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# Telecommunications for e-Business

A USER'S GUIDE





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## Introduction

In recent years the information and communications sector has changed dramatically. The developments in information and communications technologies are defining new ways of doing things for businesses, customers, governments and society in general and are changing the ways in which they all interact. Indeed, we are now living in truly global Information Age, and people, whether individually or collectively, can transact and communicate at the touch of a button. The impact of these technological developments is hardly surprising, as communication has always been the lynchpin of co-operative human endeavour.

Both Governments have a facilitating role in all of these developments. In 1998, the telecommunications market was liberalised in Ireland and new legislation will be brought forward to enhance the regulatory framework in order to enable increased competition. In addition, the recent enactment of the e-Commerce Acts, 2000 in Ireland and the UK ensures that electronic agreements are undertaken in an environment of trust and certainty. We have seen the Global Crossing international connectivity deal, which places Ireland as a leader on the international broadband map. In Northern Ireland initiatives such as the Information Age Initiative have shown there are opportunities to be grasped by all in the Information, Communications and Technology sector.

We are living in exciting times on the island of Ireland in light of the Belfast Agreement, the Peace Process and the increase in North-South co-operation that stems from these. We are delighted and welcome the initiative of industry to develop this guide in a co-operative manner through their representative organisations North and South and with the assistance of the industrial development agencies. We are certain that businesses will benefit greatly from this guide. It is fitting that this joint North-South initiative comes from our business people and focuses on communication. We firmly believe that through greater communication results are achieved. This guide shows businesses how to make greater use of information and communications technologies and will contribute to the objective of making Ireland, North and South, a global centre for e-business.

We must ensure that all people can participate in the Information Society and avail fully of its benefits. It is for this reason that the Governments and EU have provided assistance for investment in e-commerce and communications infrastructure and services. The focus of these investments will be to ensure that all regions can participate in the Information Society in a fully inclusive way.

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## Preface

Forfás and the IRTU are pleased to present *Telecommunications for Business: A User's Guide*. This is the second edition of the Guide which was initiated in 1999 by Forfás and IBEC to provide a comprehensive mapping of Ireland's telecommunication infrastructures and to describe the strategic and operational opportunities which this advanced infrastructure presents for business.

The success of the first Guide in achieving its objectives is evidenced by the publication of this second edition, and the welcome inclusion of our new partners, North and South, to guide its development. Through the inclusion of the telecommunication infrastructures in Northern Ireland this year, the Guide presents, for the first time, detailed all-island maps of the telecommunications infrastructures that are central to future economic development.

The information and communications technologies that underpin e-Business are now significant drivers of economic and business growth. The development of the digital economy is well advanced and the pace of change is set to accelerate as we move into the new Millennium. For those businesses that are prepared to be pro-active, information and communication technologies offer a competitive advantage but its exploitation will require the adoption of new skills and technologies and a more flexible approach to work.

This guide will help those who wish to understand the technology and jargon used in the information and communications technology arena. It highlights sources of further advice and information to help small businesses exploit the business benefits and incorporate these technologies into their business.

The guide also demonstrates that our communications networks and infrastructures on the island of Ireland and the onward connections to the rest of the world are excellent. This demonstrates to companies around the world that we on this island are well positioned to harness the full potential of the opportunities presented in the move to a knowledge based economy .

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**Nigel Smyth**  
CBI Northern Ireland

## Foreword

The telecommunications landscape is developing at a rapid pace. Telecommunications operators in Ireland and Northern Ireland have continued to invest significant sums in developing world-class broadband infrastructure. At the time of writing, there are over 200,000 fibre kilometers on the island of Ireland, the availability of co-location space is forecast to grow by 700% in the next 18 months, and international connectivity into and out of the island is now described in terms of Terabit and Petabit capacity.

As a result of this rapid rate of change in the market, IBEC and CBI have teamed up to produce an updated report (the initial user guide in 1999 was developed by IBEC and Forfás) on the state of the Irish telecommunications marketplace. The report has been produced with the full involvement and co-operation of Forfás, the Industrial Research and Technology Unit (IRTU), which is affiliated to Department of Enterprise, Trade and Industry (Northern Ireland), IDA Ireland and the Department of Public Enterprise (Republic of Ireland). Mason Communications were commissioned to carry out the research and author the report on behalf of the project participants. This new report extends its coverage to the entire island of Ireland. As such, it represents the first combined effort to produce a definitive guide to broadband infrastructure on the island of Ireland. All parties are to be congratulated on the extent of their collaborative efforts.

In addition to providing a definitive guide to broadband infrastructure in Ireland, the report also addresses the inter-relationship between broadband infrastructure and e-business. Hence the new title: 'Telecommunications for e-Business - A User's Guide'. A user-friendly summary is provided on how broadband technology and the Internet are impacting on day-to-day business and government activities. Some case studies of real businesses are given.

Likewise, we are seeing the emergence of a whole new range of e-support services (web hosting, ASPs, etc.) that were not in existence a few years back. The report gives an introductory overview to these e-support services and explains how they are helping to create entirely new forms of web-enabled infrastructure in Ireland, North and South.

It has been stated repeatedly by many leading influencers that the availability of world-class broadband infrastructure is a critical success factor for the future of "Ireland Inc". This User Guide serves to paint the most up-to-date picture of our recent progress.

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# Table of Contents

<b>1</b>	<b>Digital Revolution and e-Business</b>	<b>1</b>
1.1	The Impact of the Digital Revolution	1
1.2	Telecommunications for e-Business	1
1.3	What is the meaning of the phrase 'Digital Revolution'?	2
1.4	What does your business have to do?	2
1.5	e-Business and the Opportunities	3
<b>2</b>	<b>e-Business and e-Commerce</b>	<b>5</b>
2.1	What is e-Business?	5
2.2	e-Commerce is One Component of the e-Business Concept	5
2.3	How is Business Changing?	5
2.4	The Internet – a new dimension to market access	6
2.5	Developing a European Centre for e-Business	7
2.6	Opportunities for Business	8
2.7	e-Business and the Challenges	8
2.8	What is e-Commerce?	9
2.9	Changing Commerce	10
2.10	How your Business can Benefit from e-Commerce	10
2.11	Business-to-Business e-Commerce	12
2.12	Business-to-Consumer e-Commerce	14
2.13	Web Portals	14
2.14	Training and Education	15
2.15	m-Commerce and t-Commerce	15
2.16	Government Initiatives	15
2.17	Electronic Commerce Bills, Security and Privacy	17
2.18	An incremental approach to e-Business	17
2.19	Summary	20
<b>3</b>	<b>e-Government</b>	<b>23</b>
3.1	The Vision	23
3.2	Transformation to an e-Government	23
3.3	e-Government Initiatives	25
3.3.1	Initiatives in Ireland	25
3.3.2	Initiatives in Northern Ireland	25
<b>4</b>	<b>e-Business Support Services</b>	<b>29</b>
4.1	Why Outsource?	29
4.2	e-Business Support for the SME Sector	29
4.3	Data Centre Services	31



4.3.1	The Services Explained	32
4.4	Application Service Provider (ASP) Services	33
4.4.1	What is an ASP?	33
4.4.2	What services does a typical ASP have to offer?	34
4.4.3	What are the advantages of using an ASP?	35
4.4.4	Drawbacks to the ASP concept	35
4.4.5	The ASP Industry Consortium (www.aspindustry.org)	36
4.5	Commercial Support Services	36
<b>5</b>	<b>Broadband Telecommunications Infrastructure</b>	<b>37</b>
5.1	Building Infrastructure Capacity for e-Business	37
5.2	What is Broadband?	37
5.3	Why is it important to have a broadband network?	38
5.4	How is broadband provided?	40
5.5	Broadband network services	40
5.6	Broadband Networks	42
5.6.1	Backbone Networks	42
5.7	Local access networks	43
5.7.1	xDSL – Digital Subscriber Line	45
5.7.2	Wireless Local Loop (WLL)	45
5.7.3	Digital Television	46
5.8	Mobile Networks	47
5.8.1	WAP	48
5.8.2	'Interim' Technologies	48
5.8.3	3rd Generation and UMTS	48
5.9	International links	49
5.9.1	Direct Global Terabit and Petabit Connectivity	51
5.10	Summary	52
<b>6</b>	<b>Getting Started</b>	<b>67</b>
6.1	Government Departments, North & South	67
<b>7</b>	<b>Advertorials</b>	<b>71</b>
<b>8</b>	<b>Directory</b>	<b>108</b>
<b>9</b>	<b>Glossary of Telecommunications and e-Business Terms</b>	<b>117</b>

# 1

# The Digital Revolution and e-Business

## 1.1 The Impact of the Digital Revolution

The 1999 edition of this Guide, the 'Telecommunications for Business – A User Guide', had as its central theme the arrival of the 'Digital Revolution', and the emerging Digital Economy. It described the challenges, opportunities and threats in this new business environment in Ireland. Rapid progress has been made since then. The vision for an Information Society is being realised as a result of the rapid development and the widespread, cost-effective, availability of Information and Communications Technology (ICT.)

For the 2000 edition, the term 'e-business' has been added to the title, as the Digital Economy is not so much emerging, but is already here. In addition, the guide now covers mobile access technologies and 'm-commerce', in keeping with the technology developments that allow access to services on the go.

There are high levels of awareness and access to new technology amongst businesses. Most companies' first venture on to the Web is a site providing information and contact details. The key step toward success, in the increasingly competitive markets of the digital age, is to directly **interact** (with customers, suppliers, etc.) through this Web presence. That is, to permit business interactions, which naturally follow-on from access to that information, to also take place through that same electronic medium, independent of geographic location, international boundaries and time zones.

## 1.2 Telecommunications for e-Business

**This Guide is available on the Telecommunications for e-Business Web site: [www.t4eb.com](http://www.t4eb.com).**

The focus for this year's guide is e-business. e-Business refers to all business processes that use Internet technology to operate more efficiently. This guide is targeted at companies of all sizes, across all sectors. It aims to:

- explain the relevance of the digital revolution to businesses;
- provide guidance on why and how companies should implement e-business processes;
- provide a source of data for business-to-business linkages and the agency support to help businesses to source the expertise necessary to set up new communications, e-commerce and related systems;
- provide the latest outlook on the deployment of broadband communications infrastructure – including backbone and access networks, international links and broadband technologies.

The Guide is divided into five sections covering the key topics relevant to the digital revolution in Ireland, North and South:

- e-Business and e-Commerce;
- e-Government;
- e-Business Support Services;
- Broadband Telecommunications Infrastructure;
- Getting Started.

Case studies throughout the Guide highlight 'real world' examples of how companies and the Governments are successfully implementing e-business.

While not seeking to repeat the content of the 1999 Telecommunications User Guide, it is worthwhile, first of all, to review the introduction to the digital revolution and recap on the recommendations set out in this previous edition.

### 1.3 What is the meaning of the phrase 'Digital Revolution'?

Information and Communications Technology (ICT) opens up enormous possibilities for interactions – social, cultural and business – between people, companies, communities and markets all over the world. The implications for business are immense. The important aspect is **not** the technology, but new services and ways of doing business that result from it. This is what is called the 'Digital Revolution'.

The falling cost of communication services, the falling cost of computing power, together with the technologies that combine computing and communications, herald the new age of global access and interactions – the 'Digital Age'.

### 1.4 What does your business have to do?

- Take advantage of new technologies and develop an awareness of the implications of these technologies and of the challenges facing your business in the future.
- Invest in ICT to protect your existing markets, improve trading efficiency and exploit new opportunities in the global market.
- Examine new ways of doing business and the appropriate strategies to be formulated and implemented to fully exploit the new fixed and wireless technologies and services.

The key lesson to be learned from experience so far is that **there must be a business strategy behind building a Web site**. This strategy should comprise:

- an awareness of the benefits of the technology before progressing to e-business practices;
- a plan as to how your Web presence can be utilised from a business perspective;
- a clear understanding of how e-business practices will complement existing business processes.

## 1.5 e-Business and the Opportunities

Excellent opportunities exist for indigenous companies and foreign companies to exploit the potential of the Internet. These opportunities are founded on:

- the open and supportive attitude to e-business;
- rapidly improving telecommunications infrastructure;
- English being commonly spoken, which is the language of the WWW;
- a highly educated, enthusiastic, technology adept workforce;
- the highly active software and Web content sector.

Companies of all sizes can benefit from e-business. The Government agencies are committed to providing the necessary assistance and advice to all sectors to adopt e-business processes. The agencies also run a number of programmes and schemes to encourage existing and new overseas companies to establish e-business activities. Many of these companies are e-business leaders and indigenous companies can learn from these best practice exemplars.

In summary, what can business leaders do?

- **Become aware.** Awareness of the new technologies and their implications for business practice is essential at a time when international best practice for each business is rapidly changing.
- **Evaluate all aspects of your business** in the light of the changes occurring and the opportunities and threats they present.
- **Explore the potential to exploit the new environment** by establishing new enterprises or integrating electronic business channels into existing enterprises.

- **Formulate strategies** for the company to take advantage of new opportunities and overcome potential threats.
- **Look for support** from the agencies involved – state or business representative associations. Business leaders can use this guide to seek exemplars and discover sources of advice and information.

A partnership approach between Government, service providers and business could ensure that the progress in the Information Age will bring with it prosperity and improved quality of life for all.

# 2

## e-Business and e-Commerce

### 2.1 What is e-Business?

*e-Business is the conduct of internal and external business through the application of Web technologies, not only buying and selling, but also servicing customers and collaborating with business partners.*

### 2.2 e-Commerce is One Component of the e-Business Concept

e-Commerce should be viewed as **one component of the overall e-business concept**. e-Commerce is the component of e-business that has the potential to involve monetary transactions, and on this basis can be defined as:

*The ability to market goods and services and to conduct financial transactions electronically, making use of computer networks such as the Internet to access both local and foreign markets.*

### 2.3 How is Business Changing?

Developments in ICT are influencing a change in how industries are structured, how firms are organised, how business interactions take place and how customers behave. New mindsets are required, new measurements and new concepts.

The Internet can deliver a broad range of facilities and applications to business and consumer alike. These services and facilities are new to the market place and the business vocabulary. New ways to configure businesses, serve customers and organise companies are emerging.

- Businesses are increasingly using the Internet to improve efficiency and productivity. Firms are **moving their supply networks and sales channels on-line**, integrating these electronic systems within their business processes to improve service and gain efficiencies.
- Potentially companies can reach customers anywhere in the world. **Direct sales and distribution** will play a far greater role in business practice, particularly where the service involves the supply of information or information surrounding exchange of goods. Physical production and transportation of reports, contracts, tickets, etc. can be eliminated.
- **Exchange of data** between businesses is being facilitated through the use of Electronic Data Interchange (EDI).

- **New working patterns** will emerge. Technology developments are enabling mobility and enabling employees to carry out their work more efficiently. Depending on their business, people will be able to choose when and where they work, essentially making the office increasingly location-independent.
- **Outsourcing** (sourcing materials or services outside the company) is on the increase. Companies can benefit from the superior efficiency and economies of specialised suppliers.
- **Integrated business systems.** Company systems will become more 'open' as direct exchange of information between buyer and seller becomes commonplace.
- **Business-client-supplier networks.** These extended networks allow customers to have a direct input into a product or service from design to delivery. Similarly, suppliers can get an inside view of the company's inventories and production plans, with constant real-time updates.
- **Expertise** will become an increasingly valuable asset. Transfer of skills across borders and distance is becoming facilitated, and people with expertise will have customers all over the world. Individuals who possess critical know-how will attract disproportionate returns.

## 2.4 The Internet – a new dimension to market access

The Internet is essentially a high-speed, high-bandwidth, low-cost Wide Area Network (WAN) that businesses can use to deliver their services to a theoretically unlimited number of users.

Once on-line, access to the Internet is made at the cost of a local call, and in many cases it's even lower. After that, access to the millions of sites on the World Wide Web is free. This is a completely new dimension of 'market access', whereby for little cost the market can access you.

The World Wide Web (WWW) is fast becoming critical as a business tool. For example:

- the WWW gives the opportunity to all businesses to operate in the global marketplace;
- the Internet is now a vast communications and trading centre where tens of millions of people swap information or do deals around the world;
- the Internet can be used to directly link suppliers, factories, distributors and customers;
- the WWW enables businesses to save time spent in product design, speeding up the delivery of components, tracking sales by the hour and getting instant feedback from customers – all with the possibility of keeping inventories to a bare minimum.

The downside of the new era is upheaval across nearly every industry. In coming years, many employees could find their jobs turned upside down as human tasks such as selling airline tickets or tending to customer complaints over the telephone are taken over by the one-to-one, buyer-to-

seller nature of the Internet. There are huge challenges to be faced and, in general, companies that prosper will be those that are aware of the implications of the new era and adapt appropriately.

Similarly, the regulatory environment has to adapt to keep pace with the rapid restructuring in the global economies:

*"Those countries with a communication regulatory environment, which facilitates abundant capacity at reasonable rates, will launch electronic economies much faster than countries that constrain such developments."<sup>1</sup>*

## 2.5 Developing a European Centre for e-Business

Ireland, North and South, has a tremendous opportunity to become a European centre for e-Business. Already we are a European leader in telecommunications-based sectors such as telemarketing and call centres. We can also become leaders in the field of e-business as we have many advantages.

