.

The community economic impact model (see below) that is being built is centred around a social accounting matrix which looks at the key sectors in a region, at the relationship between sectors and at how the local economy reacts to leakages into the rest of the economy. It is a form of impact assessment which allows the prediction of outcomes. This permits planning for strategic choices.

Components of a Community Decision Support System

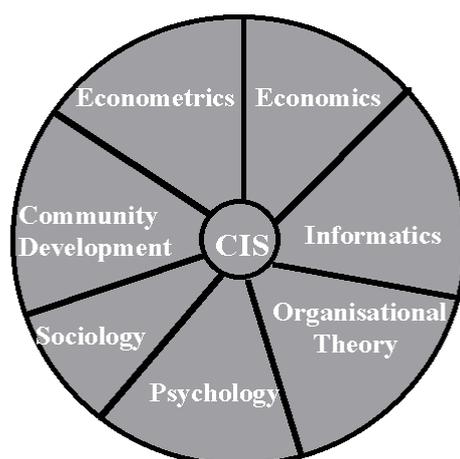


Figure 2. Show Me community decision support model

8. HEALTH INFORMATICS

The health informatics sector, broadly defined as information systems related to the delivery of healthcare, is at an early stage of development both in the North and the Republic. The [Northern Ireland Centre for Health Informatics](#) (NICHI), a consortium of 17 partners spanning the health care trusts, industry, commerce and academia, was established in January 1999 to improve the quality of healthcare delivery. Full partners include the University of Ulster, the Queen's University of Belfast, the South and East Belfast Trust, the Royal College of Nursing, the Northern Ireland Growth Challenge and PRAXIS, the mental health charity. The centre is one of a number of centres to be established in the UK following what is generally believed to have been a lack of co-ordination among those in the health service who use new

technology. The Cork-based [Southern Health Board](#) (SHB) in the **Republic of Ireland** has been involved in telematic services over the past number of years with the primary focus of optimising health service delivery for people who are isolated due to social and physical boundaries or limitations. However it has not established contact with the new northern base. Examples of SHB work include NIVEMES (Network of Integrated Vertical Medical Systems), RISE (Remote Information Services for the Elderly), KATE (Killarney and Telecom Eireann), TASTE (Technology Assessment in Telemedicine) and FECV (Forward Emergency Control Vehicle). While the overall focus of the health technology sector in the Republic has very much been concentrated on the biotechnology area, the [Centre for Health Informatics](#) in Trinity College Dublin has recently run an ICT Awareness Programme with health professionals in 30 centres in the South. Both examples of North-South collaborative work outlined below were initiated by northern colleagues.

8.1 ACTION (Assisting Carers using Telematics Interventions to meet Older person's Needs)

ACTION is a 36-month project funded by the European Union through the Fourth Framework Telematics Application Programme and the TIDE programme (Telematics for the Integration of Disabled and Elderly people). The project started in January 1997 and is led by [NICH](#) in Northern Ireland with partners in Sweden, England, Portugal and the [North West Health Board](#) in the Republic of Ireland. The primary aim of the project is to enhance the autonomy, independence and quality of life for frail, elderly and disabled people and their informal family carers by the application of telematic technology. The main objective is to demonstrate that through a combination of familiar technologies (the carers' own television, remote control units) and use of additional technologies, fast computer processors and access to interactive communication, effective on-line care information communication can become a reality for formal and informal carers. ACTION is a nurse-led project which takes a multidisciplinary approach, so that on both local, national and international levels the teams are supported by a wide range of experts including informatics and telecommunications engineers, social workers, physicians, ethics and health care managers.

Hardware and software applications have been developed in order to meet identified users' requirements. The initial specifications for the carers station is based upon a multimedia PC, designed to operate as a 'set-top box' using an ordinary TV with a SCART connection as its monitor. A remote control handset is used, which obviates the need for a keyboard while allowing the user to switch between TV and ACTION programmes.

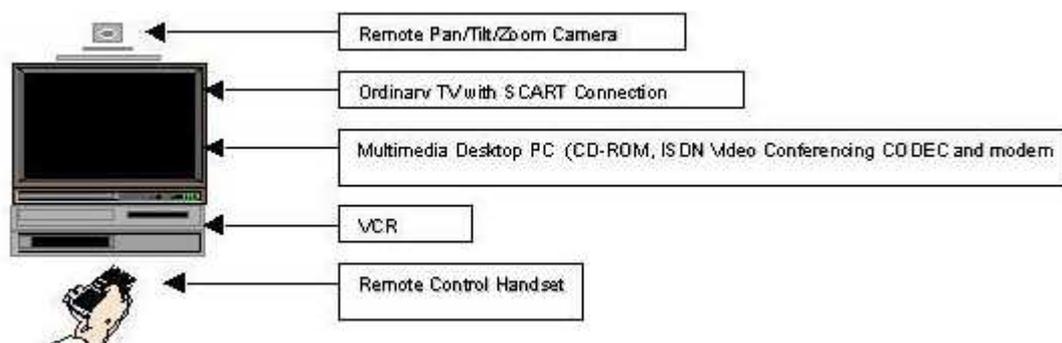


Figure 3. Hardware for the carer station

The PC employs an ISDN compatible codec for video-conferencing between all carers, both family and formal. The overall user interface shell is developed to act as a toolbar from which the user can launch the individual applications modules. All the information is available using intranet system and CD-ROM. Four main types of applications modules have been developed: education and training, information, knowledge-based systems and video-conferencing.

By February 2000, the entire ACTION system, including the training and implementation programmes and strategies enabling family carers and formal carers to use the telematics applications, had been tested and validated in 40 private homes, eight nursing/residential homes, eight hospitals and eight health care centres in both jurisdictions. The ACTION concept is now being evaluated in relation to the overall aim of maintaining and/or enhancing the quality of life, autonomy and independence of older people and their family carers. Preliminary evaluation results have revealed the positive impact of the service on the daily lives of frail older people and their family carers. The majority of users found it helpful, easy to understand, as well as useful and informative. The videophone has been used for consultations between family carers and local health and social care professionals with practical benefits in terms of information giving, education and support. Although user acceptance was similar in both Irish jurisdictions, the family carers/professional carers in NI appeared to be more accepting of the technology and certainly used it more frequently. However the timing of the recent nurses strike in the Republic may have exerted an influence on outcome. The final results will be produced shortly.

8.2 ITHACA (Telematics for integrated client centred community care)

ITHACA is a 36-month project supported by the Health Telematics Programme of the European Commission. The aim of the project is to improve the quality of care provided to people living in the community through the integration and validation of telematic services capable of supporting the efficient sharing of relevant information between health and social care professionals. Specifically, ITHACA hopes to validate and exploit the results of the successful European Prototype for Integrated Care (EPIC) project. The users involved in this project are multidisciplinary groups of professionals from each of the ten sites involved in the project, including doctors, nurses, social workers, physiotherapists, occupational therapists and managers. The Irish partners include South & East Belfast Health and Social Services Trust in the North and the North Eastern Health Board and former Eastern Health Board in the Republic.

The project uses an object-orientated approach to build a demonstrator consisting of a person-centred community information system, with integration of home telecare management systems, and use of portable data access tools such as hand held computers, executive and geographical information systems. The project is developing the telematics support for a client-focused approach to care in which the individual's needs are assessed and care is tailored accordingly with agreed goals and measurement of outcomes.

9. INDUSTRY and RESEARCH

To date indigenous Irish industry has only had modest success in the ICT market and has mostly focused on the less valued areas of either manufacturing ICT or leveraging core ICT models or products. Even though Ireland is developing a nucleus of skills in the area of Digital Signal Processing, its development is limited by the shortage of requisite postgraduate skills. Opportunity growth areas for the future have been identified as the development of affordable technology to solve the problems of the 'last mile', improving the performance of analogue models, wireless communications technology, multimedia capability on the Internet, development of smartcard systems, sensors and storage systems. The importance of research and development (R&D) investment is seen as vital in the development of this new technology and the economic benefits that can accrue from it. Traditionally, Northern Ireland has had access to considerably more R&D funds than its counterparts in the Republic through the many UK-based research funds. However, the recent recommendations of the *Technology Foresight report* in the South and the resultant government decision to allocate £560 million to establish a critical mass of research in Informatics and Biotechnology indicate the Irish government's determination to develop the states intellectual expertise. The challenge for the enterprise and development agencies in both jurisdictions is to create initiatives to maximise the commercial and economic effect of their investments. Of the few true cross border companies, *Nortel Networks* is perhaps the best known. Although the company has bases in Galway and Newtownabbey the work in each centre is co-ordinated through the main base in Canada. Nortel is however involved in numerous cross border staff training exercises and technology awareness exercises and the experience of working in both jurisdictions gives it a valuable insight into the strengths and weaknesses of the respective business environments. The emphasis on enhancing linkages between the knowledge resources of university and industry as the key to sustaining successful innovation in the economy has been outlined in numerous recent reports such as the recent EU Green Paper on innovation, the UK White Paper on Competitiveness, the *Republic of Ireland Enterprise Report* and the *Northern Ireland Strategy 2010*.