- Many overseas companies are based here, including a number of leading US data-centric and web-centric companies.
- A number of indigenous companies have moved into the world of e-business (e.g. banks and other financial institutions).
- There is a significant software capability.
- There are favourable corporate tax regimes in place. This low corporate tax regime is being extended to all traded activities and will apply to e-businesses.
- English, the language of the World Wide Web and Internet, is commonly spoken. In addition, there are facilities for other languages.
- Ireland is the only English-speaking nation using the euro.
- Northern Ireland, using Pounds Sterling, is the only English-speaking country in Europe sharing a land boundary with a European country using the euro.
- There is a young population that easily adapts to the Information Age.
- There are excellent education and training facilities.

<sup>1</sup> OECD: 'Building Infrastructure Capacity for Electronic Commerce', 1999.



## 2.6 Opportunities for Business

Traditionally, the island's geographic position on the edge of Europe and its isolation from continental Europe as a marketplace has posed a strategic challenge to businesses. e-Business offers a new route to overcome this.

e-Business is leading to new business opportunities for all SMEs, which account for over 95% of enterprises. The issues and challenges faced by SMEs are different to those faced by their larger counterparts. In recognition of this, there are now a number of initiatives set up by agencies focused on assisting the SME sector in implementing e-business. Details of these agencies are provided in Section 6, 'Getting Started'.

Internationally, e-business promises to significantly increase trade across all sectors of the economy.

- e-Commerce will allow producers and exporters access to a wider audience and increase their international presence.
- Companies will be selling on a wider world stage with increased market share and competition from other traders.
- e-Business will bring with it a strong impetus towards harmonisation of international regulatory frameworks in areas such as licensing, security and reputation.

There are many hurdles to overcome, but the implementation of e-business promises to bring with it huge cost savings and rewards.

## 2.7 e-Business and the Challenges

If the digital revolution is ignored and out-moded business practices and models are maintained, businesses may lose competitive advantage to rival companies, who could inevitably increase market share and improve trading efficiency. Only by becoming aware of the opportunities and threats inherent in the new technologies and formulating appropriate strategies, will businesses thrive.

All of the specific challenges in the following list have the potential to lead to losses for companies in market share on national and international markets.

- Companies that currently enjoy market leadership in Ireland, North and South, will come under **pressure from overseas competitors**, and they need to have competitive strategies in place before this occurs.

- There must be **sustained development of ICTs** and continued investment in **training** in their use. For example, with international retail chain stores, having compatible technologies is a prerequisite for supplying into their international supply chains.
- **Accelerated trends in efficiency** will put pressure on companies who do not have new strategies in place. In particular, the movement to outsourcing of specialist products and services will challenge industries.
- **Regulatory control** is difficult to apply in the e-business world, and cross-border trading in electronic goods and services hard to monitor. Companies operating in highly regulated markets could be disadvantaged. Entry to the marketplace of non-regulated goods will result in a loss of competitiveness for the regulated product.

Companies must ensure that people with the **required expertise** are retained and that the broad range of creative and technical skills is available to support the target markets in the digital age.

## 2.8 What is e-Commerce?

e-Commerce in some form or other has been around for some time. The types of e-commerce that most people use on a regular basis are e-mail and fax. Another form of e-commerce is the ability to do on-line banking over the Internet, or to purchase financial products on-line. For example, it is already possible to purchase motor insurance over the Internet in Ireland and the UK.

The many forms of e-commerce include:

- e-tailing or 'virtual storefronts' on Web sites with online catalogues. These are sometimes gathered into a 'virtual mall';
- e-mail and fax and their use as media for reaching prospective and established customers, for example, with newsletters;
- business-to-business buying and selling (B2B);
- business-to-consumer buying and selling (B2C);
- the security of business transactions, including encryption and certification.

As a result of new broadband access technologies and channels through which e-commerce takes place, we are now seeing new sub-sets of e-commerce emerging, such as:

- m-commerce - mobile commerce, access to e-commerce services on the go;
- t-commerce - TV commerce, access to e-commerce services through the television set.

## 2.9 Changing Commerce

e-Commerce has caused a revolution in the way business is carried out. e-Commerce changes the whole way business is conducted from ordering to tracing the order through each stage to delivery and to the final invoicing and payment.

- Businesses are improving internal networks and networking with other companies to:
  - share marketing and distribution platforms;
  - Link co-workers, suppliers, factories, distributors and consumers in strategic partnerships, to speed up processes and eliminate tedious and repetitive tasks.
- Companies can offer products or services to other companies regardless of location - e-commerce has no geographic boundaries and time zones are irrelevant.
- Marketers can be far more efficient in marketing to 'affinity groups'<sup>2</sup> on the Internet, through direct marketing and advertising. These groups will become critical to businesses to tailor their products and services more specifically to customer needs.

All businesses must consider adopting e-commerce as a way of doing business. Even the smallest local retailer or service provider can use the Internet to buy and sell, deliver services and market their products.

Those organisations that have chosen to embrace the principles of e-commerce and e-business have a head start on their competitors and are developing a competitive advantage. Meanwhile, their competitors are learning fast and hastening to catch up. The Internet with the WWW exists today and it is developing rapidly. However, it is not the underlying technology that is important, it is willingness to embrace its potential and the innovative nature of how business will use it that determines the future success of the island in the Digital Age.

## 2.10 How your Business can Benefit from e-Commerce

A well-designed, user-friendly Web site increases the likelihood of repeat purchases and facilitates the casual buyer. e-Commerce can be used to speed up the whole process chain to provide a better service by:

- streamlining distribution networks;
- improving traceability;
- enhancing the quality of the product;
- building customer relationships and loyalty.

2 *Groups that share a common interest or environment.*

e-Commerce allows retailers to increase global sourcing as they force relentless price competition. Similarly, it creates market opportunities on a global scale for high quality products sold at a competitive price. The benefits that can be derived for business from utilising e-commerce include:

- providing instant access to information and self service to improve the quality of customer service;
- improving the information flow around an organisation;
- extending the market reach of business for both sales and procurement purposes;
- being able to understand clients' buying behaviour and so tailor solutions to suit;
- improving the time to market for new services and products by achieving faster and better customer feedback.

**Case Study 1** describes how Worldoffruit.com, whose headquarters are located in Dublin, successfully established their e-business enterprise. The company is owned by Fyffes, who opted to launch their on-line service under a completely new brand name.

## Case Study 1

## WorldofFruit.com ([www.worldoffruit.com](http://www.worldoffruit.com))

**Business Areas:** worldoffruit.com is one of the first and fastest moving net marketplaces for the global fresh produce industry offering 24 hour secure trading. worldoffruit.com also provides the user with industry news and reports, message boards and other value added services.

**Sector:** worldoffruit.com offers online trading and services to operators at all levels across the fresh produce supply chain. The targeted trading communities have been defined as importers/exporters, growers and retailers.

**Technologies:** Sun Solaris and Oracle 8i technology are the principal technologies behind the development of the system. The servers are hosted offsite.

**Size:** Currently worldoffruit.com has a team of 45 employees with sales offices in Spain, Italy, France and the Netherlands.

**Location:** worldoffruit.com head office is located in Dublin, Ireland with a number of European sales offices in Spain, Italy, France, and the Netherlands. Ultimately, the aim is to have a series of sales office worldwide with the next offices opening soon in Asia, South Africa and America.

**Geographical Impact:** worldoffruit.com is a truly global marketplace, which overcomes time zone difficulties. Registered users have instant access to customers and suppliers worldwide through an extensive customer database

**The Business Opportunity:** Fyffes plc, the leading European importer and distributor of fresh produce had been looking at e-business possibilities since 1998. Due to the perishable nature of fresh produce, the low margin that typify the sector and the requirement for an efficient means to communicate with other traders, the need for an effective trading tool was recognised. A prototype web-based system was developed, influenced by industry participants, and in Nov 1999 the company launched the subsidiary worldoffruit.com with the aim of making it the leading net marketplace for the £250 billion global fresh produce industry.

**The Solution:** The system is a scalable robust platform designed to facilitate 24x7 global fresh produce trading. Principal development partners, Computer Science Co-operation (CSC) and Zartis.com, have provided worldoffruit.com with their considerable development knowledge in the building of the online trading system.

**Success:** Today worldoffruit.com has over 330 registered users from over 25 countries worldwide. As a net market place, worldoffruit.com will generate revenue by offering tailored solutions to operators at all levels of the fresh produce supply chain. Revenues will flow from commissions charged as well as membership and advertising fees.

**Lessons learned:** worldoffruit.com has discovered that, in order to develop a successful trading system, it is essential to know the user and understand their needs. worldoffruit.com has been developed by the industry for the industry and therefore reflects a deep understanding of the business and they are confident that they can provide all the tools required for successful trading. Surveys carried out by worldoffruit.com conclude that the fresh produce sector is not afraid of embracing new technology and is ready to take up the challenge of e-commerce.

**The Future:** The aim of worldoffruit.com is to move quickly to become the leading transactions engine in the fresh produce industry and capture a significant share of the global on-line business to business fresh produce market by 2004. With continued investment in technological development, staff, marketing and innovation, worldoffruit.com will seek to develop, to the highest possible standards, the range of services offered through its net market place.

## 2.11 Business-to-Business e-Commerce

Business-to-Business, or B2B, is the exchange of products, services, or information between businesses. Companies are enabling access to a snapshot of their purchasing, supply chain management, inventory management, customer relations and logistics via an interface provided on the Internet to these systems.

B2B can take place via one of the following media:

- **Company Web sites.** The target audience for many company Web sites is other companies and their employees. Therefore, a company web site is a round-the-clock mini-trade exhibit. A company Web site can also serve as the entrance to an exclusive extranet available only to customers or registered site users. Some company Web sites sell directly from the site to other businesses.
- **Product supply and procurement exchanges.** The company's purchasing agent can shop for supplies from vendors, request proposals, and, in some cases, bid to make a purchase at a desired price on-line.
- **Brokering sites.** These act as an intermediary between someone wanting a product or service and potential providers. Equipment leasing is an example.
- **Information sites.** These provide information about a particular industry for its companies and their employees; for example, these include specialised search sites and trade and industry standards organization sites.

B2B e-business opportunities exist in:

- **e-Procurement** – the location, negotiation and purchase for requisites for an organisation through electronic means.
- **Electronic Bill Presentment and Payment (EBPP)** – the distribution of invoices to customers and electronic payment processing with key drivers being reduced costs of sending invoices and handling payments.
- **Customer Relationship Management (CRM)** – a set of processes to support and enhance a company's understanding of customer needs, expectations and behaviours enabling it to dynamically respond to opportunity and change.
- **Web Services** – Converging software (tools and applications) with professional services such as consulting.
- **e-Commerce software enterprises** - software to build B2B Web sites. This includes site building tools and templates, databases, as well as software developing.

In Ireland, examples of B2B initiatives include:

- iCommerce - the coming together of a number of partners namely, Business & Finance magazine, Comit Gruppe and the Chambers of Commerce of Ireland. They have created Ireland's biggest B2B marketplace, iCommerce.ie. This will allow businesses to buy and sell business products and services, and so far ensures the involvement for over 100,000 companies. (<http://www.icommerce.ie>)
- Esat Telecom has introduced Marketplace, which is Ireland's first B2B on-line auction facility. (<http://www.marketplace.ie>)

In Northern Ireland, Trade UK, is enabling B2B success in global markets through a structured and strategic approach to export and trade development.

- TradeUK is Trade Partners UK's Internet service for international buyers and UK exporters. Trade Partners UK (which includes Trade International Northern Ireland) is the Government network dedicated to building British business success overseas.
- Using the latest information technology, Trade Partners UK has developed a free Internet service to help overseas companies search for British suppliers or to deliver their purchasing requirements direct to the desk-tops of relevant British companies. (<http://www.tradeuk.com>)

## 2.12 Business-to-Consumer e-Commerce

Business-to-Consumer (B2C) is the electronic trading between business and consumer.

Europe is quickly catching up with the US with its on-line culture, as 49% of European consumer spending power is now on-line.<sup>3</sup> In addition to this on-line spending through the PC, B2C will develop further through a number of new channels. These include digital TV and Internet-enabled phones. Together, these will substantially increase Internet adoption rates in Ireland, North and South, offering greater opportunities for business.

Opportunities exist in B2C e-commerce in a broad range of areas from contact (both information and entertainment) and transactions to advertising. To date, enterprises have emerged in:

- retail & grocery shopping;
- financial services;
- medical advice;
- reservations and bookings across all activities from travel to cinema/theatre, restaurants.

The availability of Internet access, particularly for home use, has improved significantly over the past twelve months. This has been aided by competition amongst operators offering Internet access. An important aspect of this competition is the downward pressure on access costs. This is making access more flexible, convenient and affordable and allowed people to spend more time on the Internet. In turn, this opens up a multitude of e-commerce opportunities for businesses, as not only is the number of consumers on-line increasing, but also these on-line users are becoming more receptive to e-commerce services.

## 2.13 Web Portals

B2B and B2C commerce can be transacted through Web 'portals' or gateways. A portal is a starting site on the Web for users when first connected or one that users tend to visit as a regular site.

A number of large access providers offer portals to the Web for their own users. They include Yahoo, Excite, and Netscape. Niche, or 'vertical market' portals, called 'vortals' also exist to serve a particular affinity group. One such example is 'Ireland.com', the portal of the Irish Times, which provides links to information sites in Ireland. Other examples of niche portals include Garden.com, for gardeners and Fool.com, for investors.

3 DataMonitor IMPACT Survey, May 2000.

## 2.14 Training and Education

There is an ongoing requirement for training in the Digital Age.

Training and education will no longer be so reliant on the physical presence of a trainer. Training can be delivered on-line through multimedia and all the administration and finance completed through the exchange of electronic documents.

Businesses can also use 'Intranets' (private Web services offered within an organisation) to provide training facilities to their staff. It can also be a means for improved internal communication and to make information available to staff that can help them improve their jobs.

## 2.15 m-Commerce and t-Commerce

Developments in mobile telephony technology are moving mobile phones from being a simple auditory device to being a universal personal interface to information. These developments are bringing access speeds to the mobile device compatible with the data-centric world of the Internet.

e-Commerce will continue to evolve and develop to utilise this mobility. For example, WAP, GPRS, EDGE and UMTS technologies are expected to play a big part in the upsurge of on-line shopping and other e-commerce services.

Analysts predict that mobile Internet access will herald big social and economic change. Hence the latest addition to the e-business vocabulary: m-commerce. m-Commerce is the ability to purchase goods anywhere through a wireless Internet-enabled device.

Digital TV will bring an access to the household through a very familiar appliance and so offer Internet capability in a user friendly way. It has the potential to open up a whole range of business services for the enterprise sector. Digital TV will be interactive and will effectively be a gateway to the Internet in every home.

## 2.16 Government Initiatives

How are the Governments supporting and encouraging development towards e-business? In order to help companies rapidly acquire knowledge and capabilities in e-business there are a number of initiatives in place. Refer to Section 6: Getting Started for links to sources of practical advice and support for management, marketing and skills development.

In Ireland, examples of the regulatory initiatives include:

- the Irish Government produced an action plan for implementing the Information Society in Ireland in January 1999, which involved many significant initiatives;



- the DPE and the European Commission assisted IBEC/Information Society Commission Business Awareness Campaign under the Economic Infrastructure Operational Programme;
- Enterprise Ireland's Adapt Initiative (See Case Studies 3 and 4.);
- Enterprise Ireland's e-Business Learning Centre and 'E-Work Business Campaign'.

Infrastructure-based initiatives include:

- the DPE and the European Commission assisted 25 corporate infrastructure demonstration-type projects under the Economic Infrastructure Operational Programme 1994-1999 (co-funded by ERDF);
- network of 'Webworks' – a network of technology hubs planned by Enterprise Ireland. These will house new companies in towns and cities around the country;
- IDA Ireland's strategy to make Ireland a European e-business hub, for example, the Irish Government/IDA Ireland contract with Global Crossing, which will give Ireland practically unlimited bandwidth connectivity to Europe and the rest of the world;
- designating of City West as the National Digital Park. IDA Ireland is working with the private sector on the development of this and other digital parks. IDA Ireland is working with the private sector to develop an international telehouse for telecommunications and ISP companies to exchange traffic at City West;
- *eircom* Ennis Information Age Town project.

In Northern Ireland examples include:

- The Information Age Initiative - a representative group from the private and public sectors with a brief to develop a strategy framework and comprehensive action plan aimed at ensuring that Northern Ireland takes maximum advantage of opportunities for e-business. ([www.leapfrog.gov.org](http://www.leapfrog.gov.org));
- The Department of Enterprise, Trade and Industry (DETI) is taking the lead in supporting the Information Age Initiative and, through an extensive range of programmes, is encouraging the development of the knowledge driven economy and e-commerce through client companies and various organisations in the business sector;
- the training scheme for business called 'Training for Buttons'. ([www.trainingforbuttons.com](http://www.trainingforbuttons.com));
- Local Enterprise and Development Unit (LEDU) has initiated a Connectivity Programme targeting 1,000 small companies to provide them with website access and e-mail facilities. The LEDU is a Government-funded agency in Belfast who assists small businesses within Northern Ireland. e-Commerce initiatives include getting clients 'connected.'

## 2.17 Electronic Commerce Bills, Security and Privacy

Government in the UK and Ireland have realised that the laws need updating to cope with the Internet. For example, when on-line trading becomes ubiquitous, it is essential that documents will not be denied legal effect by virtue of being transported or stored electronically. Both Governments have developed legislative frameworks – both entitled 'The Electronic Commerce Act, 2000' - for the emerging world of e-commerce and on-line communications. These allow the legal and administrative systems to give equivalence to written and digital documents and signatures

These legislative frameworks add trust and certainty to e-business systems and electronic agreements. The legislation is designed to give a key advantage in what is a very competitive market and also to ensure that the island remains an attractive location and environment for dot.coms and e-enabled businesses and activities.

In Ireland, the Chambers of Commerce Ireland (CCI) has shown an interest in becoming a certification authority for e-commerce in Ireland and An Post recently became a certification authority. The CCI will offer a service named ChamberCERT to issue digital certificates to member organisations for secure authenticated Internet business. Other certification authorities are also likely to emerge shortly.

In Northern Ireland, the Post Office in the UK has a certification scheme available, called 'Viacode'. ([www.royalmail.co.uk](http://www.royalmail.co.uk)).

## 2.18 An incremental approach to e-Business

A popular approach to bringing e-business methods into a company is for the company to introduce new processes on a small scale, and to use this as a base from which to ramp up their e-business capabilities. The second of our Case Studies illustrates how Delap and Waller, mechanical and electrical consulting engineers, have used non-Web-based e-commerce to increase its turnover. In this case, the company did not opt for an overhaul in its business processes from the outset, but instead have achieved a good pay back from well-planned use of limited e-business techniques.

### Case Study 2

### Delap and Waller ([www.delap-and-waller.com](http://www.delap-and-waller.com))

**Business Areas:** Operations, Design & Production, Customer Service      **Sector:** Engineering (electrical, mechanical, process)

**Technologies:** Video conferencing, networks, e-mail      **Size:** 54 employees

**Location:** Londonderry      **Geographical Impact:** National (Belfast, Dublin, Cork), International (London)

**Background:** Delap and Waller is a firm of mechanical/electrical consulting engineers. The company is split into a number of regional offices in Belfast, Dublin, Cork and London. Until 1994 technology was peripheral to the business.

**The Business Opportunity:** Delap and Waller recognised that through technology it could share information better between staff in its different offices and with customers in order to streamline its business processes and provide a more efficient service for its clients.

**The Solution:** The Company installed a Wide Area Network (WAN) to link its computers and telecommunication systems in different offices to improve staff communication and allow information to be shared. They also installed desktop and video conferencing. The investment in technology cost approximately £150,000.

**The Success:** Internally, the use of e-mail, digital telephone systems and desktop and video conferencing systems has streamlined operations and allows all the sites to work together, sharing information and resources. Delap and Waller form virtual teams from across its offices and wider within its sector when bidding for new work.

Externally, the company has improved the way it communicates with customers. It uses conferencing technologies on a daily basis for discussions with its clients. It can send them documents instantaneously by file transfer.

Integrating technology throughout the business was responsible in part for a £600,000, almost 15% increase in turnover despite the strong pound. The company anticipates that the figure will rise again in the following financial year.

**The Future:** Delap and Waller intends to continue to upgrade its IT and telecommunications systems by installing remote access and teleworking facilities. It also plans to install more video conferencing systems into its offices.

Liam O'Hagan, MD of Delap and Waller, explains, "This will allow us to offer better service to our customers and also liaise more closely with project partners and the supply chain".

**Advice for other companies:** Liam O'Hagan advises other companies thinking about incorporating technology into their business "Don't try to do everything at once – stage the introduction of e-commerce. This will give time for staff to accept and learn the technology and also for your business to adapt to using it. I'd also recommend other companies to seek independent advice and support, in particular, at the initial stage".

E-commerce is not restricted by time zones. The concept of "open all hours" is truly alive in terms of on-line transactions. As illustrated in **Case Study 3**, for example, a customer from the US can order a sweater from an Irish manufacturer at 3 am if they so wish.

**Business Areas:** Magee Weaving is based in Donegal in the North West of Ireland. Magee Clothing is the largest manufacturer in Ireland of clothing with factories in Donegal and Antrim. Magee of Donegal is a large retail outlet in Donegal Town, with other complementary brands of quality clothing. Magee Weaving maintains the unique hand-weaving tradition in Donegal but also weaves on technically advanced Rapier looms.

**Size:** 280 employees

**Location:** New Row, Donegal

**Geographical Impact:** Donegal, Antrim

**Background:** Established 1866

**The Business Opportunity:** Magee want to develop a top-class online shopping presence for hand-woven suits and jackets, and in particular to expand their online retail presence in the Irish American US market.

#### **The Solution:**

Magee launched their online store in November 1999. Given Magee's current market share in their home market they were not keen to target the Irish market for fear of cannibalising their current distribution. They plan on attracting most of their custom from the US market, where they have targeted their campaign, including the registering a .com domain name.

Enterprise Ireland, through the Adapt programme, helped in the marketing of the website and its design. Kratos, an Internet development and Marketing Company operating in Dublin, gave advice on all aspects of the site. They made recommendations for promoting the site by online and offline methods and gave advice on the navigational structure.

Instead of the traditional Internet 'brochure' concept, Magee chose to focus on its customers' needs, they added a secure shopping cart that allows for a fully integrated solution. A customer can also choose from a selection of cloths, the cloth image can be magnified many times to show the quality and texture.

The Internet is the most powerful marketing tool available today. But in order to promote a new site, the more traditional methods of marketing and advertising cannot be abandoned. Kratos advised on incorporating the mageeshop.com domain name onto all corporate stationery, company communications and any further offline advertising.

#### **The Success and Lessons Learnt**

There has been an increase in customer enquiries using email. The shopping cart has allowed a safe and secure medium for Internet transactions. Customers can avail of special discounts and fast delivery through their international delivery network. Magee offers a 5% discount for 3 or more items bought. Magee now have the option of integrating the Internet into all their business operations.

#### **The Future:**

Over a number of years they have accumulated a considerable amount of contact (name and addresses, emails). It is expected that a targeted mailshot explaining the existence of the new website could attract previous overseas customers to shop online.

e-Business can be successfully implemented across all sectors and industries, and does not necessarily have to involve the buying and selling of goods. The example documented in **Case Study 4** outlines how an SME, with the help of Enterprise Ireland's Adapt funding, has identified the ways in which a Web presence could increase their business opportunities in terms of increased audience and streamlined business processes.

## Case Study 4

### Abacus (<http://www.abacus-communications.com/>)

**Business Areas:** Abacus Communications designs, produces and sells computer-based language training programmes. The software programmes are aimed at learners who want to improve their level of language proficiency using a highly motivating medium.

**The Business Opportunity:** Web site development.

Adapt funding has helped Abacus to research all aspects of their online business and set a strategy for the coming months. The Web site will become the cornerstone of Abacus' marketing effort. The aims of the introduction of the Web site are to facilitate communication with resellers and potential customers, to enable Abacus to make contact with a greater audience and to generate a database of clients.

The project aims to reduce overheads such as postal and telephone support charges, and generate a higher turnover with less effort on the part of Abacus personnel. For example, the Web site will save Abacus personnel time in addressing customers queries.

For Abacus, the site will become an asset in itself, and for its customers it will be valued as part of the service. The criteria for the new Web site were: simplicity, ease of use, easily updated and easily navigated.

**The Success:** Abacus has certain technology skills but the Internet was new to the management team. The Adapt programme helped the management team come to a better understanding of the opportunities available in this domain. Non-technical staff benefited from the practical introductory Internet training sessions. The value of the programme for senior management had more to do with generating the discipline of thinking about the marketing and sales issues related to this domain at regular times. This can be a problem for SMEs. There is usually so much to do and so little time in which to do it.

## 2.19 Summary

Doing business in a world of plentiful and cheap interactions will clearly require new skills and a new mindset. No firm or sector will be left unaffected. Those who anticipate and understand the fundamental nature of the changes ahead and reshape their business models will be best placed to exploit the opportunities.

e-Business is a multi-billion dollar industry that offers, like never before, the opportunity for business in Ireland, North and South, to trade in every part of the globe. It is therefore imperative that businesses adapt their trading techniques to come in line with this new technology.

e-Business is one of the biggest challenges to businesses and is still a very new concept to many. The most recent surveys indicate that across all businesses, those that have e-mail addresses and that have their own web site are still relatively low. Of those that have a Web presence, many report to having little or no sales revenue from this Internet site.<sup>4</sup>

Many companies have had a Web page built to have a presence on the Web but had no plan as to how this presence could be utilised from a business perspective. Often, it is not possible to simply transcribe existing business to the Web, a new business model is required to properly exploit its potential. The key lesson to be learned from experience so far is **that there must be a business strategy behind building a Web site.**

Overall, the key messages for business are to:

- explore internal and external opportunities in ICT, no matter how small the change;
- take advantage of new technologies;
- develop an awareness of the challenges facing your business in the future;
- examine new ways of doing business and the appropriate strategies to be formulated and implemented to fully exploit the new fixed and wireless technologies and services.

To become the European centre for e-business, all companies and Government organisations in Ireland, North and South, will have to adopt new electronic methods as a way of doing business, and find a way of integrating these with existing traditional business processes. It will also involve attracting new overseas companies and developing indigenous companies, based on e-business.

It is ambitious, but with proper planning, adequate time and resources, it is a real, achievable, opportunity and would establish Ireland, North and South as one of the leaders in e-business.

<sup>4</sup> From a study by University of Ulster, published in the Irish Banking Review, June 2000.



# 3

## e-Government

### 3.1 The Vision

*e-Government uses Internet technology to conduct internal and external Government processes. The Internet is transforming the way in which Governments work and trade, and is improving access to their public services.*

The Governments in both parts of Ireland are adopting new models of information and delivery and customer service to citizens and businesses using a single point of access. The aim is to enable the people who live or work in Ireland, North and South, to access the local and public services they need, when and where they want to.

The Governments in UK and Ireland are ensuring that appropriate support is in place to encourage the development of e-business and that they are in line with best practice in the rest of the world. Much of this guidance provided by the Government bodies is directly relevant to their own processes and operations, and the Governments themselves should be major beneficiaries of the Digital Revolution. The Governments recognise that they need to think of themselves in 'e' terms and take the lead on e-business initiatives.

### 3.2 Transformation to an e-Government

Governments are aiming to facilitate quicker access to services around the clock, providing access to public services wherever Web access is available.

The 'Citizen as a Customer' concept envisages citizens being able to ask for services or products on line, whenever **they** want. The aim is to provide 24 hour access to information through electronic media, i.e. the flexibility to make the Government 'open all hours'.

Governments can potentially offer all of the services listed below electronically:

- Advice on a range of subjects including income tax, local authority benefits, and employment benefits.
- Public services - enquiries and complaints, planning applications, voting, social issues.
- Payment of social welfare benefits.
- Education - access to shared resources, remote training, distance learning.
- Property - availability, repairs, commercial & residential building standards, land registry.
- Care - aged, homeless, adoption registers, birth registers, health.



- Applying for driving tests, and even sitting the theory test on-line.
- Payment and collection of rent and taxes.

The focus on service delivery is changing to place the emphasis firmly on what the customer wants and to deliver a service to meet these expectations. In this case, the public are the customers.

The entire Government information system will be integrated to deliver services via a number of different methods including telephony, Internet, traditional hard copies and information kiosks.

The concept of 'Joined-Up' Government requires the public sector organisations to interwork closely so that the public see the local or central Government as one single unit. This concept is borne out through the 'Electronic Services Broker' or eBroker service in Ireland, described in Case Study 5.

## Case Study 5

## The Government of Ireland Reach Initiative (<http://www.reach.ie>)

**Area:** Government

**Sector:** Economic Development

**Technologies:** e-Government

**Geographical Impact:** Regional

**The Business Opportunity:** e-Broker Service

The broker is intended to act as an intermediary between the citizen and the public service. It will establish and operate a standard common authentication service for citizens in accessing public services. It is intended for use in all citizen/public service contacts, regardless of access channel, i.e., it can be used in face to face and telephone contacts as well as remote self-service contacts over a network.

**The Solution:** The Government has committed to delivering electronic public services through an eBroker model. The "electronic broker" will act as agent for the client using state of the art technologies to meet the requirements of the client, and to ensure that their expectations of quality service are met. It will basically amount to a virtual corporation delivering quality services on the basis of client needs and increasing the level of efficiency and service throughout the public service.

The eBroker will be used for personal events like birth registration and for business events like filling tax returns.

An important feature of the broker will be personal "data vaults" where citizens can store additional personal information or profiles, which can be voluntarily released for enhanced service levels.

Another important feature of the broker will be the development of a common transaction or episode management system. This will involve the development of interfaces giving access to groupings of services related to particular episodes in the life of the citizen. Citizens' requests for services coming through these episode interfaces will be presented to the various public service agencies in a standard format. The service agencies will be expected to redevelop their own systems to support these standard interfaces. While the idea of personal data being held under the personal control of the citizen is central to the operation of the e-broker, there is also the requirement to share a basic data set across the service agencies. The purpose of this requirement is to improve service levels to the customer by eliminating the necessity for repeated form filling and affirmations of identity at each point of contact with the public service. The extension of the use of the Personal Public Service number (PPS No.) across the public service is central to the achievement of this objective.

## 3.3 e-Government Initiatives

The change from the current system to a system where all information is readily available on-line or through other electronic media may seem like a monumental task, but the first steps have already been taken. There is already a huge amount of Government-produced information available on-line, and many initiatives in place. To enable these initiatives, local service providers will work together with local and central Government using the telecommunications technologies to deliver services in the most cost-effective and simple way.

### 3.3.1 Initiatives in Ireland

Information is available from [www.irlgov.ie](http://www.irlgov.ie).

The report 'Modernising Government, the Challenge for Local Government' assesses the success of the Government's strategy and the future direction within local government. In addition, initiatives in Ireland to support the electronic delivery of Government services include:

- **A next generation VPN Government network:** For example, GPs could use this as an extranet service as they need to be in contact with various public departments. End consumers could use it for transactions with the public service, for example for paying motor tax.
- **The 'Reach' Initiative:** A public sector initiative to foster more streamlined public services through greater sharing of information by public bodies. It will encourage and support the development of more integrated services, including the eBroker initiative.
- The Government's **Information Society Action Plan** sets out a coherent framework for the development of e-government.
- **Electronic Commerce Act** – this provides a framework for the electronic delivery of Government services.
- The launch of '**ChamberSEAL**' by the Chambers of Commerce. This provides a listing of companies including name, location and tax registration information and, on a general level, the creation of homepages for all Government departments, both local and central.

### 3.3.2 Initiatives in Northern Ireland

UK Government information is available from [www.open.gov.uk](http://www.open.gov.uk). The Northern Ireland Executive Web site is [www.nics.gov.uk](http://www.nics.gov.uk).

In the UK, a strategy published in April 2000 established the framework for achieving the Government's targets for getting e-government services online. In response to the 'Modernising Government' White Paper, it presents a strategy for Information Age Government in the UK. Its focus is on providing better services for citizens and businesses and more effective use of the Government's information resources.

The UK Government has set a target of having all Government services available on-line by 2005.

In addition, local Government initiatives include:

- an intranet for the country's local authorities;
- electronic procurement system;
- planning application based on GIS and Internet technologies.

Northern Ireland Government departments are actively pursuing knowledge-driven economy issues arising from the Competitiveness White Paper and associated initiatives - Modernising Government, Electronic Government and the Information Society. For example, the Office of Government Commerce, OGC, will oversee the purchasing activity of some 200 Government departments and agencies across the UK. Also, the Government Purchasing Agency Credit Card has been introduced in Northern Ireland.

Case Study 6 presents an e-government success story from IRTU in Northern Ireland, who have Web-enabled a number of Government services. Further evidence of progress is the launch of Cablenet – the UK e-Government news service.

**Area:** Government

**Sector:** Economic Development

**Technologies:** E-government Video conferencing, E-mail

**Size of Organisation:** 143 employees

**Location:** Co. Antrim

**Geographical Impact:** Regional

**The Business Opportunity:** Local Companies log-on to e-Government Services

In 1999, Tony Blair in the white paper "Modernising Government" stated that when businesses or citizens interacted with government 50% of dealings should be capable of electronic delivery by 2005 and 100% by 2008. These figures have been revised and the new targets have been set as 100% by 2005.

IRTU recognised that a number of schemes they administered could be delivered using Internet technologies.

**The Solution:** IRTU decided that they should pilot a system by which customers could submit application forms for the Networking Programme, through the IRTU web site. "We wanted customers to be able to fill in an electronic form over the Internet that closely emulated the paper version." said Trevor Forsythe, e-solutions manager.

IRTU worked closely with their web contractor to develop the software. The developer also made recommendations on enhancing the services such as systems to save versions of applications, opportunities to review applications and automatic systems to save data.

Procedures were developed within IRTU alerting staff when applications were submitted, and systems introduced to issue appropriate responses to customers.

**The Success:** Initially the service was offered to companies who were comfortable using Internet technology. This allowed meaningful feedback and constructive criticism on the service to be gathered. The service was made widely available in 1999.

Since the launch of the service there have been over 100 applications and at present over 80% of all applications are made over the Internet.

**The Future:** Since the development of the pilot, IRTU has identified four other schemes that can utilise the same software to capture information over the Internet. They are also looking at their other schemes to discover how they can be best delivered over the Internet.

**Advice for other companies:** Trevor Forsythe commented, "We had clear ideas as to how we thought the service should be delivered. We ensured that our developer fully understood what we wanted to achieve. We also had to consider new working practices in IRTU to handle this new method of capturing and processing information."