At present there are relatively few examples of North-South/cross border co-operative work (see below) with people in both jurisdictions preferring to work with partners in Britain or further afield. However, there appear to be certain factors which have facilitated joint working, including the introduction of EU directives which stipulate criteria that need to be met by industries in both jurisdictions, the convergence of isolated university disciplines into multidisciplinary centres and the reputation of a centre as a leader/or the best in the field within a wider context than its own jurisdiction. Truly jointly-managed cross border work is rare with only two examples found, namely the Centre for Supercomputing in Ireland and the Biomedical and Environmental Sensor Technology Centre. Other cross border work appears to have been mostly instigated by people within Northern Ireland although a few examples have been found of work led by partners in the Republic.

9.1 Jointly managed projects

9.1.1 Supercomputing

Supercomputers, which are used by universities and government institutions for modelling large dynamic systems such as weather patterns or economic development, can also be utilised in general industry. Irish supercomputing projects are in large part dedicated to raising awareness in the corporate sector about the commercial applications of supercomputer-crunched data.

The [Centre for Supercomputing in Ireland \(CSI\)](#), jointly undertaken by [Trinity College Dublin](#) and [Queen's University Belfast](#) is now the 16th-largest supercomputer installation in Europe. A strategic decision was made by both universities to combine their efforts to raise funding for an ultra-expensive machine. The powerful IBM SP-2 supercomputer, which is housed in QUB, is a parallel processing computer, its 48 processors working together to execute a programme's calculations. Each processor has 256 megabytes of memory, and with the system's overall 340 gigabytes of disk space, the SP-2 can handle 30 billion calculations per second.

Among the projects already underway at the centre are:

- Modelling telecommunications networks: telecommunications bandwidth, and the methods used to connect networks, are changing rapidly, so European telecoms operators are seeking new ways of designing large-scale networks. The scale is such that prototypes are unfeasible, so this project is attempting to create a computerised model of such massive networks.
- Supermarket refrigeration: the SP-2 supercomputer was used to build fluid dynamic models to simulate milk separation in large storage tanks, and the suspension of solids in large stirred tanks.
- Fish farm management: to track potential pollution from fish farms, a large model of the ocean currents and tidal patterns of the Conamara coast was used to simulate the movement of effluent from the fish.

Outputs expected from CSI include 600 trained graduates, enabling new-start-ups, inward investment and new areas of opportunity for business. The aim of the £4.2m Centre for Supercomputing in Ireland (CSI) was to eventually make 20% of its computer time available to Irish industry, initially at no cost. However, these plans have not yet been implemented.

During April 1997, a partnership between [TCD](#), [QUB](#) and the [Dublin Chamber of Commerce](#) was established as a [Technology Transfer Node \(TTN\)](#) within the European network of high performance computing (HPC) transfer nodes. This network, the [Irish Centre for Transfer of Advanced Computing Technology \(ICeTACT\)](#), is supported by the European Commission's ESPRIT programme in IT for a three year period. It is located at TCD's Innovation Centre. It was set up to show Small and Medium Enterprises how to become more competitive and efficient by using the latest information technology solutions. Another 19 similar 'nodes' or centres are scattered across the EU, all working together to publicise the results of EU-funded projects that have successfully used high-performance computing in the past. ICeTACT's core activities are concentrated around awareness creation and dissemination. One of the main studies conducted by ICeTACT in conjunction with Vector Computing International Ltd in Belfast was the awareness campaign in Northern Ireland entitled 'Awareness Creation for Industry and Government in Northern Ireland' (ANI) Project. The main objectives of the ANI Project were to make organisations in Northern Ireland aware of the potential for exploitation of supercomputing technology, and to carry out a survey of the degree to which Northern Ireland organisations are aware of the potential of supercomputing to their companies and understand and use simulation

techniques. Over a six-month period interviews were conducted with key managers in the North, 100 business organisations were surveyed and awareness seminars were held with both government and businesses. The study revealed a very high interest in the benefits of supercomputing which was coupled with little practical understanding and negligible current activity. Recommendations from the advisory group to follow-up this new interest with training sessions have not yet been realised.

9.1.2 BEST Sensor Technology

The [Biomedical and Environmental Sensor Technology \(BEST\) Centre](#) was established as a cross border initiative supported by the International Fund for Ireland (IFI) to provide seed funding for sensor related research activities in Ireland. Currently the Centre represents a partnership between the [Northern Ireland Bioengineering Centre \(NIBEC\)](#), the [University of Ulster at Jordanstown \(UUJ\)](#), [Dublin City University](#) and the [National Centre for Sensor Research \(NCSR\)](#). The BEST Centre's primary objective is the promotion of a vibrant biomedical and environmental sensor industry within Ireland through close collaboration between the research groups and industry. Currently the BEST Centre is involved in projects as diverse as biomedical devices, biomaterials, novel drug delivery systems, gas sensors, optical and electrochemical sensor development, signal acquisition and processing, development of automated monitoring equipment, remote sensing, materials synthesis and antibody production. Following the initial IFI funding period, the BEST Centre has been funded by two internal research centres (i.e. NIBEC and NCSR).

As this is a collaborative centre, there are a number of industrial partners involved in a range of collaborative R&D projects. Further details of current research can be found on the BEST Centre's [website](#). However, one example of a collaborative project which is generating a lot of interest in both Irish jurisdictions is the development of smart packaging. This project involves fitting radio transmitters and sensing equipment to frozen food pallets to guarantee proper handling by intermediary distributors. The packing automatically records temperature, sampling every 30 minutes over a two-week shipment period. Data can be downloaded at any stage during intermediate handling and can be coded to prevent tampering. The system can be adjusted simply to show green for proper handling or red for danger or it could give an entire listing of measurements, broadcast by a tiny radio transmitter and picked up by quality control staff. A further example is the development of wrappers that detect oxygen. These packages can be used to ensure that prepacked surgical kits have remained sterile and can also be developed to scavenge for oxygen, thereby keeping red meat looking better when on display. Another smart packaging project is the development of wrappers that react to the food they contain, changing colours if high levels of bacteria are present. The potential for marketing such innovations has clearly been recognised by industry, with strong partnerships between a range of companies from the North, the Republic (including Cadbury, Kerry Co-op, Monaghan Mushroom, Smurfit and Analog Devices) and the BEST research unit.

9.2 Republic of Ireland managed projects

9.2.1 The National Centre for Laser Applications

The [National Centre for Laser Applications](#) (NCLA) was founded in 1989 as a centre of excellence in laser technology. It is based in [University College Galway](#) (UCG) and is a partnership between Forbairt and UCG. The centre provides the infrastructure that encourages the use of lasers in Irish manufacturing industry and facilitates the transfer of information and technical knowledge to industry by providing access to state of the art laser equipment and expertise. Lasers are a key enabling technology in the automation of high precision industrial processes. Many Irish companies, both indigenous and multinational, benefit significantly from the improved product quality, greater efficiency, and higher throughput, which laser tooling can provide.

The NCLA has recently commenced a comprehensive cross border project to promote the use of laser technology in industry. The project, part-financed by [INTERREG II](#) and administered by [Optronics Ireland](#) in Dublin, aims to provide companies in Northern Ireland and the border counties with an introduction to laser technology and a low-risk assessment of laser process viability. 15 companies in the North and seven companies in the border counties which were too small to have their own R&D facility but could potentially benefit from laser applications were selected to attend a one day workshop run by NCLA. Companies' current production procedures were assessed during individual visits and methods of introducing laser technology were discussed. Finally, following proposals from the companies, NCLA produced reports outlining the economic and other benefits that changing to laser applications would ensure. Four companies have since decided to adopt laser techniques and one or two companies are undergoing follow-up projects. One of the reported benefits of the scheme has been the exchange of experience and practice between the traditionally heavy engineering in the North and the light engineering in the Republic.