# 4

## e-Business Support Services

Current e-business activity consists primarily of a basic Web site and is based on simple intranet and traditional electronic data applications. Despite a good awareness of the importance of involvement in e-business, companies sometimes lack the in-house expertise needed to implement and support these new systems. Outsourcing provides the option for companies to offload their mission-critical Internet applications and to build their e-business capability.

### 4.1 Why Outsource?

In the IT industry today, the problems faced by companies are often complex and expensive to resolve. The potential benefits of outsourcing, in particular, the emergence of the Application Service Provider (ASP), could just provide the necessary relief from these IT headaches.

Web services, Web hosting and server hosting, telehousing and co-location, application hosting and application service provision are all services that could enable businesses - small and large - to increase their presence on the World Wide Web, where previously the cost and scale of technology was prohibitive. The benefits to businesses in outsourcing their Internet activities include:

- cost-effectiveness;
- optimum time to market;
- access to experienced staff;
- reduced risk of making costly technology and implementation errors.

### 4.2 e-Business Support for the SME Sector

A lack of basic IT knowledge and Web skills are often barriers to SMEs to adopting and understanding the benefits of e-business. For companies to adopt e-business they need assistance in:

- understanding the e-business concept;
- understanding what other parties can offer, and if it represents good value.

The key to outsourcing is finding the right partner. If in-house expertise is not available, contact can be made with agencies that offer advice on:

- how to put your core business processes on-line;

- how to sell your merchandise or services over the Web more efficiently;
- whether to implement the e-business strategy in-house or to outsource some, or all, of the development work;
- selecting the right partner.

Information on these agencies is provided in Section 6: Getting Started.

Case Study 7 describes how Molloy's Liquor Store, an SME, successfully outsourced their Web site development to an Internet Agency. Molloy's now hosts its own B2C solution.

## Case Study 7

## Molloy's Liquor Store (<http://www.molloys.com>)

**Business Areas:** Customer order placement – provide virtual off licence with full range of products and services available.

**Sector:** Food and Drink sector - this e-business application is applied to a consumer market - B2C based site/application

**Technologies:** Significant technologies used - e-mail, NT server.

**Size:** 268 employees

**Location:** Dublin City

**Geographical Impact:** Global – a user may place an order from anywhere in the world for deliveries within Europe.

**Background:** The origins of the Molloy Group go back to the 1930s. The Group has a proud tradition of being at the forefront of emerging technologies in the drinks industry. In 1995, the Internet was identified as a new and potentially profitable milieu of operation. Molloy's Liquor Stores first on-line presence was established in 1996 and on-line shopping was facilitated later that year. The website retails a selection of wines and spirits which mirrors those available in the Molloy's high street stores.

**The Business Opportunity:** Molloy's Liquor Store wanted to advance further in the consumer market and did so through investment in an e-commerce enabled website. The site allows for more efficient customer service as well as enabling Molloy's to expand its customer base and stay at the forefront of the Food and Drink industry.

**The Solution:** The application of intershop software provides a secure e-commerce store where users can conduct a comprehensive search of an extensive product range and then purchase the products online. The Dublin based Internet agency Webfactory ([www.webfactory.ie](http://www.webfactory.ie)) created this website and through the implementation and personalisation of the intershop software produced a website that is e-commerce enabled. This project is a result of significant investment by Molloy's Liquor Store in partnership with Webfactory.

**The Success:** One of the main areas of success has been the opening up of an overseas market base. Particularly at Christmas but also on family occasions such as birthdays and weddings, the website has yielded a customer base wishing to send gifts from locations such as Sydney, San Diego and Hong Kong to family and friends in Ireland and the other European countries.

**Lessons Learned:** Each step in the evolution of the Group's website was taken in a carefully planned manner which reduced the number of problems encountered. Molloy's feel fortunate in their choice of an experienced and innovative development partner. Many potential problems were overcome well in advance. One of the main issues continuously worked on is logistics: the delivery of products to customers at a time and in a place which suits them.

**The Future:** A solid base has been established for Molloy's e-commerce operation. Monitoring and implementing technology changes and adapting to meet the needs of their customers will continue to be core to their operation.

**Advice for other companies:** A thorough evaluation of your business and its 'fit' in the e-commerce world is required. Recognising the needs for your product and the means of getting it to your customer has to be a vital first step in development.

## 4.3 Data Centre Services

e-Business services can be delivered from Data Centres, where the application services provided could include software upgrades, security, training, customer support and data storage and back-up. They can also be backed by Service Level Agreements (SLAs) to guarantee high quality and reliability.

Data Centres provide facilities for Web hosting, network and support services for companies of all sizes. They serve large data-centric multinational companies and ISPs, through to SMEs. Many of these Centres are located directly on the telecommunications operators' backbone networks, allowing them to offer very high speeds of connectivity and the highest level of network resilience and reliability.

The number of Data Centre and carrier hotel facility announcements by major carriers has been amassing over the past few months. A major phase of large-scale Data Centre deployment is under way in Ireland, with many domestic and global players committed to offering extensive web hosting and co-location services. We estimate that Ireland will have the capacity to provide over 400,000 square feet of co-location space in total by the end of year 2000, from up to ten providers. This figure is set to rise to 700,000 square feet by Q2 2001.

In Northern Ireland, the Data Centre market is starting to materialise, with service providers developing plans to implement similar scale projects to those emerging in Dublin.

At the higher end of the scale, a Data Centre, or co-location facility, is a secure, specialised building where telecommunications companies can house the equipment needed to run their networks, and interconnect with each other. A 'fully-serviced' building comes complete with the power, fire control, air conditioning, etc. needed to house the equipment - which is mounted in standard-sized racks.

Data Centres equally serve the SME sector. The different tiers of service are described in Table 4.1 overleaf:



**Table 4.1 - Data Centre Services**

Service	Examples of Use
Co-location	Provision of space for the customers' telecommunications equipment on the provider's premises.
Telehousing	Locating of servers at a dedicated facility designed with hosting resources in addition to technical support and facility management.
Server Hosting	Provision of servers in the Data Centre facility for the customers' needs.
Web Hosting	Provision and maintenance of a web site, often with a suite of Internet applications.
Application Hosting	Provision of applications to end-users on behalf of the customer, including the maintenance responsibilities.

4.3.1

**The Services Explained**

- **Co-location:** Co-location services allow customers to place their Internet servers in the service provider's facility. The service provider will often provide the Internet access, while the Internet application demands require the company to maintain the server.
- **Telehousing:** The locating of servers at a dedicated facility designed with resources such as secured premises, regulated power, dedicated Internet connection, security and support. Essentially, it is a service that provides a full time Internet connection to a business for their Web server, in addition to providing a secure location for the server. A business could also opt for a package that could include technical support and facility management in addition to the co-location space. See Case Study 6 for details of the Department of Public Enterprise-promoted Telehouse Project.
- **Server Hosting:** Businesses can use the facilities of a third party to supply their server needs. This spares the business the expense of supplying the hardware and the overhead of server maintenance. This has often been a prohibitive cost to small, growing businesses. This arrangement allows them to avail of the latest Internet servers in addition to basic support services such as back-up maintenance, restoration and upgrades.
- **Web Hosting:** Web hosting is a turnkey service providing businesses with a Web site and Internet services such as e-mail, Internet, Intranet and search engines. It gives the business full Internet capability with a Web presence in one solution. Any service, so long as there is sufficient bandwidth, can be pulled in over the Internet by users, and can therefore be more efficiently distributed and administered as a service rather than a packaged product.

- **Application Hosting:** The ultimate extension to Server and Web hosting. The business provides the applications to end users through using a third party, who also take care of all the maintenance responsibilities. These services are geared towards organisations whose core competencies are not in the development and maintenance of applications. ISPs, amongst other players, are moving into this market, by becoming suppliers of application software for businesses.

## Case Study 8

## TeleCity Telehouse

**Area:** Public/Private Partnership

**Sector:** Telehousing - Telecommunications and E-Commerce Infrastructure

**Technologies:** High Speed Internet Connectivity, Peering, Co-location, Web Centres

**The Project:** The Department of Public Enterprise has managed a concession-contract tender process to build Ireland's first world-class telehouse or 'carrier hotel' facility in the Citywest Digital Park. The facility has been constructed following an agreement signed with TeleCity, a UK based facilities-management company, by the Department and the Industrial Development Agency.

Telehouses provide a managed-facility peering point where telecommunications companies, Internet service providers (ISPs) and e-commerce companies can safely locate high-tech equipment so that their networks can efficiently interlink, switch and exchange data.

The Telecity facility in Citywest is the first designated point of interconnection on the Global Crossing network. Through the network, Irish telecommunications companies can connect seamlessly with 36 major cities and trade centres in Europe and the United States, cutting telecommunications costs and allowing for multiple increases in capacity and reliability. From July 2000, TeleCity has made available the first connection point for telcos and ISPs to the Global Crossing network. After final first-stage completion, the telehouse will offer over 60,000 square feet of managed space.

### 4.4 Application Service Provider (ASP) Services

The rapidly emerging ASP industry promises to bring affordable Internet access to state-of-the-art software solutions to companies of all sizes. This could provide just the boost a small or medium-sized business needs to succeed in the e-business marketplace.

#### 4.4.1 What is an ASP?

Application Service Providers manage software-based services and solutions remotely on their servers and distribute them to customers across a Wide Area Network (WAN). This WAN could, for example, be a leased line, a Virtual Private Network (VPN) or the Internet.

The basic idea behind applications rental is that customers pay a flat monthly rental charge instead of purchasing a solution. The customer pays only for the portfolio of services they need – a blend of the specific features and resources to support their business. In the same way that customers have long been able to buy monthly access to every major utility, for example, telephone, power, and water, software can be delivered as a service for a monthly fee.

While ASPs will provide applications and services to small enterprises and individuals on a pay-per-use or monthly fee basis, larger corporations are essentially providing their own ASP service in-house. This involves moving the applications off personal computers, referred to as a 'thin client' and putting them on a special kind of application server.

#### 4.4.2 What services does a typical ASP have to offer?

Companies are already using ASPs for payroll, website and e-mail applications. For example, payroll services are currently being offered to large companies and institutions, such as Government payroll and local healthcare trusts.

Generally, there could be two main approaches adopted by ASPs:

- The 'one-size-fits-all' approach, offering largely standardised (off-the-shelf) systems.
- Tailored approach, offering premium services supporting fully customised systems.

Companies could potentially outsource some or almost all aspects of their information technology needs, which could include the hardware, software, service and support. These services on offer could range from basic hosting to complete managed services.

Typical services could include:

- web site hosting, e-mail storage and routing services;
- configurable e-commerce storefronts for trading on the Web;
- secure Internet access to application servers for:
  - Sales force automation;
  - Customer Relationship Management (CRM);
  - Financial accounting;
  - Supply chain management;
  - Human resource management;
- Round the clock monitoring and service.

#### 4.4.3 What are the advantages of using an ASP?

In essence, outsourcing your IT needs means off-loading some or all of the associated headaches - you don't have to install, maintain, update and troubleshoot exacting software on your business computer system.

Ideally, from a user point of view, this arrangement allows for a seamless service with no difference to present working practices, as if the centre of the customer's network was still in their office. Therefore, the customer's IT network is still working locally, whilst profiting from the power of a bigger structure.

Depending on the level of service provided by the ASP, the visible benefits could include:

- predictable costs, lower up-front investment and reduced IT overheads;
- resolution to skills shortage, e.g. reduce the need for on-site support personnel;
- offload maintenance worries - keeping up to date with the technology, upgrades and add-ons required, and the requirement for more disk space;
- raster time to market;
- ability to scale rapidly;
- provides flexibility to keep up with and adapt to fast growth business models;
- reduced risk of making costly technology planning and implementation errors;
- all businesses get to choose "best-of-breed" solutions that previously only large corporates could afford;
- frees up the company to focus on their core business.

#### 4.4.4 Drawbacks to the ASP concept

All ASP companies are new to the market, so are unproven as regards levels of ASP support, despite having strong credentials in other arenas. While the ASP potential seems immense, businesses could face a number of risks in outsourcing their software:

- **Can the ASP understand the client's business?** The ASP could become a liability by failing to keep up with business needs. If necessary, how will the service integrate with a company's legacy systems?
- **Is it a one-stop service?** Contractual agreements could vary widely, and if the ASP will only manage the service as far as the customer's router, then the unpredictability of the costs to run and maintain the system once it is installed remains.

- **How secure is the service?** The data communications between the customer's office and the ASP needs to be over a secure encrypted link and hence cannot be intercepted or compromised. Can the ASP distribute application services securely to companies of all sizes?
- **Can the ASP deliver a global service contract?** Businesses are calling for Service Level Agreements (SLAs), providing a guaranteed level of service, regardless of location.
- **How reliable is the service?** Can the ASP build a system capable of supporting application delivery to large numbers of users, without undermining the service?

#### 4.4.5 [The ASP Industry Consortium \(www.aspindustry.org\)](http://www.aspindustry.org)

ASP Industry Consortium members, in association with other member companies, are helping set the direction of the ASP industry worldwide and are creating significant business opportunities together. Members include ASP companies, software and hardware companies, network service providers and ISPs. The consortium can advise on best practice for delivering ASP solutions and offers educational activities.

## 4.5 Commercial Support Services

The telecommunications operators and e-commerce service providers offer a range of services to support e-business, which includes:

- web site services;
  - web design and development
  - web hosting
  - web site content provision
- consultancy services to SMEs and corporates;
- systems integration;
- B2B and B2C solutions.

Links to these operators and service providers are given in the commercial features and/or directory section of the guide.

# 5

## Broadband telecommunications infrastructure

### 5.1 Building Infrastructure Capacity for e-Business

A universally accessible broadband network is central to the successful realisation of the e-business initiatives and services described in the previous chapters of this Guide. The Internet can only provide access to the global marketplace if the business can connect to a network that is of sufficiently high speed, high quality, reliable and reasonably priced.

The access options are evolving rapidly: PC, advanced mobile, interactive TV, satellite technology, etc. The challenge is to serve the entire population with Broadband, thereby creating a socially-inclusive Information Society. How close is Ireland, North and South, to reaching this goal?

Broadband connectivity is currently available throughout the island of Ireland. All major operators are continuing to invest in broadband infrastructure to scale-up in response to growing demand for bandwidth. Existing networks are being extended in terms of capacity and geographical coverage, and new networks are being rolled out.

This chapter provides the very latest view on the operators' infrastructure, including the extensive onward connections to the rest of the world. The operators' plans for the next two years are documented to give a full picture of how e-business services will be delivered.

### 5.2 What is Broadband?

Broadband connectivity is essentially a high-speed telecommunications link. The capacity of broadband networks is described by the rate of transmission or bandwidth, measured in bit/s. The minimum capacity for a 'broadband' connection, and that most commonly provided, is 2 Mbit/s. Although this capacity is adequate for most of today's applications, as we move forward into the Information Society many customers are already demanding increased bandwidth of 34 Mbit/s, 155 Mbit/s and higher.

The broadband networks are organised into three categories:

- **'Backbone' networks:** very high capacity fibre optical networks (telecommunications 'highways'), used to transport large quantities of information between the towns and cities connected to the network. Telecommunications operators manage these backbone, or 'core' networks.

- **Local access networks:** The local access network is the final link between the telecommunications service user and the service provider. This point of contact is generally between Customer Premises Equipment (CPE) and the service provider network equipment.
- **International links:** There have been many exciting developments in this market since the last edition of this Guide, notably the impending availability, during Year 2000, of potential Terabit and Petabit<sup>5</sup> international connectivity directly from the island of Ireland to the rest of Europe and the World.

Networks come in various defined amounts of bandwidth. Some of the common terms used by the telecommunications operators in describing their networks and services are explained in Table 5.1 below.

**Table 5.1 - Telecommunications Capacity Terminology**

Acronym	Capacity/Speed
T1 (US)	1.544 Mbit/s
E1 (UK)	2 Mbit/s
E3 (UK)	34 Mbit/s
T3 (US)	45 Mbit/s
STM-1	155 Mbit/s
STM-4	622 Mbit/s
STM-16	2.4 Gbit/s
STM-64	10 Gbit/s

### 5.3 Why is it important to have a broadband network?

Broadband is characterised by high-bandwidth services. The demand for these services is driven by the increasingly ICT-enabled world in which we live.

The ordinary telephone network has placed limitations on the speed of transmission of signals. We are all familiar with the slow pace at which fax messages are received, especially if the document is long; similar frustration can be felt when complex files are sent via e-mail or over the phone line.

Broadband networks are changing this scenario with the ability to send and access complex data, including video, at high speeds. As an example, Table 5.2 illustrates the difference a broadband connection can make when downloading a file of 5 Mbytes using different access types.<sup>6</sup>

<sup>5</sup> 1 Mbit/s = 1,000,000 bit/s; 1 Gigabit/s = 1,000 Mbit/s; 1 Terabit/s = 1,000 Gigabit/s; 1 Petabit/s = 1,000 Terabit/s.

<sup>6</sup> Source: OECD

**Table 5.2 - Access Bandwidth - Example Download Times**

Connection Type	Bits per Second	Download Time of 7 Megabytes
14.4 Modem	14,400	52 minutes
28.8 Modem	28,800	26 minutes
33.6 Modem	33,600	22 minutes
56k line	57,600	12 minutes
64k 1 ISDN channel	65,535	10 minutes
128k 2 ISDN channels	131,072	5 minutes
T3	46,080,000	1 second
STM-1	155,000,000	0.5 seconds
STM-4	622,000,000	0.15 seconds

The end-user market is driving the increase in core bandwidth in three ways:

- by increasing the overall number of users and devices;
- by spending more time 'on-line' i.e. connected to the network;
- by investing in new applications, like e-commerce, which require higher bandwidth.

This demand comes from business users and residential users alike. The telecommunications operators have responded to the demand for broadband connectivity, and as a result, the backbone and access networks have advanced rapidly over the last 2 years. The infrastructure being deployed is based on the latest high performance technologies. The key drivers for this infrastructure development include:

- deregulation and competition driving investment by carriers setting up or consolidating operations;
- government policy and investment to meet the growing demand for large-scale e-commerce activities;
- demand for new technology to improve access speeds e.g. Wireless Local Loop (WLL), cable modems, and Digital Subscriber Line technologies (xDSL);
- growth in enterprise networking;
- convergence trends - of voice and data, and IT and entertainment services;
- increased capacity of existing fibre links using Dense Wave Division Multiplexing (DWDM) technology;
- globalisation of commerce.



## 5.4 How is broadband provided?

- Optical fibre networks, where light is used to transmit signals - SDH and PDH fibre systems.
- Satellite and high-speed radio technology (wireless broadband).
- TV cable systems, using cable modem connectors.
- The ordinary copper telephone line, using advanced technologies – ISDN, and xDSL suite of technologies.
- Potentially, using the electricity cables, a method which seeks to use the ready-made infrastructure of electricity cables into homes and businesses as a communications medium.

These are the **physical** media through which broadband can be delivered. Various broadband services are delivered over these physical media. These are listed in Table 5.3.

## 5.5 Broadband network services

Broadband is essentially a high-speed telecommunications link. Liberalisation in telecommunications markets has opened the way for a number of competitors, who all provide broadband services. Information on these telecommunications operators can be found in the directory section and commercial features section of this Guide.

In certain cases, other broadband technologies could be used on a project-specific basis, e.g.:

- FDDI (Fibre Distributed Data Interface)
- Fast Ethernet/Gigabit Ethernet
- SMDS (Switched Multimegabit Data Service)

Operators also offer broadband services on a global basis, such as:

- integrated voice, video and data – access speeds from 64 kbps to 155Mbps;
- Global Internet access;
- Global ATM and Frame Relay services.

**Table 5.3 - Broadband Services**

Broadband Service	Speed		Typical Physical Media
Leased line access	2 Mbit/s	Available generally throughout the networks in NI and Ireland	Fibre/Microwave
	34 Mbit/s	Access service available on request at nodes served by 2.5 Gbit/s links. An individual survey is required.	Fibre/Microwave
	155 Mbit/s	Customised access project solutions are available at nodes served by 2.5 Gbit/s links. An individual survey is required.	Fibre/Microwave
	STM-4 and STM-16	Customised access solutions are available at some of the major nodes. An individual survey is required.	Fibre/Microwave
Frame Relay	2 Mbit/s	Access speeds up to 2Mbit/s are available on a country-wide basis.	Fibre
ATM	155 Mbit/s	Access rates to the ATM network of up to 155 Mbit/s. ATM circuits are available in Northern Ireland and Ireland from 2 Mbit/s up to 155 Mbit/s.	Fibre
IP	Up to 155 Mbit/s	IP services are supported on the ATM networks, and some operators are rolling out dedicated IP networks. Many operators offer end-to-end Managed IP solutions.	Fibre
ISDN Primary Rate	2 Mbit/s	Primary Rate ISDN is available.	Copper pair
DSL	ASDL: Up to 8 Mbit/s d/stream & 640 kbit/s upstream	HDSL at 2 Mbit/s is commonly deployed where appropriate in the networks. Service offerings based on ADSL will be launched during 2000 and 2001. (See section 5.7.1). VDSL could offer downstream speeds of up to 50 Mbit/s.	Copper pair
Satellite Services	Up to 155 Mbit/s	VSAT can be provided in all areas, offering specialised solutions at bandwidths of up to 155 Mbit/s. Satellite systems providing general solutions are being developed to offer data rates comparable to DSL.	Satellite
Broadband Wireless Local Loop	2 Mbit/s & 34 Mbit/s	Wireless Local Loop licenses have been awarded in Ireland and network roll-out has commenced. Licenses will be awarded this year in Northern Ireland. (See Section 5.7.2)	Radio
Mobile Data Services	Up to 2 M/bits (planned)	WAP services and HSCSD are available across Northern Ireland and Ireland. GPRS is available in Northern Ireland and will be available in Ireland this year. (See Section 5.8.)	GSM/UMTS Mobile Radio
Interactive TV, TV Internet, etc.	e.g: Cable Modem: Shared b/width up to 1 Mbit/s d/stream, 256 kbit/s upstream	Digital Cable is available in the major towns and cities in Northern Ireland. Digital Cable (and MMDS) is expected to be available in September 2000 in Ireland. Digital Satellite TV is available North and South. DTT is available in Northern Ireland. (See Section 5.7.3)	Digital TV networks

## 5.6 Broadband Networks

### 5.6.1 Backbone Networks

The 'backbone' network is that part of the telecommunications network that is used to transport large quantities of information between major population centres.

The backbone infrastructure comprises fibre optic and digital radio links necessary to support transmission systems such as Synchronous Digital Hierarchy (SDH) and Plesiochronous Digital Hierarchy (PDH.) Similarly, the transmission systems provide the reliable transmission necessary to deliver services such as Asynchronous Transfer Mode (ATM), voice, Internet and Frame Relay to the end user.

The fibre backbone provides links of 2.5 Gbit/s or more, and predominantly utilises SDH technology, which is the more advanced of the two transmission systems. The PDH technology is being phased out, being replaced by DWDM, STM-16 and higher order systems.

Most operators are either expanding the capacity of their existing broadband national backbone networks or rolling out new networks and fibre routes. These networks at a physical level are based on fibre or high capacity radio links for SDH.

The latest backbone broadband backbone network diagrams are illustrated in Figure 2 (August 2000) and Figure 3 (August 2002 planned). Where a specific backbone link capacity is shown, there may in fact be several links of this capacity owned by the same or different operators. There are many other, lower capacity, fibre links in place. The highest capacity link currently in place is shown for each route.

In recent years, the technology of choice for national and international carrier backbone networks has been SDH (up to STM-64). This is boosted by the application of DWDM (Dense Wave Division Multiplexing) to increase this capacity further. As a result, for fibre routes, link capacity can be increased almost without limit.

Overall, the capacity of fibre networks has been increased in three ways:

- Technological developments, allowing a **higher capacity on each cable**: SDH technology allows bandwidth up to 2.5 Gbit/s on a single fibre pair and is often deployed using a ring architecture that allows automatic routing of traffic around points of failure in the network. There is scope for further capacity increase through the deployment of Dense Wavelength Division Multiplexing (DWDM). DWDM is capable of increasing the capacity of one fibre pair from 2.5 Gbit/s to 100 Gbit/s.
- **Multiple cables installed on each route**, i.e. multiplication of available capacity: Numerous strands of fibre are laid together, and the additional fibre can be 'lit up' when required to provide additional capacity.

- **Multiple carrier networks** in place. The roll-out of fibre networks by many competing operators has led to an increase in overall capacity available.

In addition to fibre infrastructure, copper cables and microwave radio are used in the backbone network. Such infrastructure, although not shown on the infrastructure maps provided in this guide, will continue to play its part in the provision of a universal service.

## 5.7 Local access networks

The local access networks connect the telecommunications service provider to business parks, enterprises or homes. A broadband access network is the crucial missing element to complete the broadband system. It is required to deliver broadband services from the local broadband node to the customer.

The broadband access network is based on:

- fibre – mainly in the larger towns and cities. Most industrial business parks are served by fibre;
- leased line;
- ISDN primary rate;
- xDSL;
- Cable Modem;
- Satellite Digital TV.

In the future the following broadband access technologies will also start to be deployed:

- Wireless Local Loop (WLL).
- Broadband Mobile.

These services have recently been augmented by the roll-out of broadband ATM services to more than 45 towns and cities, and coverage is expected to increase over the coming year. The deployment of ATM services follows the path laid down by the SDH fibre backbone, i.e. the SDH networks provide the transport for the service. ATM will also be delivered by WLL and xDSL, once these services have been launched.

ATM offers many benefits to end-users and to carriers:

- Quality of service mechanisms (i.e. guaranteed service speeds).
- Ability to carry multiple traffic types simultaneously.
- Customers can order circuits from 2 Mbit/s up to 155 Mbit/s, in increments of 1 Mbit/s.

## Broadband Access Map

The network diagram provided in Figure 1 identifies all of the current access nodes capable of providing bandwidths of 2 Mbit/s and upwards. There are 3 types of broadband node depicted:

- Optical fibre
- SDH
- ATM

Once fibre optic and SDH infrastructure is in place, broadband services can be delivered to meet demand. Further nodes can be established where sufficient demand exists.

Where a town is served by optical fibre, access speeds of up to 2 Mbit/s are universally available. In addition, an SDH node enables the delivery of services up to STM-1 (155 Mbit/s). For 34 Mbit/s to STM-4 access requirements, an individual survey would be carried out, and a customised access project solution provided.

By 2002, the following broadband bandwidths will potentially be available from SDH nodes:

- STM-64
- STM-16
- STM-4
- STM-1
- 45 Mbit/s, 34 Mbit/s, 2 Mbit/s

A comprehensive table of access available in each town is provided at the end of this section. A 'tick' indicates that a service is currently provided. A star indicates that the service is available on demand.

*Whilst we have taken every reasonable care in the provision of the information provided in the maps and access matrix, we do not guarantee the accuracy of the data supplied nor accept any responsibility for errors or omissions or their consequences. This telecommunications infrastructure information will be updated on a regular basis on the Telecommunications for e-Business web site, [www.t4eb.com](http://www.t4eb.com).*

### 5.7.1 xDSL – Digital Subscriber Line

Digital Subscriber Line (DSL) technologies have been developed to deliver broadband access over copper twisted pair cable (telephone line.) DSL creates a tremendous opportunity for small and medium sized businesses to take advantage of broadband connections. xDSL is a suite of technologies (ADSL, VDSL, HDSL, UDSL, SDSL) based on ATM technology. The most common implementation is ADSL.

Currently, HDSL access technology is deployed generally in the network as required by demand, providing a 2 Mbit/s service.

ADSL allows access rates from the network to the user up to 8 Mbit/s, depending on the distance to the nearest broadband node, and is ideal for services such as LAN access, fast Internet access, and video-on-demand. However, full unbundling of the local loop is essential to facilitate open competition and maximise the potential of ADSL.

Local Loop Unbundling (LLU) is particularly relevant to the provision of broadband services. Unbundling of the local loop allows other telecommunications companies and service providers access to the former incumbent's local network and provide services directly to the customer. Work is progressing in Brussels to produce a regulation on LLU that will have direct effect on 31 December 2000.

British Telecom is to open up the local exchange to competition in July 2001. British Telecom announced that customers in Northern Ireland are to be offered ADSL services at the end of 2000.

In Ireland, the ODTR has said that new draft legislation to be published in the autumn to provide for the full unbundling of the local loop. The target launch for consumer ADSL services is by the end of 2000.

### 5.7.2 Wireless Local Loop (WLL)

WLL is of particular interest in the provision of broadband access. It can provide broadband access to a customer's premises over a wireless link, up to 5 km from the base station. Services supported include:

- Managed LAN to LAN connectivity
- VPN
- Voice
- High speed Internet access

WLL helps to fill in the gaps in the access network, where cost may previously have been prohibitively high to add customers to the network. It enables users to have high speed Internet access and data transmission without the need for cabling which can be costly and time-consuming to install.

WLL will facilitate the delivery of high quality telecommunications services to rural areas, particularly those where geography may have previously caused difficulties. WLL access is seen as an efficient means of providing universal access to "Information Society" services, and should complement the wire-based infrastructure. Many of these WLL systems will target Small Office/Home Office (SOHO) users.

Broadband Wireless Local Loop (WLL) licenses have recently been awarded in Ireland to Esat Telecom, Formus, Eircom and Irish Multichannel, and the ODTR is out to consultation on licensing additional WLL operators. As yet, the operators have not announced detailed network deployment plans. However, the Broadband license obligations for roll-out require the operators to provide coverage in at least 10 counties within 2 years, and 15 counties within 3 years of award of license. These are minimum targets, and are likely to be exceeded by the operators.

WLL licenses will be awarded in 2000 in Northern Ireland. Coverage is planned by 2002 for Newry, Portadown, Lurgan, Lisburn, Antrim, Belfast, Londonderry, Coleraine, Ballymena, Strabane and Omagh.

### 5.7.3 Digital Television

DTV is an important broadband service for residential users that will increase the choice, quality and control of television content for consumers. It is an excellent example of the convergence of the three Information Age industries, (telecommunications, media and technology), and has the potential to open up a whole range of business opportunities and telecommunications services for the enterprise sector. For example, information can be sold, banking transactions carried out and mall shopping done with the aid of pictures and video.

Digital TV also allows the operator to provide a single connection for high speed Internet access. It will be interactive and will effectively be a gateway to the Internet in every home. Interactive services will be enabled through the use of a return path, such as a telephone line.

The ways in which Digital TV can be delivered are:

- Cable Modem
- MMDS
- Satellite
- Digital Terrestrial Television (DTT)
- DSL technology

Digital Cable, while useful for broadband services, is mainly of interest in the provision of high speed Internet access and telephony services. A fast Internet access service for residential users in North County Dublin, Belfast and Londonderry has been launched, and speeds of between 10 and 100 times faster than regular modems can be achieved. Similar services are planned across Northern Ireland. In Ireland, Digital Cable and Digital MMDS services are scheduled to become available by September 2000, after the current trials of the technologies have been completed.

Digital satellite is available through Sky Digital Services.

Digital Terrestrial Television (DTT) is an all-digital system. ONDigital were the first company in the world to launch a DTT service, which is available across Northern Ireland. DTT in the Ireland is expected to be available towards the end of 2001.

To receive Digital Television, the customer must have either a set-top box for their existing TV set, or a digital TV set.

## 5.8 Mobile Networks

The 1999 User Guide emphasised the astonishing rate at which mobile phone usage was growing. It was noted that approximately 20 per cent of the population (in Ireland) had a mobile phone, and that the target was for 1 million users within 3 years. Just 1 year on, Eircell alone has reached its 1 millionth customer, and combined with Digifone's subscriber base, the mobile penetration in Ireland is at least 45 per cent!<sup>7</sup> The award of the third mobile license to Meteor will result in continued development of this market.

The evolution of mobile technology is based on increasing the speed of the data connection between the phone and the network provider. Table 5.4 lists the mobile technologies and their respective access speeds, and when we can expect to see them in place.

**Table 5.4 - Mobile Access Technologies**

	Technology	Access Speed	Launch UK	Launch IRE
GSM	Global System for Mobile	9.6 kbit/s	Now	Now
HSCSD	High Speed Circuit Switched Data	9.6 to 57.6 kbit/s	Now	Now
GPRS	General Packet Radio Service	9.6 to 115 kbit/s	Now	2001
EDGE	Enhanced Data rate for GSM Evolution	64 to 384 kbit/s	2001	2001
UMTS	Universal Mobile Telecommunications System	64 kbit/s to 2 Mbit/s	2001	2002/ 2003

<sup>7</sup> Penetration was 45% by March 2000 (Source: Mobile Communications 26/5/00). ODTR estimates that the penetration will be in excess of 50% by end of 2000.



GSM is known as the 2nd Generation mobile technology. The next major challenge for operators is the development of 3rd generation (3G) networks, or Universal Mobile Technology System, 'UMTS'.

HSCSD, GPRS and EDGE are technologies that many consider to be interim developments between the current GSM systems and the future UMTS networks. However, given the astronomical cost of the licenses in the UK<sup>8</sup>, and the cost to the operator to build the network, the role of technologies such as GPRS may well be more significant than merely a 'stepping stone' to UMTS. These technologies bring more power to mobile devices, but without the costs faced by 3G. In addition, UMTS will be available in the larger urban areas only. Therefore the interim technologies could be used to offer wide area wireless connections.

#### 5.8.1 WAP

The most recent development to be seen is the Wireless Application Protocol (WAP.) WAP enables a way of presenting Web pages in a format compatible with smaller screens, power, memory and restricted keyboards.

The launch of WAP is the first step on a road that will ultimately lead to mobile devices and services able to deliver sophisticated services such as video. WAP phones allow users to send and receive text and browse adapted web sites, but are limited by the amount of data that can be sent to them.

#### 5.8.2 'Interim' Technologies

Today's GSM networks provide a very limited capability (9.6 kbit/s) for the transmission of data. The migration towards 3G technology will provide a phased increase in the ability to handle higher data rates.

GPRS is sometimes called '2.5G'. GPRS will accelerate GSM data transmissions from 9.6 kbit/s to 56 kbit/s and beyond. It provides a permanent connection to the network and bundles data into 'packets', which can be sent far more quickly over mobile networks. GPRS has been launched in the UK. In Ireland, Eircell and Digifone have both announced that GPRS will be available in early 2001, dependent on the availability of GPRS-compatible phones.

When the new upgrades to GPRS, and ultimately 3G, services are delivered in the future, the wireless information revolution will really begin.