9.2.2 The National Microelectronics Research Centre

The [National Microelectronics Research Centre](#) (NMRC) was established at [University College Cork](#) in 1982. The Centre has a dual mission; to perform world-class research and, as a key part of the National Science, Technology and Innovation infrastructure, to provide support both to Irish industry and government agencies. NMRC today is the largest multidisciplinary research centre in Ireland with a research income of £4.4. million in 1999 and is recognised as a world-class centre of excellence in selected Information & Communication Technology (ICT) fields. A critical mass of 260 staff and postgraduate students is in place with access to core technologies and state-of-the-art ICT research facilities. The Centre has recently received major funding from the Higher Education Authority's Programme for Research in Third Level Institutions to establish a world-class [National Nanofabrication Facility](#). NMRC is currently the only European ICT research centre selected to participate in all advanced research initiatives of the EU Information & Communications Directorate. The NMRC [Central Fabrication Facility](#), an amalgamation of all of the processing facilities under a single management structure, works with [BCO Technologies](#) based in west Belfast. BCO Technologies, which is supported by £13 million grant aid from the Industrial Development Board, manufactures a computer product called BCO Substrate Material for the semiconductor industry.

9.3 Northern Ireland managed projects

9.3.1 The Polymer Processing Research Centre

The [Polymer Processing Research Centre](#) (PPRC) was established at Queen's University Belfast in 1996 with assistance from the [Industrial Research and Technology Unit](#) (IRTU). The Centre brings together the expertise of the Rotational Moulding Centre (mechanical engineering) and the Polymer Extrusion Centre (chemical engineering) which had been operating separately at the university for many years. The purpose of the PPRC is to carry out leading edge, industrially exploitable, fundamental and applied research and to support the activities of the plastic industry. This support includes product and process development; analysis and testing of material; and training courses for managers and process operators. While the Centre's main interest is polymer processing, it also undertakes projects associated with waste minimisation, life cycle assessment and recycling, and has already worked with a number of companies associated with the health care industry in Sligo, Cork and Galway (for example, Boston Scientific). In addition, the Centre intends to establish a Medical Polymer Research Institute in collaboration with the School of Pharmacy and to strengthen its existing links with medical device companies in the Republic such as [Metronics](#) in Galway.

9.3.2 The Electromagnetic Compatibility (EMC) Test and Advisory Service

The [EMC Test and Advisory Service](#) was established in 1995 in the [Northern Ireland Technology Centre](#) (NITC) at Queen's University Belfast. NITC operates as a practical experience centre dedicated to technology transfer. The Centre is self-financing with income from industrial services providing 95% of its £2.5 million annual turnover. The Centre aims to provide effective technology transfer to industry and academia and operates an effective product and process development centre for local small/medium enterprises. Specifically, the EMC group provides design advice and test facilities to enable manufacturing and service industries to make preliminary assessments of the EMC characteristics of new products and equipment. The EMC group has numerous clients in the Republic of Ireland and is now planning to widen its customer-base by raising awareness of the legal requirement of CE Marking among companies.

9.3.3 Digital Signal Processing Laboratory

The [Digital Signal Processing Laboratory](#) (DSiP) was established in 1997 at Queen's University Belfast and works in the key growth area of digital signal processing, a ubiquitous technology which underpins most of the exciting developments in digital television. Major application programmes include research on video compression, adaptive beamforming, real-time data encryption and low-energy digital signal processing platforms. The Centre has also been involved in helping to formulate British national government research strategy in System-on-a-Chip (SoC) area. The advisory board has representatives from numerous major companies with a strong telecommunications interest and includes a representative from [Analogue Devices](#), Limerick. Analogue Devices is a key manufacturer of precision performance integrated circuits with plants throughout the US, Taiwan and the Philippines as well as in Limerick and has recently bid to buy the west-Belfast based [BCO Technologies](#).

9.3.4 The Queen's University Environmental Science and Technology Research (QUESTOR) Centre

The [QUESTOR Centre](#) carries out an environmental research and training programme on behalf of 20 member industrial companies located throughout Ireland and Great Britain. The Centre has two interconnected strands. Strand A consists of a research programme which complements current work within the Centre, while Strand B has established a [Environmental Applied Technology Unit](#) aimed at transferring technology to and providing training, consultancy and Research & Development for companies. The Centre's client base has expanded into the Republic and it has recently been involved with a number of companies in the north west, notably concerning the installation of secondary treatment facilities to comply with the EU Urban Wastewater Treatment Directive whose implementation is required by December 2000. Using [INTERREG](#) funding, the Centre conducted a pilot scale study for primary sludge production by coagulation/ flocculation and its experimental treatment by anaerobic digestion. The results are being used to facilitate the design of new treatment works for wastewater from 13 fish processing factories and plants in the Killybegs area of Donegal. Another of its Southern clients includes St Brendan's Irish Cream Liqueur Co. Ltd where it is working in collaboration with colleagues in the [Northern Ireland Centre for Diet and Health](#) (NICHE) to enhance the technical knowledge underlying efficient production of a new liqueur on an industrial scale.

10. MULTIMEDIA and ARTS

The multimedia industry (film, television, radio, special effects, music, and advertising) is one of the fastest growing industries in the world. This is underlined by the convergence of the traditional media with growing on-line media sector. The successful company has been shown to engage a mix of professional, technical and artistic skills. The importance of establishing links with the information technology industry and the telecommunications industry for future development was highlighted in the final report of the Republic's Film Industry Strategic Review Group: [The Strategic development of the Irish Film and Television Industry 2000-2010](#). Also emphasised was the need to develop further the co-ordination of marketing programmes with the corresponding Northern Ireland bodies.

While the Republic has had some notable success stories across the various media sectors, it is generally regarded as being very fragmented and in the early stages of development compared to the major international players such as the US. The digital media industry is young and embryonic and consequently its growth potential over the coming years exceeds that of the traditional creative industries. The recent recommendations as outlined by Enterprise Ireland for the development of the digital media sector in the Republic should serve to realise this potential. The establishment of a [National Digital Media Directorate](#), an Informatics programme and a series of digital media flagship initiatives alongside the planned Digital Media District (incorporating the [MIT Media Lab](#)) in Dublin should serve as a strong basis for the development of Ireland as a centre of excellence in this field. In addition, [Enterprise Ireland](#) is considering the possibility of establishing a European Digital Media Training Institute in the Republic in parallel with the development of a strong network of international contacts and overseas incubation facilities.

Within Northern Ireland, the Queen's University-based [Creative Industries Research Network](#), launched in November 1999, addresses policy, research and development interests relating to the relationship between culture and industry, the arts and management. The network is supported by the Royal Irish Academy and the British Council and encompasses academics, practitioners and policy-makers working in the creative industries from both the UK and

Ireland. 60 participants representing a range of creative industries, development agencies and university research units attended a workshop in November 1999 to discuss the crucial role that knowledge, creativity and innovation play in contemporary socio-economic development.

The [DREAM project](#), run under the auspices of the Nerve Centre in Northern Ireland (see below), is currently producing a series of new media research reports providing valuable strategic objectives for the development of the new media sector within the region. However concrete recommendations have yet to be implemented. The [Nerve Centre](#) has also highlighted the need for an alternative business model within Northern Ireland to support the formation of business ideas grounded in creativity. The established support structures for businesses concentrate on business planning, accounting, marketing etc. and need to be realigned to promote creativity and entrepreneurship within the NI socio-economic system.

The skills shortage in the ICT industry in particular is increasingly seen as a major barrier to the growth and competitiveness of the multimedia industry. The need for education and training systems to embrace multimedia technologies has been highlighted by policy makers in Northern Ireland and the Republic. Third level education systems need to be able to incorporate the most advanced thinking into their college courses. Furthermore, the entirely segregated nature of third level institutions into departments concentrated on particular disciplines also needs to be revised in the light of technological developments which reflect the convergence between different areas. While the relationship between the media sectors North and the South has always appeared to be one of co-operation in the past, the South now appears to be racing ahead with development plans for the future. With the digital media sector set to 'hyper-grow' beside strong Irish government support, it may be time to formalise these healthy co-operative practices so that development can happen on an all-Ireland basis. Examples of current cross border initiatives are given below.