#### 5.8.3 3rd Generation and UMTS

UMTS is a global standard that allows the user to view video, listen to music, play games and surf the Internet through the mobile phone, with global roaming and other advanced capabilities. Typical access speeds will eventually be up to 2 Mbit/s indoors, and up to 384 kbit/s for outdoor coverage.

<sup>8</sup> The value of owning a slice of the 3G market was graphically illustrated by the recent auction of 3G licenses in UK, which netted \$35 billion for the government.

UMTS licenses have been awarded to five operators in UK. The network roll-out will initially be based around high-density population centres. Customers in Northern Ireland will **not** have to wait longer than the rest of UK for 3G services.

UMTS licenses will be awarded in Ireland during 2001, on selection on merit from competing applications, rather than an auction process. Typical timescales indicate that such networks would become operational generally during 2002 to 2003.

## 5.9 International links

International connectivity is illustrated in Figure 4 (August 2000) and Figure 5 (August 2001).

There are now many carriers connecting directly into the island of Ireland, the result being that there is now virtually unlimited capacity from the island to Europe. This has the potential to reach Petabit (1,000 Terabit, or 1,000,000 Gigabit) capacity to US and Europe once the current infrastructure projects are completed. In real terms, this means that soon there will be sufficient capacity to allow everyone in Ireland to call overseas at the same time! Table 5.5 provides details on the international links, along with the expected dates of operation for connectivity projects.

Until recently, all international traffic from Ireland and Northern Ireland (except for low-capacity PTAT and satellite links) passed through Great Britain. From there, it is further routed on international cables such as TAT-12, TAT-13 (10 Gbit/s capable) and TAT-14 (160 Gbit/s capable) to the US, ODIN to Scandinavia and RIOJA to Spain. With the launch of the Global Crossing service and the impending launch of the 360 Atlantic Service, direct connectivity to the US and European destinations is possible.

Traditional carriers and new entrants are constructing broadband networks at a rapid rate across the Atlantic. These networks are being integrated on an end-to-end basis with pan-regional networks in North America and Europe.

**Table 5.5 - International Links**

LINK	OPERATOR	TYPE	CAPACITY	DATE OPERATIONAL
Dublin – Holyhead	Eircom	Submarine fibre (PDH & SDH)	2x140 Mbit/s 1x565 Mbit/s 1x2.5 Gbit/s	Now
Dublin – Holyhead	Eircom	Digital microwave (PDH)	7x34 Mbit/s	Now
Dundalk-Newry	Eircom/BT	Fibre (PDH)	2x140 Mbit/s 1x565 Mbit/s	Now
Monaghan-Aughnacloy	Eircom	Fibre (SDH)	2x2.4 Gbit/s	Now
Dublin – Belfast	Eircom/BT	Digital microwave (PDH)	2x140 Mbit/s	Now
Cork - UK (PTAT-1 East)	Eircom	Fibre (PDH)	2x45 Mbit/s	Now
Cork - USA (PTAT-1 West)	Eircom	Fibre (PDH)	45 Mbit/s	Now
Wexford - Lands End (CELTIC)	Eircom	Fibre (SDH) DWDM	2.4 Gbit/s >10 Gbit/s	Now Sept 2000
Wexford - Oxwich Bay (SOLAS)	Eircom	Fibre (SDH) DWDM	2 x 2.4 Gbit/s >10 Gbit/s	Now Sept 2000
Bridgend - Derry	Eircom	Fibre (SDH & DWDM)	>10 Gbit/s	End 2000
Eutelsat (Europe)	Eircom	Satellite	14 x 2 Mbit/s	Now
Intelsat (North America)	Eircom	Satellite	7 x 2 Mbit/s	Now
Belfast - Portpatrick	BT	Fibre (PDH, SDH, DWDM)	> 10 Gbit/s	Now
Larne - Girvan	BT	Fibre (PDH, SDH, DWDM)	> 10 Gbit/s	Now
Belfast – Isle of Man	BT	Fibre (PDH, SDH, DWDM)	> 10 Gbit/s	By November 2000
Dublin-Belfast	NTL	Fibre (SDH), DWDM	n x 2.4 Gbit/s >10 Gbit/s	Now End 2000
Dublin-Preston	NTL	Fibre (SDH), DWDM	n x 2.4 Gbit/s >10 Gbit/s	Now End 2000
Belfast - Glasgow	NTL	Fibre (SDH), DWDM	n x 2.4 Gbit/s >10 Gbit/s	Now End 2000
ESAT I - Wexford-Lands End	Esat Telecom	Fibre (SDH)	2 x 2.4 Gbit/s 8 x 2.4 Gbit/s	Now 2001
ESAT II - Dublin-Southport	Esat Telecom	Fibre (SDH)	2.4 Gbit/s 8 x 2.4 Gbit/s	Now 2001

**Table 5.5 - International Links (contd.)**

LINK	OPERATOR	TYPE	CAPACITY	DATE OPERATIONAL
Dublin - Portadown	BT/Ocean	Microwave Radio	2 x 155 Mbit/s	Now
Dublin - Belfast	Ocean	Fibre (SDH) DWDM	2.4 Gbit/s >10 Gbit/s	Now 2001
Belfast-Manchester (via Isle of Man)	C&W	Fibre (SDH)	n x 2.4 Gbit/s DWDM	Now 2001
Belfast-Glasgow	C&W	Fibre (SDH)	2.4 Gbit/s DWDM	Now 2001
Dublin-Manchester (PEN)	Concert	Fibre (SDH)	2.4 Gbit/s 2 x 2.4 Gbit/s	Now June 2000
Dublin-Belfast-Glasgow (PEN)	Concert	Fibre (SDH)	2.4 Gbit/s 2 x 2.4 Gbit/s	Now June 2000
Dublin – UK and direct to European network and US.	Global Crossing	Fibre (SDH & DWDM))	n x 10 Gbit/s	August 2000
Dublin-US and UK (360 Atlantic ring)	360 Networks	Fibre (SDH)	Up to Terabit	March 2001
Dublin-UK (2 rings)	i-21	Fibre (SDH)	Up to Petabit	Q4 2000

**5.9.1 Direct Global Terabit and Petabit Connectivity**

International connectivity is now talked about in terms of Terabit and Petabit capacity<sup>9</sup>. Physical limitations restrict the size of sub-sea cables in comparison to terrestrial cables. Now the advances in technology mean that once the ducts and optical fibres have been laid, the capacity can be increased by upgrades in the equipment at each end of the fibre, allowing the physical limitations to be overcome.

There are two projects of note providing connectivity to the US and Europe: Global Crossing and 360 Atlantic. These links will provide very high telecommunications capacity directly from the island of Ireland to the rest of the world. The aim is to connect business centres worldwide through a network composed of undersea cables and terrestrial city-to-city connections.

The Global Crossing project is part-funded by the Irish Government. The Government signed an €77 million contract for 160 STM-1 links and dark fibre to the US and 36 European cities with Global Crossing. Almost all of these lines have been sold to telecommunications operators and ISPs. The under-sea fibre optic cable system will link leading companies and multinationals via two diverse cables to the Global Crossing Network. This network was ready for commercial service in August 2000.

<sup>9</sup> For example, the 360 Atlantic link will consist of 4 fibre pairs, each having 48 x 10 Gbit/s channels per fibre, making a total of 1.92 Tbit/s network capacity. The i21 network will have up to 192 fibre pairs, with 160 x 10 Gbit/s channels per fibre, making a total system capacity of 300 Terabit/s (with up to 5 ducts available, this provides a potential capacity of over 1 Petabit!)

360 Networks, a competitor to Global Crossing, is constructing its '360 Atlantic' links to provide high-speed (1.92 Terabits) direct connectivity to European destinations and the US. The project involves the laying of 12,200 km of transatlantic fibre, and the link is scheduled for a March 2001 launch. The ring connects Dublin to Halifax (Canada), and Liverpool, where it then ties in to their European Network.

## 5.10 Summary

The capacity of the broadband networks is being increased through the implementation of Dense Wave Division Multiplexing (DWDM), Synchronous Digital Hierarchy (SDH) and Asynchronous Transfer Mode (ATM.)






Significant future developments are planned for the backbone including:

- upgrading of all backbone links to 2.5 Gbit/s;
- addition of new links;
- phasing out of backbone Plesiochronous Digital Hierarchy (PDH) links;
- upgrading of legacy links from the backbone to smaller towns to a minimum 155 Mbps SDH capacity over fibre;
- addition of ATM nodes, to expand reach of ATM networks as demand requires;
- addition of new North-South interconnection points particularly in the west of the border region;
- expansion of existing capacity on main trunk links;
- expansion of existing backbone 2.5 Gbit/s links by the addition of multiple 2.5 Gbit/s links through investment by new operators;
- evolution of the backbone into a high-capacity SDH mesh structure, with protection and restoration functions.

The island of Ireland now has a first rate national broadband infrastructure, comparable to that of Mainland Europe. This infrastructure is highly developed with the outlook for further major improvements in the near future through ongoing investment by carriers and Government-sponsored projects.




# Figure 1 Broadband Access Network August 2000


Whilst we have taken every reasonable care in the provision of the information provided in these maps, we do not guarantee the accuracy of the data supplied nor accept any responsibility for errors or omissions or their consequences. This telecommunications infrastructure information will be updated on a regular basis on the Telecommunications for e-Business web site, [www.t4eb.com](http://www.t4eb.com)

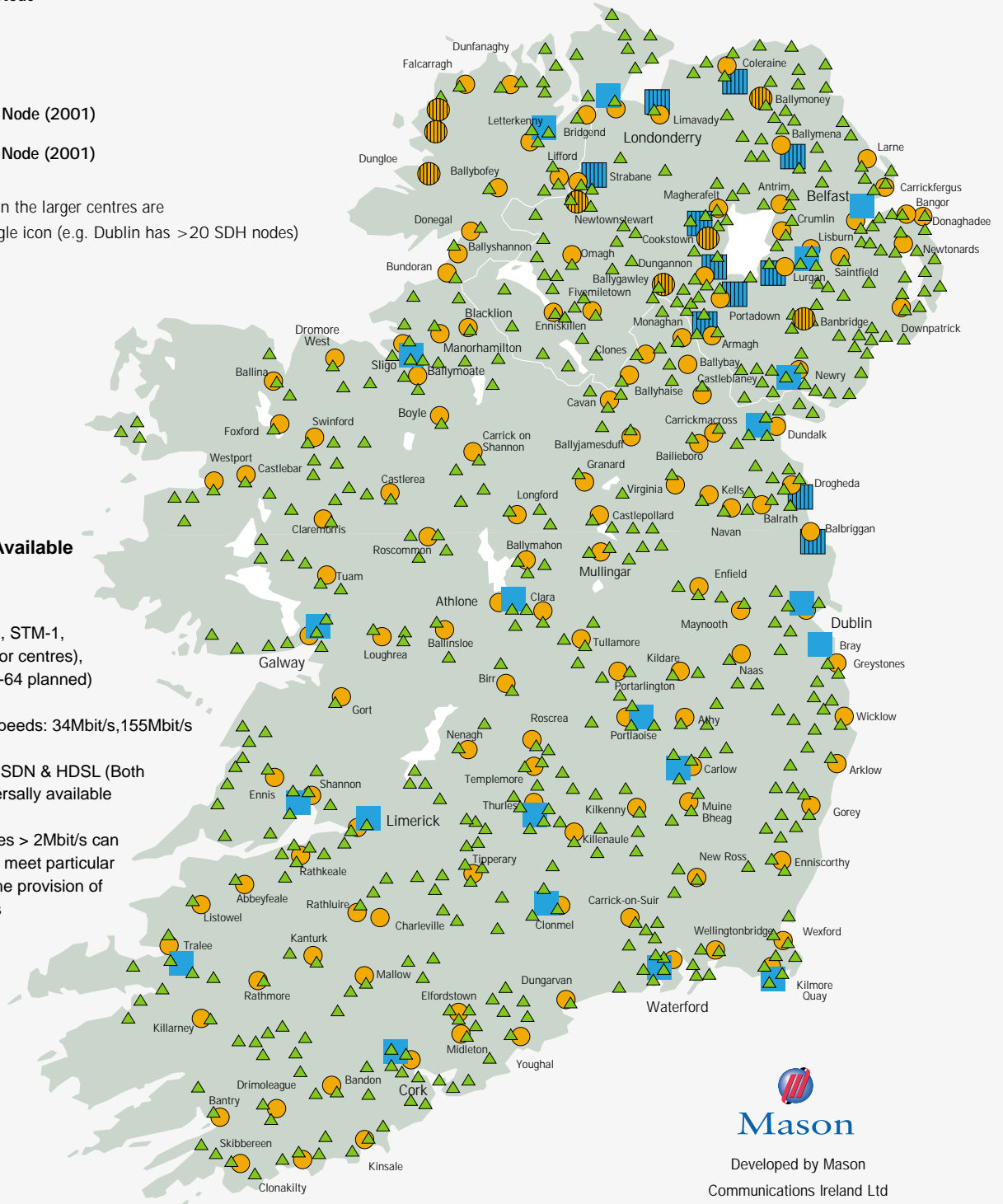
-  Optical Fibre Node
-  SDH Node
-  ATM Node
-  Planned SDH Node (2001)
-  Planned ATM Node (2001)

NB: multiple nodes in the larger centres are represented by a single icon (e.g. Dublin has >20 SDH nodes)

## Access Speeds Available

-  2 Mbit/s
-  2M, 34M, 45M, STM-1, STM-4 (in major centres), (STM-16, STM-64 planned)
-  ATM access speeds: 34Mbit/s, 155Mbit/s

- Primary Rate ISDN & HDSL (Both 2M bit/s) universally available
- At  Data rates > 2Mbit/s can be provided to meet particular demands by the provision of SDH terminals



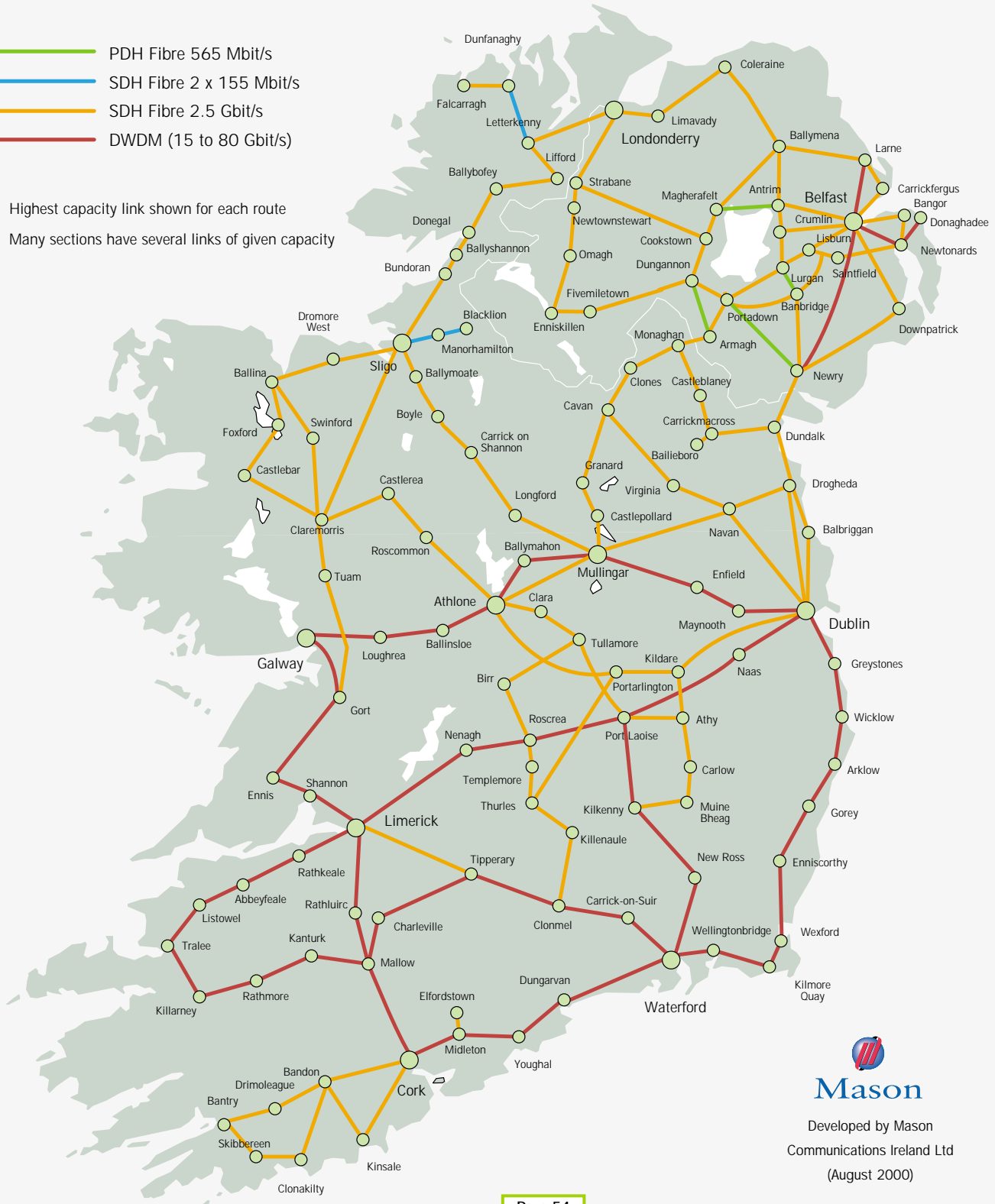
Developed by Mason  
Communications Ireland Ltd  
(August 2000)

Figure 2

# Broadband Backbone Network August 2000

- PDH Fibre 565 Mbit/s
- SDH Fibre 2 x 155 Mbit/s
- SDH Fibre 2.5 Gbit/s
- DWDM (15 to 80 Gbit/s)

- Highest capacity link shown for each route
- Many sections have several links of given capacity



  
**Mason**  
Developed by Mason  
Communications Ireland Ltd  
(August 2000)

Figure 3

# Broadband Backbone Network August 2002

- PDH Fibre 565 Mbit/s
- SDH Fibre 2.5 Gbit/s
- SDH Fibre 10 Gbit/s
- DWDM (15 to 80 Gbit/s)

- Highest capacity link shown for each route
- Many sections have several links of given capacity

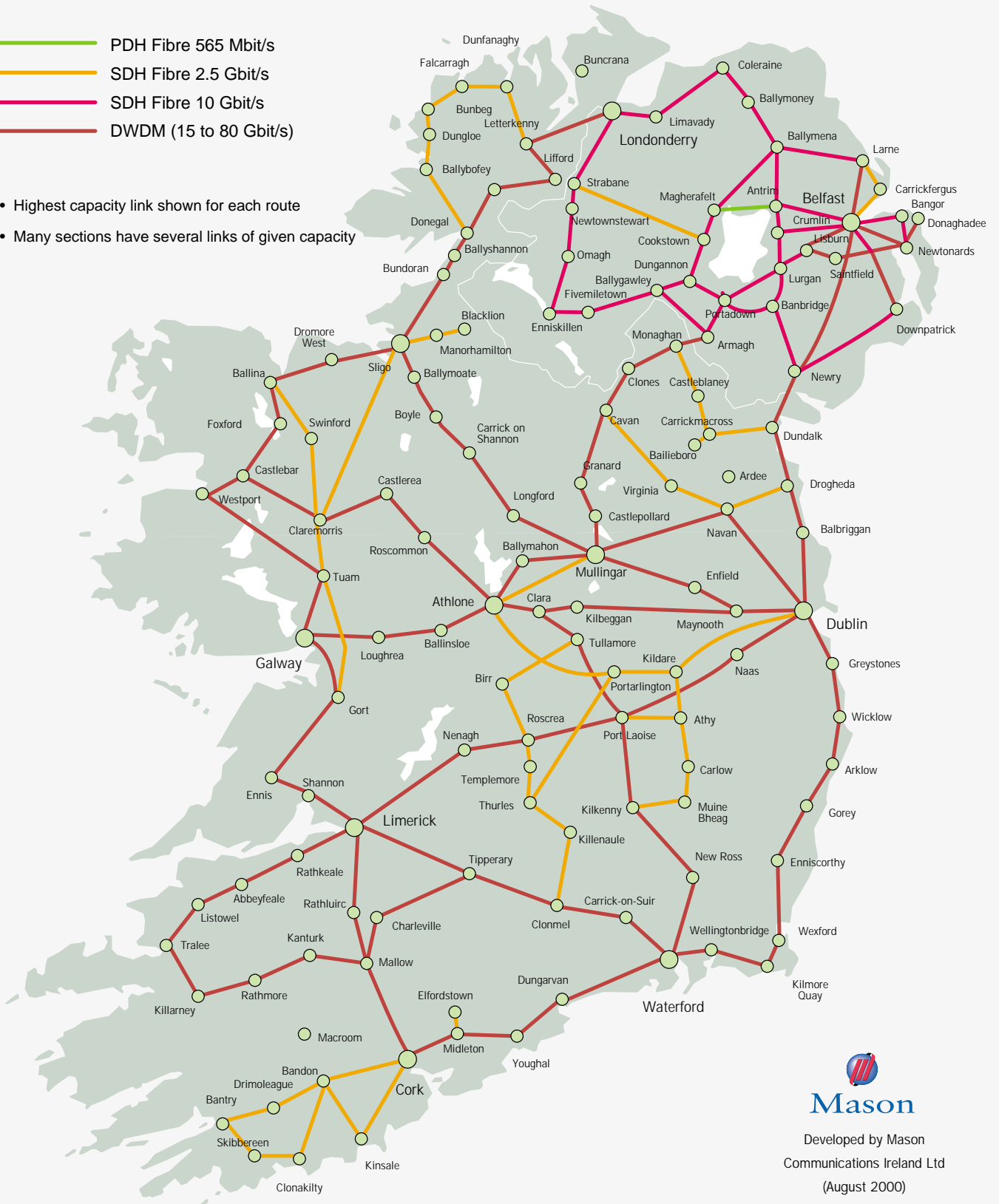


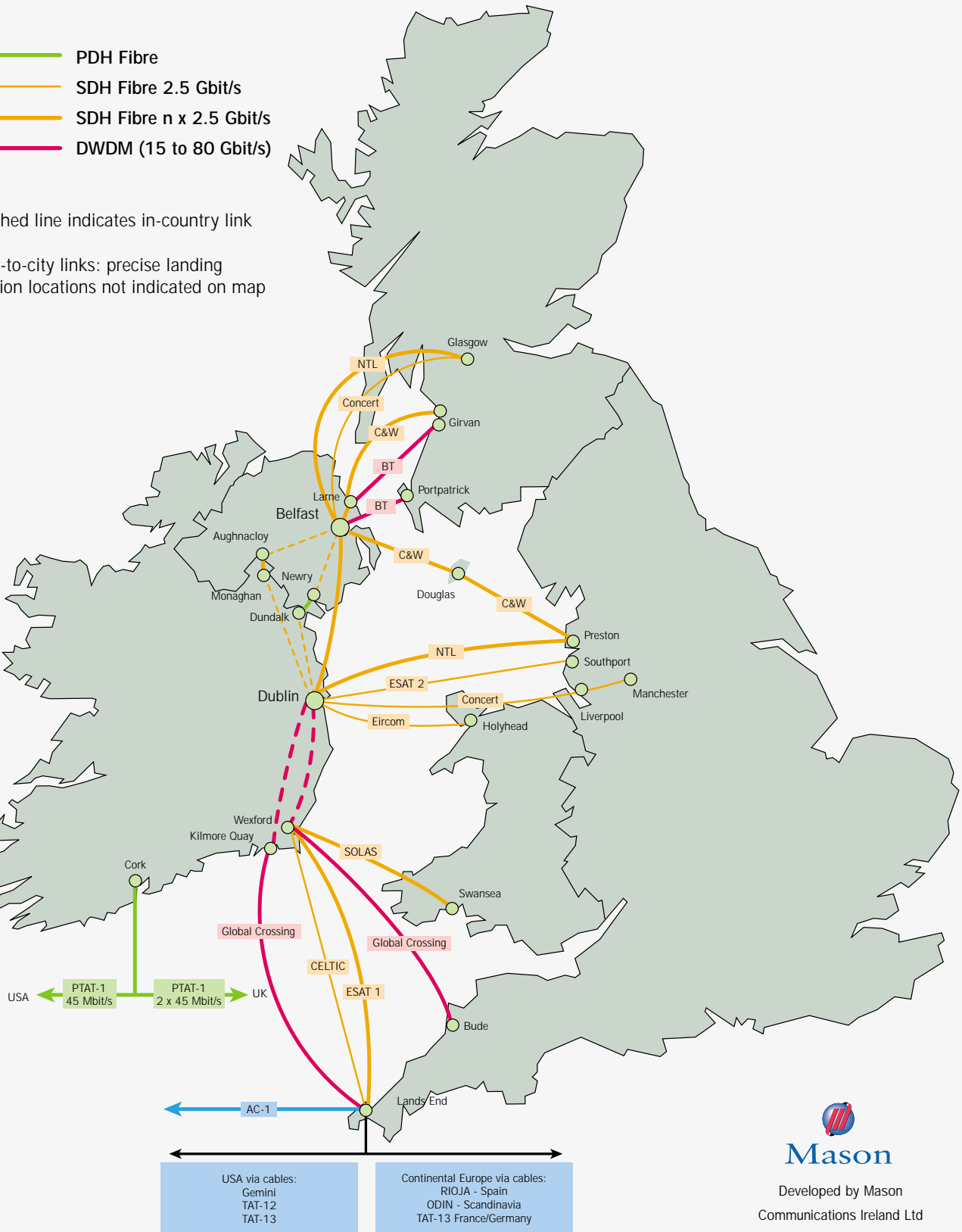


Figure 4

# International Links August 2000

- PDH Fibre
- SDH Fibre 2.5 Gbit/s
- SDH Fibre n x 2.5 Gbit/s
- DWDM (15 to 80 Gbit/s)

- Dashed line indicates in-country link
- City-to-city links: precise landing station locations not indicated on map



USA via cables: Gemini TAT-12 TAT-13	Continental Europe via cables: RIOJA - Spain ODIN - Scandinavia TAT-13 France/Germany
---	--

  
**Mason**  
 Developed by Mason  
 Communications Ireland Ltd  
 (August 2000)

Figure 5  
**International Links August 2001**

- PDH Fibre
- SDH Fibre 2.4 Gbit/s
- SDH Fibre n x 2.4 Gbit/s
- DWDM (15 to 80 Gbit/s)
- Very high capacity (Terabit & Petabit) transatlantic and Pan-European links

- Dashed line indicates in-country link
- City-to-city links: precise landing station locations not indicated on map



Developed by Mason  
 Communications Ireland Ltd  
 (August 2000)

# Broadband Access Tables

- Key**
- ▲ Optical fibre node
  - SDH Node
  - ATM Node
  - ✓ Service available now
  - ★ Service planned (by end 2001)
  - (★) Service can be deployed, based on demand requirements

**Notes** Whilst we have taken every reasonable care in the provision of the information provided in this access matrix, we do not guarantee the accuracy of the data supplied nor accept any responsibility for errors or omissions or their consequences. This telecommunications infrastructure information will be updated on a regular basis on the Telecommunications for e-Business web site, [www.t4eb.com](http://www.t4eb.com)

- The list of locations is not exhaustive; it does not include every optical fibre node indicated on the accompanying Broadband Access Map (Figure 3). Please contact the telecommunications operators for details of your nearest access node and the speed(s) and services supported.
- There are generally no distance limitations from the node to fixed access services.
- Node provision/upgrade: reserve node equipment can be deployed based on demand requirements.
- At optical fibre nodes, data rates in excess of 2 Mbit/s can be made available as required, to meet particular demands, by the provision of SDH terminals.
- Individual surveys are required for access speeds of 34 Mbit/s and above.
- Over 25 more ATM nodes in Ireland are planned for 2001 (not included on the Broadband Access Map). Details of the locations of these nodes have not been released to date. Generally, ATM nodes will be deployed throughout the network based on demand requirements.

## Ireland

	Network Nodes 2000	Additional Nodes 2001	HDSL	2M	34M	155M	STM4 & 16	ATM
Abbeyfeale	▲		✓	✓	(★)	(★)	(★)	
Abbeyleix	▲		✓	✓	(★)	(★)	(★)	
Ardee	▲		✓	✓	(★)	(★)	(★)	
Ashbourne	▲		✓	✓	(★)	(★)	(★)	
Arklow	▲ ●		✓	✓	✓	✓	(★)	(★)
Athlone	▲ ● ■		✓	✓	✓	✓	✓	✓
Athy	▲ ●		✓	✓	✓	✓	(★)	(★)
Baillieboro	▲ ●		✓	✓	✓	✓	(★)	(★)
Ballaghaderren	▲		✓	✓	(★)	(★)	(★)	

	Network Nodes 2000	Additional Nodes 2001	HDSL	2M	34M	155M	STM4 & 16	ATM
Balbriggan	▲●	■	✓	✓	✓	✓	(★)	★
Ballina	▲●		✓	✓	✓	✓	(★)	(★)
Ballinasloe	▲●		✓	✓	✓	✓	(★)	(★)
Ballinspittle	▲●		✓	✓	✓	✓	(★)	(★)
Ballybay	▲●		✓	✓	✓	✓	(★)	(★)
Ballybofey	▲●		✓	✓	✓	✓	(★)	(★)
Ballyjamesduff	▲●		✓	✓	✓	✓	(★)	(★)
Ballygawley	▲	●	✓	✓	★	★	(★)	(★)
Ballyhaise	▲●		✓	✓	✓	✓	(★)	(★)
Ballymahon	▲●		✓	✓	✓	✓	(★)	(★)
Ballymoney	▲	●	✓	✓	★	★	(★)	(★)
Ballymote	▲		✓	✓	(★)	(★)	(★)	
Ballyshannon	▲●		✓	✓	✓	✓	(★)	(★)
Balrath	▲●		✓	✓	✓	✓	(★)	(★)
Baltinglass	▲		✓	✓	(★)	(★)	(★)	
Banbridge	▲	●	✓	✓	★	★	(★)	(★)
Bandon	▲●		✓	✓	✓	✓	(★)	(★)
Bantry	▲●		✓	✓	✓	✓	(★)	(★)
Belturbet	▲		✓	✓	(★)	(★)	(★)	
Belmullet	▲●		✓	✓	✓	✓	(★)	(★)
Birr	▲●		✓	✓	✓	✓	(★)	(★)
Blacklion	▲●		✓	✓	✓	✓	(★)	(★)
Blarney	▲		✓	✓	(★)	(★)	(★)	
Blessington	▲		✓	✓	(★)	(★)	(★)	
Boyle	▲		✓	✓	(★)	(★)	(★)	
Bray	▲■		✓	✓	✓	(★)	(★)	✓
Bridgend	▲●		✓	✓	✓	✓	(★)	(★)
Bunberg	▲	●	✓	✓	★	★	(★)	(★)
Bundoran	▲●		✓	✓	✓	✓	(★)	(★)
Buncrana	▲		✓	✓	(★)	(★)	(★)	
Caher	▲		✓	✓	(★)	(★)	(★)	
Carlow	▲●■		✓	✓	✓	✓	(★)	✓
Carndonagh	▲		✓	✓	(★)	(★)	(★)	
Carrickmacross	▲●		✓	✓	✓	✓	(★)	(★)
Carrick-on-Shannon	▲●		✓	✓	✓	✓	(★)	(★)
Carrick-on-Suir	▲●		✓	✓	✓	✓	(★)	(★)
Carrigaline	▲		✓	✓	(★)	(★)	(★)	
Castlebar	▲●		✓	✓	✓	✓	(★)	(★)
Castleblayney	▲●		✓	✓	✓	✓	(★)	(★)
Castlecomer	▲		✓	✓	(★)	(★)	(★)	
Castleisland	▲		✓	✓	(★)	(★)	(★)	
Castlepollard	▲●		✓	✓	✓	✓	(★)	(★)
Castlerea	▲●		✓	✓	✓	✓	(★)	(★)

	Network Nodes 2000	Additional Nodes 2001	HDSL	2M	34M	155M	STM4 & 16	ATM
Cavan	▲●		✓	✓	✓	✓	(★)	(★)
Celbridge	▲		✓	✓	(★)	(★)	(★)	
Charlestown	▲		✓	✓	(★)	(★)	(★)	
Charleville (Rathluirc)	▲		✓	✓	(★)	(★)	(★)	
Clane	▲		✓	✓	(★)	(★)	(★)	
Clara	▲●		✓	✓	✓	✓	(★)	(★)
Claremorris	▲●		✓	✓	✓	✓	(★)	(★)
Clones	▲●		✓	✓	✓	✓	(★)	(★)
Clonmel	▲●■		✓	✓	✓	✓	(★)	✓
Clonakilty	▲●		✓	✓	✓	✓	(★)	(★)
Cobh	▲		✓	✓	(★)	(★)	(★)	
Cootehill	▲		✓	✓	(★)	(★)	(★)	
Cork	▲●■		✓	✓	✓	✓	(★)	✓
Donegal	▲●		✓	✓	✓	✓	(★)	(★)
Drimoleague	▲●		✓	✓	✓	✓	(★)	(★)
Drogheda	▲●	■	✓	✓	✓	✓	(★)	★
Dromore West	▲●		✓	✓	✓	✓	(★)	(★)
Drumshanbo	▲		✓	✓	(★)	(★)	(★)	
Dublin	▲●■		✓	✓	✓	✓	✓	✓
Duleek	▲		✓	✓	(★)	(★)	(★)	
Dundalk	▲●■		✓	✓	✓	✓	(★)	✓
Dundrum (Co. Tipp)	▲		✓	✓	(★)	(★)	(★)	
Dunfanaghy	▲	●	✓	✓	★	★	(★)	(★)
Dungarvan	▲●		✓	✓	✓	✓	(★)	(★)
Dungloe		▲●	✓	★	★	★	(★)	(★)
Dunshaughlin	▲		✓	✓	(★)	(★)	(★)	
Elfordstown	▲●		✓	✓	✓	✓	(★)	(★)
Enfield	▲●		✓	✓	✓	✓	(★)	(★)
Ennis	▲●		✓	✓	✓	✓	(★)	(★)
Enniscorthy	▲●		✓	✓	✓	✓	(★)	(★)
Ennistimon	▲		✓	✓	(★)	(★)	(★)	
Falcarragh	▲	●	✓	✓	★	★	(★)	(★)
Fermoy	▲		✓	✓	(★)	(★)	(★)	
Ferns	▲		✓	✓	(★)	(★)	(★)	
Foxford	▲●		✓	✓	✓	✓	(★)	(★)
Galway	▲●■		✓	✓	✓	✓	✓	✓
Gorey	▲●		✓	✓	✓	✓	(★)	(★)
Gort	▲●		✓	✓	✓	✓	(★)	(★)
Granard	▲●		✓	✓	✓	✓	(★)	(★)
Greystones	▲●		✓	✓	✓	✓	(★)	(★)
Kanturk	▲●		✓	✓	✓	✓	(★)	(★)
Kells (Ceanannas)	▲●		✓	✓	✓	✓	(★)	(★)
Kilcock	▲		✓	✓	(★)	(★)	(★)	