10.1 The Nerve Centre

Established in Derry in the late 1980s, the [Nerve Centre](#) is a multimedia and arts centre; a subsidiary has produced an Oscar-nominated short film, and Nerve describes itself as "one of the key dynamics fuelling the arts and digital media sectors in Northern Ireland today". Seven intermediary funding bodies of the EU Special Support Programme for Peace and Reconciliation (SSPPR) have invested in the Nerve Centre: Proteus, DENI (now DE), Co-operation Ireland, Northern Ireland Voluntary Trust (NIVT), YouthNet, Community Relations Council, Derry District Partnership. The Centre has had a number of cross border technology projects in the past, mostly notably the production of an [interactive CD-ROM](#) on the life of St Colm Cille. Since 1996, the Nerve Centre's production company, Raw Nerve Productions, has been commissioned to make two animated short films for Frameworks (funded by RTÉ, the Irish Film Board and the Arts Council of the Republic). At present two project workers from the centre are working in partnership with [Local. Ireland](#) in Dublin to create a presence for the whole of Northern Ireland on the Local.Ireland website. The centre is involved in the production of a new CD-ROM dealing with the Battle of the Somme and the Easter Rising—a project which has a lot of assistance from institutions in the Republic.

10.2 Cross Border Locations Database

The [Northern Ireland Film Commission](#) (NIFC), in partnership with the [Screen Commission of Ireland](#) (SCI), launched its new cross border locations database in May 2000. NIFC Chairman Ronnie Kells welcomed the new initiative, which aims to open up Northern Ireland and the six border counties of the Republic of Ireland to film-making by showcasing the outstanding film locations of the region to producers at home and around the world. A minimum of 1,200 locations will be fully surveyed

between February 2000 and June 2001. Three surveyors (based in Enniskillen, Islandmagee and Castletwellan) are using digital SLR cameras to collect the highest quality images. The survey notes will be entered directly onto laptop computers at the location; the photographs are added to the survey notes and the databases at the NIFC and SCI are updated via ISDN lines each evening from the surveyors' homes. Funded by the International Fund for Ireland and the European Union's INTERREG programme, the project will primarily target weird and wonderful locations that stand out and are visually exciting. The film commissions in both jurisdictions have a close working relationship, holding joint Irish presentations at film festivals, and as such the majority of bureaucratic red-tape which can hinder progress has been side-stepped. Tax breaks in the Republic already attract a lot of film-makers. By match funding the two film commissions were able to apply for cross border funding and potentially draw filmmakers to the border region and beyond. Technology difficulties which have been encountered are concerned with security of data transmission and storage as opposed to cross border transmission of data.

10.3 The Irish film industry

The film production industries in the Republic and Northern Ireland have a strong history of co-operation, jointly promoting the Irish films industry at conferences and festivals abroad. In June 1999 the [Northern Ireland Film Commission](#) announced its first ever [production fund](#) with the award of half a million pounds from the EUSPPR. The fund, which covers Northern Ireland and the border counties of the Republic, is being invested on locations, crews, cast and facilities for four or five feature films. The co-production of 'Country' by Indi Films, Dublin and Flying Saucer Productions from Co. Armagh, is one result. The venture is cross border in nature with the locations centred in and around Counties Armagh and Monaghan. The film, which received its first showing at the Cannes Film Festival in May 2000, has recently won best feature film award at the Galway Film Fleadh.

10.4 Moving Arts

[Moving Arts](#) is a new agency, funded by [Co-operation Ireland](#) (£68,000), established with the specific mandate of promoting creative endeavours on a cross border basis. The aim of Moving Arts is to strengthen the artistic communities in Northern Ireland and the six adjacent border counties by getting more people interested and involved in the arts. Several initiatives under the Moving Arts initiative have an ICT element. The agency is compiling an in-depth database for the arts in Northern Ireland and the six border counties with the explicit intention of encouraging a smoother cross border arts trade and developing links between groups on either side of the border. The database will be accessed on the Internet alongside a comprehensive arts and media magazine. A series of computer-based workshop programmes for young people is due to be held in the agency's headquarters in Monaghan. Workshops such as 'Website Creation and Maintenance' and 'Computer Applications to Music' aim to improve participants' level of proficiency in arts-based computer applications while increasing awareness of the benefits of new technologies.

10.5 New Generation Audiences (Ireland) *proposed*

Using [Think.Com](#), an internet facility offered free by [ORACLE](#), the [Arts Council of Northern Ireland](#), the Southern [Arts Council](#) and the [Faculty of Informatics](#), University of Ulster, hope to facilitate young people to avail of spare capacity in arts venues around Ireland. On-line interactive facilities will include items such as discussion groups, newsletter production, 'ask an expert' and reviews of performances. It is hoped that the scheme will be integrated into the education system North and South as it offers secure, password-protected access which can be harnessed by the

schools to encourage interactive cross border communication alongside the development of interest in the arts, improvement in ICT skills and improvement in writing ability. Preliminary meetings with representatives from the current Wider Generation Programme in England have proved positive and it is hoped that funding will be secured to enable an all-Ireland pilot scheme to be put in place by Christmas 2000.

11. COMMUNITY INITIATIVES

New technology is distributed unevenly throughout society. The ability to use new technology is rapidly becoming a skill as fundamental as the established literacies of reading, writing and numeracy. Research has shown that those who are already marginalised in society are significantly more likely to be 'late adopters' of the new technology. This is ironic in the sense that those who are already disadvantaged in society have potentially the most to gain. It is acknowledged that providing physical access alone to new technology will not automatically result in the inclusion of previously excluded groups in the Information Society, and that proactive government policy is needed to improve awareness, ability to access and training for individuals.

Awareness and access

The UK Report of the National Working Party on Social Inclusion, *The Net Result: Social Inclusion in the Information Society* (1997) concluded that given the social significance of access to information and the challenges of social inclusion, it would be irresponsible to leave developments to market forces. As part of the UK Information Society Initiative an [IT for All programme](#) has been put in place, aimed at the general public. As part of this campaign, over 3000 access sites have been created, including in **Northern Ireland** to allow members of the public to gain access to and have an introductory tutorial to IT. These local access sites are mainly provided through schools open out-of-hours, libraries, cyber-cafes and in computer stores opening especially for public access sessions. Woolwich Building Society has also provided a free access facility. British Telecom has provided a citizen's freephone line allowing members of the public to phone and obtain a printout of their closest access point. This initiative is a good example of how existing appropriate networks can be utilised to good effect as part of an access scheme.

The recently published *Programme for Prosperity and Fairness* identifies the achievement of balance between economic, social and societal aims as a key objective in terms of the Republic of Ireland's development as an Information Society. While the 'Celtic Tiger' economy has been developing, the issues relating to the wider societal implications of the Information Society and the needs of marginalised groups have received a lesser profile. The Information Society Commission (ISC) in the **Republic of Ireland**, and in particular the IT Access for All subgroup, have also been examining the broader issues of access and the feasibility of e-mail for every citizen. It is accepted that there is a large gap between superficial awareness of new technology and a real understanding of the opportunities that it offers. There have however been a couple of notable initiatives which have aimed to provide access to and training in new technology to local communities: the [Dublin Corporation Central Library](#), the [Schools Integration Programme](#) (one of the major initiatives of Schools IT 2000), the [Ennis Information Age Town](#), the [Wheel Project](#) and [Netd@ys](#) Ireland. Within the Republic consideration is now being given to the potential use of existing appropriate networks as access points, a strategy which has been shown to work successfully within the UK. The suitability of libraries, schools, government offices, the community and voluntary sector, post offices and retail outlets (cafes, pubs, and supermarkets) are being assessed for their potential to spread the Information Society. Information Society funding has been invested to

increase the number of PCs providing free internet access to the public in local libraries by a factor of 10. Kiosks are also being installed in social welfare offices to provide on-line access to FÁS job recruitment and training services and related areas.

Education and training

One of the prime rationales behind the use of ICT within the education and training systems is its capacity to support and facilitate effective individual learning by users. Some of the main benefits of using new technologies in the learning process include: overcoming time constraints and problems of physical access to learning materials, the use of a variety of sensory inputs to increase experiential learning and the ability to pace and customise individual learning. Opinion polls already suggest that the public believe that the most positive aspect of the technology is its future roll in education. Despite the success of the Schools IT 2000 programme many believe that the Irish government's response is inadequate with the **Republic of Ireland** outside the top ten countries in terms of the number of computers in post primary schools. In addition, the Dublin-based [National Centre for Technology in Education](#) believes that the major failing of the Schools IT 2000 programme is its failure to provide enough courses for teachers to keep up with developments in IT. However, [ScoilNet](#), the Irish portal site for the primary and secondary sectors, which has been developed in conjunction with the National Centre for Technology in Education and Intel, is a one example of how collaboration can help to familiarise students with computers through interactive learning.

Within **Northern Ireland**, there are several educational initiatives already underway: Classroom 2000 (all UK schools provided with ISDN connectivity and 6000+ laptops provided for teacher use), CareerWindow (interactive, internet-based tool for enhanced career guidance), Further and Higher Education ICT strategy (*ICT for All – The Way Forward in the FE sector* report), University for Industry Learndirect, community access to lifelong learning (£9 million New Opportunities Fund from National Lottery) and the public library IT network. The Information Age Initiative now plans to extend Classroom 2000 to include community access, private sector partnership and local creative capacity to reach the widest possible audience. Cross-border co-operation in education has been mapped in a separate Centre for Cross Border Studies [study](#) where details of such initiatives as Classroom 2000, Cross-Connect, Infusing Teacher Education with New Technologies (In-TENT), the North-South project and Dissolving Boundaries through Technology can be found.

Governments leading by example

Aside from engaging in proactive policies to spread the benefits of the Information Age, both governments are heavily promoting e-commerce, which places them under a obligation to set an example by delivering its own business electronically. The Irish Government has already taken concrete steps in this direction through the Life Events Database and the [REACH](#) initiative while Northern Ireland is on the verge of launching its COINS initiative. In addition, the European focus on equality of access is outlined in *eEurope: An Information Society for All*. Launched in December 1999, this broad range of measures sets targets for promoting access in schools, reducing the cost of Internet access, increasing the participation of people with disabilities and increasing on-line government.

While there are currently quite a few examples of cross border co-operation in ICT for the citizen in Ireland (see below) this work mostly concentrates on joint training initiatives. With notable exceptions (see [eKiosks](#) under e-commerce section), few co-operative ventures exist on improving the access or awareness of individuals on a cross border basis.

11.1 DERAL (Distance Education in Rural Areas via Libraries)

DERAL is a co-funded project (£69,000) under the EU Telematics for Libraries Programme which aims to encourage public libraries to play an increasingly important role in the transfer of information, knowledge and education to users who have difficulty in following normal courses of study. This frequently applies to those living in rural areas as well as to the unemployed and to elderly or disabled people who cannot normally attend university, college or high school. The project (May 1998 – July 2000) will serve as a prototype in four regions of Europe (Ireland (Northern Ireland and the Republic), Sweden, Austria and Spain) and, if successful, will become a model for Europe-wide access to distance learning through public libraries. Within Ireland, the project is being run as a collaboration between the University of Ulster and Dublin Corporation Public Libraries. DERAL will provide gateways to distance learning resources on the Web. Guidelines are being developed for librarians and library users and a set of tools based on Internet technology and video-conferencing will be developed, allowing libraries to act as brokers between providers of distance learning courses and users. (If possible, TV-screen access to these resources will also be tested.)

11.2 FALCON (Fermanagh and Leitrim Community On-line Network)

A website for Leitrim and Fermanagh has been launched as a result of a cross border programme funded by the International Fund for Ireland's Wider Horizons Programme in November 1998. The Wider Horizons Programme provides training for young people in disadvantaged areas North and South and is jointly administered by the two training and employment agencies T&EA and FÁS. The online programme aims to provide Internet training for unemployed local people and to contribute to business and social co-operation between counties on both sides of the border. A core group of 15 young people participated in a training programme before designing the FALCON website which is essentially a multipurpose address for all business, environmental and community information regarding Leitrim and Fermanagh.

11.3 LEO (Louth Enniskillen Opportunities)

The LEO project, funded by the EU INTERREG II Programme, is a pioneering project to promote the creation and development of a network of qualified technology trainers linked to community-based organisations in the counties of Louth and Fermanagh. Candidates over 21, who have a basic familiarity with computers and who are unemployed or working in a voluntary capacity, are eligible to undergo a three-month course to become a certified Information Technology trainer. The seven hours intensive training one day per week is based in a local teaching environment with examinations scheduled twice per year. The course is delivered free and incorporates all examination fees and educational resources. Phases I and II of the project incorporated the Drogheda, Ardee, Dundalk, Enniskillen and Newry areas and participants from all the sites met for an away weekend earlier this year to discuss their experiences. The project has been hailed as highly successful with 98% of candidates achieving qualified status and now either working as trainers in their local community or continuing with their education. If further funding is forthcoming the scheme will expand to include other border areas.

11.4 Community Exchange

The [Public Communications Centre](#) in Dublin is a non-profit strategy and communications resource, which works exclusively with progressive not-for-profit groups. One of its current projects is [Community Exchange](#) (CE) Ireland, a publication delivered by e-mail where community and voluntary sector organisations in Ireland, North and South, can provide information on their activities and learn about other activities. CE covers a wide range of topics and offers e-mail and URL addresses for further information or debate and has recently (April 2000) become accessible over the Internet. Starting with a list of 100 addresses, the distribution has now expanded to 400 addresses. It is functioning as a collective environment where people and organisations take an active role by sending information and requests, but it has not developed yet into a fully fledged discussion area. The publication is moderated by a steering group of volunteers from Combat Poverty Agency, Models Research, the Public Communications Centre and the Women's Resource and Development Agency (Belfast).

11.5 Telework Ireland (TWI)

[Telework Ireland](#) (TWI) is a transborder organisation with 'teleworking' members from Northern Ireland and the Republic of Ireland. Telework entails employees using ICTs to perform their work away from the employer's premises. It is estimated that there are about 60,000 teleworkers in Ireland today, its growth stimulated by advances in telecommunications and the demand for greater flexibility in working arrangements. While most of the corporate membership and sponsorship has originated in the Republic, TWI has also been active in the North. One example was the Internet workshop for human resource managers which was sponsored by Northern Ireland Electricity. More recently 10 mentors were trained to assist in the development of telework-based businesses. This initiative was supported by EU SSPPR and both the mentors and pilot trainee community groups were selected on a cross border basis.

11.6 Foyle Basin Council

The [Foyle Basin Council](#) is a small non-governmental organisation (NGO) based in Derry that provides education, training and media support on a range of environment and development issues in the north west cross border region. Direct services include the design and maintenance of websites for organisations and companies involved in ecologically sound and/or ethical trading initiatives. Among the programmes they offer are the [Sustainable Ireland Online programme](#)—an Internet information and news service. Sustainable Communities Information Points (SCIP) are active in Derry, Belfast and Donegal with local authorities, library networks and other organisations now being invited to install Internet-supported SCIPs in their local authority areas.

11.7 The Employment Initiative

The [Employment Initiative](#) was a European Social Fund (ESF) Initiative which operated until the end of 1999 and focused on the need to adopt a proactive approach to the problems of exclusion. It targeted four groups that face specific difficulties in the employment market: women (NOW), disabled (Horizon), young people (Youthstart) and the long-term unemployed (Integra). The Initiative gave a community dimension to the European Union's overriding priority to boost employment, providing a framework for the encouragement of transnational co-operation and the pooling of know-how in pursuit of community priorities. There were a number of partnerships established between the Republic of Ireland and Northern Ireland which addressed communication or technology issues. However the project partnerships tended to involve small groups and run in parallel rather than

under joint management. Examples of such projects under the Employment Initiative are outlined below.

11.7.1 Women in Science & Technology

During 1995 the ESF funded a joint project between [Women in Science and Technology](#), Co. Tipperary and ITS Training in Belfast with the aim of promoting women technologists and scientists in the Irish food industry. The project aimed to design, develop and establish an accredited management development programme for women scientists and technologists which would improve their access to management positions; and to implement and monitor equal opportunity practices within industry. Further funding was granted during the 1997 round of allocations to extend the previous work by establishing a network for women working in non-traditional areas in industry, devising and delivering career development training opportunities and establishing an Internet resource for the programme.

11.7.2 WENT (Women into Enterprise & New Technology)

The WENT project (1995) aimed to improve and enhance the skills of women through the provision of an accredited training certificate course in Enterprise Development and Information Technology. The pilot programme was linked to existing mainstream programmes being provided by national training agencies. The project was a partnership between Northside Partnership in Dublin, Newry & Mourne Enterprise Agency, Milton Keynes Chamber of Commerce, UK and the Regional Bureau in Holland.

11.7.3 Advance and Tramlines

Under the direction of the [Nerve Centre](#), Derry, the Advance project involved multimedia and advanced technology training for disadvantaged people in Denmark, Germany and the Republic of Ireland. The Nerve Centre, Derry has also worked in partnership with the Ballymun Job Centre, Dublin and European partners in Denmark, Germany and the UK to offer 25 job seekers a high level of training in order to acquire professional qualifications as Microsoft engineers which would open the door to highly paid and highly regarded professional careers. Training was provided over a 2-year period and an 80% success rate was achieved in placing participants in suitable employment or self-employment.

11.7.4 GRAVITATE (Gaining Reasonable Access for Visually Impaired Trainers at Technology)

The aim of the Gravitare project, a collaboration between the [Royal National Institute for the Blind](#) (RNIB) in Northern Ireland and the [National Council for the Blind in Ireland](#) (NCBI) in the Republic (and a partner in Greece), was to design and deliver a certified, modular training programme which would enable mainstream trainers to provide specialist training to the visually impaired. The training package, which permitted both class-based and distance learning, also aimed to facilitate networking between voluntary and statutory agencies working with the visually impaired in order to expand the vocational and employment opportunities for visually impaired people.

12. E-COMMERCE

E-commerce is defined as the buying and selling of products, goods, information and services over the Internet. The Internet is changing the way businesses do business, from the acquisition and servicing of customers, to the management of relations with suppliers. It is clear that that businesses on both sides of the border have been slow to address the new technological opportunities, with only 3% of businesses in the North and 9% of businesses in the Republic currently trading electronically. However the already close relationships forged by the newly formed implementation body, [Trade and Business Development Body](#), and the [IBEC-CBI Joint Business Council](#) should facilitate the 'jump-starting' of cross border e-commerce in Ireland.

Trade and Business Development Body

The [Trade and Business Development Body](#) identified e-commerce as one of its main priorities for debate and analysis. The implementation body is currently developing an operational scheme for [North-South Ministerial Council](#) (NSMC) approval which will include implementing a science and technology awareness programme on a North-South basis and outline proposals to increase competitiveness in e-commerce. Alongside its e-commerce conference held in June 2000, the TBDB has been preparing a report on the current e-commerce activity in Ireland. This report, which is due to be published in the autumn 2000, focuses on maximising the potential for e-business and supporting businesses by making recommendations to increase enterprise competitiveness in a North-South context in such areas as skill availability, telecoms, IT and e-commerce.

IBEC-CBI Joint Business Council

The [IBEC-CBI Joint Business Council](#), formed by the [Irish Business and Employers Confederation](#) (IBEC) and the Northern Ireland section of the Confederation of British Industry (CBI), acts as a catalyst to expand and maximise the level of trade, business development and economic co-operation between Northern Ireland and the Republic of Ireland. The core activity of this joint group is expanding cross border trade and encourage business co-operation through a business development programme. Increasingly this programme of work, which is undertaken in close collaboration with development agencies from both sides of the border, is concerned with new technology and communications. Alongside the production of a North-South telecommunications guide, over 2000 firms, North and South, have already taken part in e-commerce workshops, business surveys, electronic catalogues and on-line Internet and tendering (see TradeNet [below](#)). In particular, the Supplier Index Enterprise Limited, a consortium of industry, government and trade associations, allows SMEs to put their products into electronic catalogues at very advantageous rates and to trade with the public sector in both jurisdictions. The IBEC-CBI Trade and Business Development Programme in partnership with the Centre for Software Engineering in the Republic of Ireland and the Software Federation in Northern Ireland are developing a North-South Software Quality Network. By sharing best development practice it is hoped that software companies in both parts of Ireland can become more competitive through reduced costs, reduced rework and faster time to market new products.

In 1998, John McKenna, the Chief Executive of the IBEC-CBI Joint Business Council, officially recognised the crucial role that all-island technology development had to play in attracting future investment. He called for greater co-operation between the Republic's Office of the

Director of Telecommunications Regulation and the North's Oftel office to achieve a seamless telecommunications infrastructure. In addition, he also highlighted several of the difficulties that hampered cross border trade such as a diverse range of business directories, non-uniform telephone dialling codes and limited coverage of toll-free dialling.

Training & Employment Agency (T&EA) and Foras Áiseanna Saothair (FÁS)

A joint initiative between the [Training and Employment Agency \(T&EA\)](#) and [Foras Áiseanna Saothair \(FÁS\)](#) has connected training centres via video-conferencing facilities in Lisburn, Derry, Dundalk and Letterkenny. The project, which has been funded by the [EU SSPPR](#), is designed to improve the standard of training on both sides of the border in the areas of electronics, engineering and plastics technology and to introduce new training technologies. In addition to the video-conferencing links, all 10 Northern Ireland training centres and four training centres in the border counties of the Republic of Ireland have been networked to facilitate joint training and co-ordination of resources. Both agencies meet regularly on a formal, official level and on an ad hoc committee level and hope to continue this relationship when the T&EA is incorporated into the North's new further education structure. In December 1999 Tánaiste Mary Harney and the Northern Ireland Minister of Higher and Further Education, Dr Seán Farren met to discuss initiatives to encourage a common labour market north and south of the border and greater co-operation in higher and further education. Plans to develop a more effective mechanism of marketing job opportunities to attract labour from Northern Ireland to work in the South and vice versa may now be established using technology such as the Internet.

The Banks

The facilitation of on-line business relationships on a cross border basis is definitely a priority for the administrations in Dublin and Belfast. However, the facilitation of cross border electronic commerce has yet to be efficiently realised. The banks can play a major role in acting as a catalyst for the promotion of e-commerce with the cost of processing a banking transaction falling from around 70p to less than 10p and the cost of processing a bill payment falling from £1.50 to around 50p if it is done electronically. Developments like the [Clikpay](#) Internet-based credit card payment system and the [CITRUS](#) cash free smartcard system are charting the evolution of an alternative payment system. However, they are currently isolated ventures with little or no cross border dimension. Indeed, as outlined in recent newspaper articles, while the prestige developments are very successful it is the basic technology that is failing to satisfy customers. There is evidence of simple electronic money transfers between bank accounts on both sides of the border taking a day longer to process than a similar paper-based transaction, of incorrectly set-up ISDN connections and of lengthy delays in getting high speed lines installed. At present with certain airlines an individual in the Republic can only book a flight on-line from an airport in Northern Ireland if he or she has a credit card with a UK address. (The Credit Card Union of Ireland has stated that this will change by September 2000.) For people living in the Southern border counties the airports in Belfast are often more convenient to use and such on-line booking procedures have created unnecessary problems. On a cross border basis, it is clear that banks are slow in embracing the e-commerce opportunity, with few facilitating online credit card processing services to e-commerce companies and funding entrepreneurial e-commerce plans. Furthermore, there is evidence that some of the major banks within Ireland have not yet adopted electronic means to conduct their own internal business.

The current level of cross border e-commerce is rapidly increasing and becoming much more sophisticated than earlier examples of business innovation programmes. On-line

tendering and discussions are now facilitated. Examples of current co-operation are outlined below.

12.1 LINKIT (Business Linkages through Information Technology)

The aim of the [LINKIT project](#) was to enhance the current capacity for ICT within small businesses on a cross border basis. Run by the Carrickfergus Enterprise Agency and funded by Co-operation Ireland, IFI, and FÁS, the LINKIT project involved 16 businesses (8 in Carrickfergus and 8 in Leitrim) undergoing an individually-tailored programme to optimise their current IT facilities by creating awareness and providing appropriate training. Recruitment of businesses was restricted to those with less than 10 employees (micro enterprises). Approximately 65% of all businesses in Ireland employ fewer than 10 people. A four-month individual mentoring programme was established which involved an IT review for each business, a series of seminars ranging from the basics of a PC to the benefits of e-commerce, a series of guest speakers (for example, from Ennis Information Age Town), and a series of exchange visits. An evaluation of the project, which is now completed, showed that 80% of all businesses have improved their IT business use and 50-60% of businesses are now developing a web presence. Plans are underway to run future courses along similar lines with other groups of small businesses in the border region.

12.2 TradeNet Ireland

[TradeNet Ireland](#), a cross border Internet site, was established in October 1999 by the IBEC-CBI Joint Business Council. Funding for the business-networking site has been given by 15 local authorities along the Belfast to Dublin economic corridor and the EU SSPPR. As well as offering a traditional trade directory the new site sends members targeted information relevant to their businesses. Tenders are offered on-line and members have access to other companies via a detailed database for specific trading leads. Membership was free until April 2000. In its eight months of existence 945 businesses have become registered users of the system. Usage has dramatically increased (30%) in the past two months following a publicity campaign. Interestingly, there is now an even split of businesses from both jurisdictions on the site after an early preponderance of firms from the Republic. Companies on both sides of the border have testified to the invaluable opportunities resulting from the service in sourcing supplies and making contacts with other businesses.

12.3 PLATO

The [PLATO](#) small business website features a searchable database of more than 700 companies throughout Ireland, links to useful websites for start-up companies seeking advice or help, news on PLATO events, and on-line networking and discussion areas. The initiative is based on a Belgian model of business development networking designed to make available the expertise of big business to smaller companies, with support at regional level. Launched in December 1998, PLATO uses senior management representatives from more than 90 of Ireland's top 150 companies to act as programme facilitators. The network is established in six regions of Ireland, including two cross border initiatives in Louth, Newry and Mourne and Donegal and Derry. The scheme receives funding from county enterprise boards, Co-operation Ireland, the IFI, Tallaght Partnership, LEDU, Dundalk Employment Partnership and Newry and Mourne District Council.

12.4 eKiosks

An Irish company, [Circle Network](#), formed in November 1999, has developed a virtual shopping mall called an eKiosk and is planning to locate 10,000 of these in shopping areas and hotels around Europe over the next two years. It has become the first company in the world to market this type of Internet-connected kiosk as a virtual store and also the first to bring video e-mails to the mass market. The eKiosks are virtual stores operated by touch responsive screens which provide a comprehensive package of e-commerce products and services. They allow users to order goods such as tickets and clothes, do their banking, surf the web and send video e-mails, order airline tickets, pick up e-mail or merely browse the Web. The new eKiosks enable people to send video e-mails to relatives world-wide for the price of a phone call via a 128 Kbits per second ISDN line. Access to the Internet is being provided at a cost of just £1 for 10 minutes with certain electronic retailer services provided free. Clients throughout Ireland include Campus Oil, Indigo, Ryanair, Jurys Hotels, Interflora and Chartbuster Videos. While there is some scepticism about the potential use of these new facilities by local people, their potential as a virtual tourist office is accepted. Importantly the eKiosks will improve accessibility to the Internet.

12.5 MIMIC (Mining the Internet for Marketing Intelligence)

[Mining the Internet for Marketing Intelligence](#) (MIMIC), funded by the ESPRIT IV Framework Thematic Programme for Electronic Commerce (£300,000), is a collaboration between two technology suppliers, Integral Solutions Ltd (UK) and University of Ulster, and two technology users, [Adnet](#) (a network applications service provider in the Republic of Ireland) and At Internet (France). There are now over 80,000 on-line Internet shopping providers worldwide, with thousands more appearing each month. Each of these on-line malls generates data on the customers who use the sites to either browse or buy. The technical objective of the MIMIC project is to develop a data mining toolkit that will make possible the mining of the data generated by online retailers. MIMIC will give retailers, for the first time, a cost-effective means of customised data-driven marketing communication. The marketing intelligence information from the MIMIC data mining toolkit may be used to provide a competitive edge for on-line retailers, allowing them to capture, retain and satisfy customers. Following two years of development, the [Easyminer intelligence software](#) was launched in July 2000 to help companies to develop their e-business strategies by cutting through the jargon and showing companies how people use and view their sites.

12.6 Dot.coms

The dot.com concept is high on the agenda at the moment with the collapse of some high profile companies and the failure of any dot.com businesses yet to make a profit despite their high premium value. Even [Amazon.co.uk](#), the highly publicised on-line book retailer which is hailed as a classic example of how to do business on the Net, is surrounded by rumours that it may collapse and cease trading before the end of 2000 following a dramatic 28% drop in share prices in June 2000 after a negative report on its business model. One reason cited for the problems facing dot.com companies is the lack of business knowledge among the new breed of IT people. Traditional 'bricks and mortar' companies typically have seasoned IT professionals, average age 38-45, who have been with the organisation for many years and who understand the business and how IT supports it. Dot.coms on the other hand have staff of a very young age who do not understand the business and want to build an IT system much faster than their traditional counterparts. Market sentiment has changed, with investors who were ready to pour money into dot.coms last year no longer funding start-up operations.

However despite the problems, there has recently been an explosion of start-up Internet companies in Ireland, offering either Web services or business products to customers on both sides of the border. In addition there has been a recent trend of company start-ups with two business sites, one in each jurisdiction, to avail of tax benefits in the Republic and the labour market in the North. Businesses such as [KITE Ltd](#), [The Postcard Company](#), [eprams](#), [Dempseys](#), [Wineonline](#) and [Homeweaver.co.uk](#) are all good examples of online sites. Some of these businesses have been born out of the e-commerce revolution while others are long-established businesses who have adopted a new model to sell their products. All of these sites have similar characteristics such as ease of use, customised use, currency exchange facilities, online tracking if appropriate, and reduced or discounted prices on certain items. While these businesses are too numerous to review within this paper, examples of such sites, new and old, are outlined below.

- The UK's biggest video store, [BlackStar.co.uk](#) brings an innovative, highly consumer-driven approach to the emerging market for goods bought on-line. Based in Belfast, the company sells over 60,000 videotape and DVD titles, including every release currently available in the UK. Launched early in 1998 to emulate the successful Amazon.co.uk book company, BlackStar has consistently achieved an average sales growth of 40% per month. It now employs over 50 staff and has customers in over 100 countries.
- [Adculture.net](#), the Internet advertising agency which was recently formed with offices in Dublin and Belfast, is one example of a growing breed of start-up companies which are adopting an all-Ireland focus. The agency, which offers media planning, creative design, media buying and research and analysis among its services, adopted its all-Ireland focus to ensure that its business would benefit from the availability of staff in the North and the tax benefits in the Republic. While the Belfast office is essentially a subsidiary of the main Dublin office, the company has already won a prestigious contract with [easyJet](#) to further increase awareness and use of the airline's on-line Internet services in Northern Ireland. easyJet offers a fully transactional e-commerce website to encourage passengers to book their seats over the Internet.
- Internet Service Provider Indigo has just launched what it calls 'Ireland's first online superstore' ([www.indigo.ie](#)). Consumers can log onto the Indigo superstore and purchase a wide range of products 24 hours a day, seven days a week. The site was developed by Indigo in conjunction with Bank of Ireland, SDS and EuroCommerce and the site is built on Indigo's own GoSell e-commerce platform. Secure payment facilities are provided by Internet Merchant account from Bank of Ireland and live customer support is available online.
- In July 2000, a new database-driven website ([www.fly2thesun.com](#)), which caters for Irish holidaymakers in both jurisdictions, was launched. All packages that fly from the Republic are quoted in Irish punts, while those that depart from Belfast are quoted in Sterling. While the on-line booking facility has yet to be enabled, the site offers a one-stop-shop for flights only, package holidays, last minute specials, car rental, hotel bookings, travel insurance, weather reports and links to local airports with departures and arrival times. The ease of use is facilitated by the fact that the site deals only with flights which leave from airports in Ireland (Dublin, Belfast, Cork etc.) so that the user does not have to wade through and eliminate flights from UK airports.
- In August 2000, [Ryanair](#) will launch its WAP site for on-line bookings to accommodate the smaller size of mobile phone screens. The company will interface with the customer's bank computer system with entire transactions completed in minutes. This site will overwrite the static Ryanair.com booking system which currently handles over 35% of the airline's bookings. In

addition, the airline will begin to offer online hotel bookings by mid-July which will link users into 13,500 hotels worldwide.

12.7 The Adapt Initiative

[Adapt](#), a European Social Fund (ESF) initiative which operated until the end of 1999, was designed to help European employers and workers anticipate industrial change. National approval was channelled through the Department of Enterprise, Trade and Employment in the Republic of Ireland and the Training and Employment Agency in Northern Ireland. Technical support and expertise was co-ordinated on the island of Ireland through the [Léargas](#) unit in the Republic and PROTEUS in Northern Ireland. The Adapt objective was to enable experimentation, innovation and the cross-fertilisation of ideas and energy in areas of shared concern. As with the Employment initiative, operational programmes submitted to the European commission from the two jurisdictions in Ireland had a particular emphasis on the promotion of new forms of work through exploring the implications of new Information and Communication Technologies. Some examples of this work are outlined below.

12.7.1 The construction industry

The governments in Dublin and Belfast have realised that unless the construction companies, in particular SMEs, are assisted to adapt successfully to the challenges of industrial change, they will fail to survive or at best will be incapable of providing quality services and products. Co-funded by the Adapt programme, the representative bodies of the construction industry from both sides of the border formed a transnational partnership with the French Building Federation (IT-FFB) to proactively initiate development strategies. The three-year study and experimentation training program (1998-2000) entitled [aims—Construction 2000](#) will see a range of technology initiatives designed and implemented within Ireland.

12.7.2 Plangest

The Plangest project was a collaboration between [Banbridge District Enterprise Ltd](#), The Tallaght South Dublin Chamber of Commerce and other European partners in Belgium, Spain and France. The aim of the project was to improve the business management skills of SME manufacturing entrepreneurs/ managers in the region through computerised business planning methods.

12.7.3 Trades

The Trades project was a collaboration between Customised Training Services in L/Derry, the [Tallaght Institute of Technology](#) and other European partners. The aim of the project was to provide a facility using advanced telecommunications and information technology whereby companies could access training for their employees at any time on site without the problems associated with lost production days due to staff being absent. The facility will also provide the opportunity for employees who may be under threat of redundancy to gain skills that would be more attractive to the new chemical and pharmaceutical employers in the north west.

12.7.4 Telework development and support systems

A collaborative project between [Telework Ireland](#) in the Republic and [Kinawley Integrated Teleworking Enterprise Ltd](#) (KITE) in Fermanagh aims to

provide support and links between teleworkers and to influence policy on teleworking. Telework Ireland represents the interests of Irish teleworkers and provides a teleworking information and advice service for members. Telework Ireland had become aware of the ICT skills shortage and the resulting niche opportunity for teleworkers. A formal infrastructure of information, communications and training systems was needed to allow individuals and small groups to develop the necessary skills and knowledge to work in the software and localisation industry. KITE Ltd received "the most entrepreneurial use of telework in Europe" award for 1998. A team of qualified teleworkers work from KITE's purpose built facility in Co. Fermanagh, providing data management services. The North-South partnership resulted in the design, delivery, resourcing and investment needed for an industry driven, technology supported distance learning package.

12.7.5 The food industry

[Goldenvale](#) is one of the island's leading dairy processors, with major plants in Northern Ireland and the Republic. Surveys conducted in the company revealed that most mid-career employees were reluctant to use new technology or simply did not use it at all. Under the auspices of the Adapt programme, it has established links with the Food Industry Network Development (FIND) project in Northern Ireland with the joint aim of raising the level of skill and competence in ICT of employees in the food industry. The FIND project is a partnership between the [Northern Ireland Food and Drink Association](#) (NIFDA) and Queen's University, Belfast. NIFDA is a voluntary organisation committed to helping Northern Ireland food and beverage companies compete successfully and to represent and promote their interests.

12.7.6 The engineering/aerospace industry

A partnership between [SIFCO Turbine Components](#) in Cork and [Bombardier, Shorts](#) in Belfast has been established to develop an innovative pre-employment training programme which would allow them to identify potentially suitable new employees and equip them with the appropriate engineering, attitudinal and business competencies to meet the companies needs. SIFCO Turbine Components, which was established in 1983, is the only repair station world-wide to have original equipment manufacture (OEM) approval for all four major aircraft engine manufacturers. Bombardier Shorts offers a range of products and services related to business aircraft, regional aircraft and amphibious aircraft. Through this joint programme trainees have gained an understanding of and a commitment to new technology, world class manufacturing and ongoing change. 24 trainees have completed the programme, and all of these are now in employment, 50% of them with SIFCO Turbine Components.

13. CONCLUDING EXAMPLES

We conclude with an example of good ICT use which is vital to the success of an important cross border social programme, and an example of poor cross border co-operation in telecommunications which has led to problems for businesses in both jurisdictions.

13.1 Child protection

[Focus on Children](#) is a charity with offices in both Dublin and Belfast. A recent study by the charity on behalf of the European Commission into the extent of paedophilia and child pornography on the Internet uncovered at least 20,000 paedophiles worldwide. The island of Ireland is second only to the Netherlands for the proportion of Internet users who visit sites containing paedophilia or child pornography. Bogus websites, such as a supposed Titanic site, are a common ploy used by paedophiles to gather personal details of children before attempting to lure them into abuse. Specialised software developed by the charity is now able to unmask perverts who think they can visit paedophile sites with anonymity. Members of the Garda and RUC have already been briefed on details of the study and the American FBI and Europol, the European police liaison force, are soon to be given presentations by researchers on the new software.

In parallel, another European study, [Copine](#) (Combating Paedophile Information Networks in Europe) was established at the Child Studies Unit in University College Cork (UCC) four years ago. The aim of the project is to improve the quality of life for children at risk and their families through the education and training of those who work with and for them, while developing current knowledge through child-centred action research. The project is funded by Interpol, the police forces in Britain and the Netherlands and the Irish Department of Justice. Copine is involved in three main projects: the maintenance of a reference database on child pornography throughout the whole of Ireland; the nature and incidence of child-sex tourism and trafficking in Europe; and the tracking of paedophiles through their collections of child pornography.

It is estimated that at least several hundred paedophiles are regularly using the Internet north and south of the border. Ireland has traditionally been a favourite place for paedophiles to operate as there has been no co-operation between the two jurisdictions in terms of children's rights. Recently however, Ministers from both jurisdictions have set up a working party to look into establishing a child protection register throughout Ireland.

13.2 Telephone Dialling System

The telephone digit system for an estimated 650,000 homes in Northern Ireland was transformed on April 22, 2000, as part of a wider campaign in several UK regions. [The Big Number](#), as it was called in a massive advertising campaign, represented the biggest overhaul of the nation's telephone numbers ever undertaken. Northern Ireland now has a single new area code (028) followed by new eight digit numbers. Until mid-September phone-users in the Republic calling the North can use either the new cross border (048) code, the new international (004428) code or the old (08) code. A number of agencies in the North including the [Federation of Small Business](#) and [NI Advisory Committee on Telecommunications](#) have expressed fears that cross border trade has been affected by the lack of co-ordination between the phone companies North and South. Despite a major publicity campaign within Northern Ireland advising businesses to begin using the new codes from October 1999, five months later only 3% of phone users could describe their new numbers. In January 2000, an IDS survey of 200 businesses in the Republic of Ireland, many of whom were in the border region, showed not one business which knew how to dial the new numbers of their colleagues and suppliers in the north. The Northern Ireland Advisory Committee on Telecommunications has experienced a small number of complaints from irate customers who have lost business due to the changes in telephone numbers.

However, this concern over cross border trade was not shared by the [Office of the Director of Telecommunications Regulation](#) (ODTR) in the Republic. It was 'fairly confident' that the September 22 deadline for phasing out of the old codes would pass without major problems. eircom plans to use detailed telephone announcements from 16 September to explain the changes to callers. There are no plans to give out any information until this date despite Northern Ireland businesses already detailing their new codes on public material. However, concerns have been expressed about the number of companies which have not changed the necessary equipment and that an information campaign would be needed to raise awareness of the changes in the South.

It was also noted that if the respective departments in London and Dublin had discussed the number changes before they were finalised, the same access code could have been selected for users in the North and the Republic, thereby avoiding any confusion. However, as the (028) code, which was selected for use in Northern Ireland, was already being used in the Republic (West Cork access code) an alternative code (048) needed to be allocated for users in the Republic phoning Northern Ireland.