	Network Nodes 2000	Additional Nodes 2001	HDSL	2M	34M	155M	STM4 & 16	ATM
Kilcullen	▲		✓	✓	(★)	(★)	(★)	
Kildare	▲		✓	✓	(★)	(★)	(★)	
Kilkenny	▲●		✓	✓	✓	✓	(★)	(★)
Kill	▲		✓	✓	(★)	(★)	(★)	
Killarney	▲●		✓	✓	✓	✓	(★)	(★)
Killenaule	▲●		✓	✓	✓	✓	(★)	(★)
Killorglin	▲		✓	✓	(★)	(★)	(★)	
Kilmore Quay	▲●■		✓	✓	✓	✓	(★)	✓
Kilrush	▲		✓	✓	(★)	(★)	(★)	
Kinsale	▲●		✓	✓	✓	✓	(★)	(★)
Leixlip	▲		✓	✓	(★)	(★)	(★)	
Letterkenny	▲●■		✓	✓	✓	✓	(★)	✓
Lifford	▲●		✓	✓	✓	✓	(★)	(★)
Limerick	▲●■		✓	✓	✓	✓	✓	✓
Listowel	▲●		✓	✓	✓	✓	(★)	(★)
Longford	▲●		✓	✓	✓	✓	(★)	(★)
Loughrea	▲●		✓	✓	✓	✓	(★)	(★)
Louisburgh	▲		✓	✓	(★)	(★)	(★)	
Macroom	▲		✓	✓	(★)	(★)	(★)	
Mallow	▲●		✓	✓	✓	✓	(★)	(★)
Manorhamilton	▲●		✓	✓	✓	✓	(★)	(★)
Maynooth	▲●		✓	✓	✓	✓	(★)	(★)
Midleton	▲●		✓	✓	✓	✓	(★)	(★)
Millford	▲		✓	✓	(★)	(★)	(★)	
Mitchelstown	▲		✓	✓	(★)	(★)	(★)	
Monaghan	▲●		✓	✓	✓	✓	(★)	(★)
Monasterevan	▲		✓	✓	(★)	(★)	(★)	
Mountmellick	▲		✓	✓	(★)	(★)	(★)	
Muine Bheag	▲●		✓	✓	✓	✓	(★)	(★)
Mullingar	▲●		✓	✓	✓	✓	✓	(★)
Naas	▲●		✓	✓	✓	✓	(★)	(★)
Navan	▲●		✓	✓	✓	✓	(★)	(★)
Nenagh	▲●		✓	✓	✓	✓	(★)	(★)
Newbridge (Curragh)	▲		✓	✓	(★)	(★)	(★)	
Newcastlewest	▲		✓	✓	(★)	(★)	(★)	
Newmarket-on-Fergus	▲		✓	✓	(★)	(★)	(★)	
New Ross	▲●		✓	✓	✓	✓	(★)	(★)
Newtownmountkennedy	▲		✓	✓	(★)	(★)	(★)	
Nobber	▲		✓	✓	(★)	(★)	(★)	
Oldcastle	▲		✓	✓	(★)	(★)	(★)	
Portarlinton	▲●		✓	✓	✓	✓	(★)	(★)
Portlaoise	▲●■		✓	✓	✓	✓	✓	✓
Rathcoole	▲		✓	✓	(★)	(★)	(★)	

	Network Nodes 2000	Additional Nodes 2001	HDSL	2M	34M	155M	STM4 & 16	ATM
Rathkeale	▲●		✓	✓	✓	✓	(★)	(★)
Rathluirc	▲●		✓	✓	✓	✓	(★)	(★)
Rathmore	▲●		✓	✓	✓	✓	(★)	(★)
Roscommon	▲●		✓	✓	✓	✓	(★)	(★)
Roscrea	▲●		✓	✓	✓	✓	(★)	(★)
Shannon	▲●■		✓	✓	✓	✓	(★)	✓
Skerries	▲		✓	✓	(★)	(★)	(★)	
Skibbereen	▲●		✓	✓	✓	✓	(★)	(★)
Sligo	▲●■		✓	✓	✓	✓	(★)	✓
Swinford	▲		✓	✓	(★)	(★)	(★)	
Templemore	▲●		✓	✓	✓	✓	(★)	(★)
Thomastown (Co. Kilkenny)	▲		✓	✓	(★)	(★)	(★)	
Thurles	▲●■		✓	✓	✓	✓	(★)	✓
Tipperary	▲●		✓	✓	✓	✓	(★)	(★)
Tralee	▲●■		✓	✓	✓	✓	(★)	✓
Tramore	▲		✓	✓	(★)	(★)	(★)	
Trim	▲		✓	✓	(★)	(★)	(★)	
Tuam	▲	●	✓	✓	★	★	(★)	(★)
Tullamore	▲●		✓	✓	✓	✓	(★)	(★)
Tullow	▲		✓	✓	(★)	(★)	(★)	
Virginia	▲●		✓	✓	✓	✓	(★)	(★)
Waterford	▲●■		✓	✓	✓	✓	✓	✓
Wellingtonbridge	▲●		✓	✓	✓	✓	(★)	(★)
Westport	▲	●	✓	✓	★	★	(★)	(★)
Wexford	▲●		✓	✓	✓	✓	(★)	(★)
Wicklow	▲●		✓	✓	✓	✓	(★)	(★)
Youghal	▲●		✓	✓	✓	✓	(★)	(★)

Northern Ireland	Network Nodes 2000	Additional Nodes 2001	HDSL	2M	34M	155M	STM4 & 16	ATM
Aghadowey	▲		✓	✓	(★)	(★)	(★)	
Aghalee	▲		✓	✓	(★)	(★)	(★)	
Ahoghill	▲		✓	✓	(★)	(★)	(★)	
Annaghmore	▲		✓	✓	(★)	(★)	(★)	
Annalong	▲		✓	✓	(★)	(★)	(★)	
Antrim	▲●		✓	✓	✓	✓	(★)	(★)
Ardglass	▲		✓	✓	(★)	(★)	(★)	
Armagh	▲●	■	★	✓	★	★	(★)	(★)
Aughafatten	▲		✓	✓	(★)	(★)	(★)	
Aughnacloy	▲		✓	✓	(★)	(★)	(★)	
Ballgally	▲		✓	✓	(★)	(★)	(★)	

	Network Nodes 2000	Additional Nodes 2001	HDSL	2M	34M	155M	STM4 & 16	ATM
Ballycastle	▲		✓	✓	(★)	(★)	(★)	
Ballygawley	▲	●	★	✓	★	★	(★)	(★)
Ballies Mills	▲		✓	✓	(★)	(★)	(★)	
Ballinamallard	▲		✓	✓	(★)	(★)	(★)	
Ballinskeagh	▲		✓	✓	(★)	(★)	(★)	
Ballyclare	▲		✓	✓	(★)	(★)	(★)	
Ballykinler	▲		✓	✓	(★)	(★)	(★)	
Ballygowan	▲		✓	✓	(★)	(★)	(★)	
Ballymena	▲●	■	✓	✓	✓	✓	(★)	★
Ballymoney	▲	●	★	✓	★	★	(★)	(★)
Ballynahinch	▲		✓	✓	(★)	(★)	(★)	
Ballyronan	▲		✓	✓	(★)	(★)	(★)	
Ballywalter	▲		✓	✓	(★)	(★)	(★)	
Ballyward	▲		✓	✓	(★)	(★)	(★)	
Banbridge	▲	●	★	✓	★	★	(★)	(★)
Bangor	▲●		✓	✓	✓	✓	(★)	(★)
Belcoo	▲		✓	✓	(★)	(★)	(★)	
Belfast	▲●■		✓	✓	✓	✓	(★)	✓
Bellaghy	▲		✓	✓	(★)	(★)	(★)	
Bellarena	▲		✓	✓	(★)	(★)	(★)	
Belleek	▲		✓	✓	(★)	(★)	(★)	
Benburb	▲		✓	✓	(★)	(★)	(★)	
Beragh	▲		✓	✓	(★)	(★)	(★)	
Bessbrook	▲		✓	✓	(★)	(★)	(★)	
Bready	▲		✓	✓	(★)	(★)	(★)	
Bushmills	▲		✓	✓	(★)	(★)	(★)	
Caledon	▲		✓	✓	(★)	(★)	(★)	
Campsie	▲		✓	✓	(★)	(★)	(★)	
Carnlough	▲		✓	✓	(★)	(★)	(★)	
Carrickfergus	▲●		✓	✓	✓	✓	(★)	(★)
Carrickmore	▲		✓	✓	(★)	(★)	(★)	
Carryduff	▲		✓	✓	(★)	(★)	(★)	
Castledawson	▲		✓	✓	(★)	(★)	(★)	
Castlederg	▲		✓	✓	(★)	(★)	(★)	
Castleragh	▲		✓	✓	(★)	(★)	(★)	
Castlerock	▲		✓	✓	(★)	(★)	(★)	
Castlewellan	▲		✓	✓	(★)	(★)	(★)	
Claudy	▲		✓	✓	(★)	(★)	(★)	
Clogher	▲		✓	✓	(★)	(★)	(★)	
Coagh	▲		✓	✓	(★)	(★)	(★)	
Coalisland	▲		✓	✓	(★)	(★)	(★)	
Coleraine	▲●	■	✓	✓	✓	✓	(★)	★
Comber	▲		✓	✓	(★)	(★)	(★)	



	Network Nodes 2000	Additional Nodes 2001	HDSL	2M	34M	155M	STM4 & 16	ATM
Cookstown	▲●	■	✓	✓	✓	✓	(★)	★
Craigavon	▲●	■	✓	✓	★	★	(★)	(★)
Cross	▲		✓	✓	(★)	(★)	(★)	
Crossgar	▲		✓	✓	(★)	(★)	(★)	
Crossmaglen	▲		✓	✓	(★)	(★)	(★)	
Crumlin	▲●		✓	✓	✓	✓	(★)	(★)
Cullybackey	▲		✓	✓	(★)	(★)	(★)	
Cushendall	▲		✓	✓	(★)	(★)	(★)	
Cushendun	▲		✓	✓	(★)	(★)	(★)	
Derryadd	▲		✓	✓	(★)	(★)	(★)	
Derrygonnelly	▲		✓	✓	(★)	(★)	(★)	
Derrylin	▲		✓	✓	(★)	(★)	(★)	
Dervock	▲		✓	✓	(★)	(★)	(★)	
Dohaghmore	▲		✓	✓	(★)	(★)	(★)	
Donaghadee	▲●		✓	✓	✓	✓	(★)	(★)
Downpatrick	▲●		✓	✓	✓	✓	(★)	(★)
Draperstown	▲		✓	✓	(★)	(★)	(★)	
Dromara	▲		✓	✓	(★)	(★)	(★)	
Dromore, Co Down	▲		✓	✓	(★)	(★)	(★)	
Dromore, Co Tyrone	▲		✓	✓	(★)	(★)	(★)	
Drumbo	▲		✓	✓	(★)	(★)	(★)	
Drumquin	▲		✓	✓	(★)	(★)	(★)	
Dunamanagh	▲		✓	✓	(★)	(★)	(★)	
Dundonald	▲		✓	✓	(★)	(★)	(★)	
Dundrod	▲		✓	✓	(★)	(★)	(★)	
Dundrum	▲		✓	✓	(★)	(★)	(★)	
Dungannon	▲●	■	✓	✓	✓	✓	(★)	★
Dungiven	▲		✓	✓	(★)	(★)	(★)	
Dunloy	▲		✓	✓	(★)	(★)	(★)	
Eglinton	▲		✓	✓	(★)	(★)	(★)	
Enniskillen	▲●		✓	✓	✓	✓	(★)	(★)
Feeny	▲		✓	✓	(★)	(★)	(★)	
Fintona	▲		✓	✓	(★)	(★)	(★)	
Fivemiletown	▲●		✓	✓	✓	✓	(★)	(★)
Florencecourt	▲		✓	✓	(★)	(★)	(★)	
Forkhill	▲		✓	✓	(★)	(★)	(★)	
Garavagh	▲		✓	✓	(★)	(★)	(★)	
Gilford	▲		✓	✓	(★)	(★)	(★)	
Glarryford	▲		✓	✓	(★)	(★)	(★)	
Glenanne	▲		✓	✓	(★)	(★)	(★)	
Glenarm	▲		✓	✓	(★)	(★)	(★)	
Glengormley	▲	●	✓	✓	★	★	(★)	(★)
Glenwherry	▲		✓	✓	(★)	(★)	(★)	

	Network Nodes 2000	Additional Nodes 2001	HDSL	2M	34M	155M	STM4 & 16	ATM
Gortin	▲		✓	✓	(★)	(★)	(★)	
Greyabbey	▲		✓	✓	(★)	(★)	(★)	
Helen's Bay	▲		✓	✓	(★)	(★)	(★)	
Hillsborough	▲		✓	✓	(★)	(★)	(★)	
Holywood	▲	●	✓	✓	★	★	(★)	(★)
Irvinestown	▲		✓	✓	(★)	(★)	(★)	
Island Magee	▲		✓	✓	(★)	(★)	(★)	
Jerretspass	▲		✓	✓	(★)	(★)	(★)	
Katesbridge	▲		✓	✓	(★)	(★)	(★)	
Keady	▲		✓	✓	(★)	(★)	(★)	
Kesh	▲		✓	✓	(★)	(★)	(★)	
Kilkeel	▲		✓	✓	(★)	(★)	(★)	
Killeavy	▲		✓	✓	(★)	(★)	(★)	
Killinchy	▲		✓	✓	(★)	(★)	(★)	
Killyleagh	▲		✓	✓	(★)	(★)	(★)	
Kilrea	▲		✓	✓	(★)	(★)	(★)	
Kircubbin	▲		✓	✓	(★)	(★)	(★)	
Larne	▲ ●		✓	✓	✓	✓	(★)	(★)
Limavady	▲ ●	■	✓	✓	✓	✓	(★)	★
Lisbellaw	▲		✓	✓	(★)	(★)	(★)	
Lisburn	▲ ● ■		✓	✓	✓	✓	(★)	★
Lisnakea	▲		✓	✓	(★)	(★)	(★)	
Londonderry	▲ ● ■		✓	✓	✓	✓	(★)	★
Loughgall	▲		✓	✓	(★)	(★)	(★)	
Loughgeil	▲		✓	✓	(★)	(★)	(★)	
Lurgan	▲ ●	■	✓	✓	✓	✓	(★)	(★)
Maghera	▲		✓	✓	(★)	(★)	(★)	
Magherafelt	▲ ●		✓	✓	✓	✓	(★)	(★)
Markethill	▲		✓	✓	(★)	(★)	(★)	
Martinstown	▲		✓	✓	(★)	(★)	(★)	
Mayobridge	▲		✓	✓	(★)	(★)	(★)	
Maze	▲		✓	✓	(★)	(★)	(★)	
Millisle	▲		✓	✓	(★)	(★)	(★)	
Moira	▲		✓	✓	(★)	(★)	(★)	
Moneymore	▲		✓	✓	(★)	(★)	(★)	
Mountfield	▲		✓	✓	(★)	(★)	(★)	
Moy	▲		✓	✓	(★)	(★)	(★)	
Newtownhamilton	▲		✓	✓	(★)	(★)	(★)	
Newcastle	▲		✓	✓	(★)	(★)	(★)	
Newry	▲ ● ■		✓	✓	✓	✓	(★)	✓
Newtownards	▲ ●		✓	✓	✓	✓	(★)	(★)
Newtownbutler	▲		✓	✓	(★)	(★)	(★)	
Newtownstewart	▲	●	✓	✓	★	★	(★)	(★)

	Network Nodes 2000	Additional Nodes 2001	HDSL	2M	34M	155M	STM4 & 16	ATM
Omagh	▲●		✓	✓	✓	✓	(★)	(★)
Pomeroy	▲		✓	✓	(★)	(★)	(★)	
Portadown	▲●	■	✓	✓	✓	✓	(★)	★
Portaferry	▲		✓	✓	(★)	(★)	(★)	
Portavogie	▲		✓	✓	(★)	(★)	(★)	
Portglenone	▲		✓	✓	(★)	(★)	(★)	
Portrush	▲		✓	✓	(★)	(★)	(★)	
Portstewart	▲		✓	✓	(★)	(★)	(★)	
Poyntzpass	▲		✓	✓	(★)	(★)	(★)	
Randalstown	▲		✓	✓	(★)	(★)	(★)	
Rasharkin	▲		✓	✓	(★)	(★)	(★)	
Rathfriland	▲		✓	✓	(★)	(★)	(★)	
Richhil	▲		✓	✓	(★)	(★)	(★)	
Roslea	▲		✓	✓	(★)	(★)	(★)	
Rostrevor	▲		✓	✓	(★)	(★)	(★)	
Saintfield	▲●		✓	✓	✓	✓	(★)	(★)
Seaforde	▲		✓	✓	(★)	(★)	(★)	
Sion Mills	▲		✓	✓	(★)	(★)	(★)	
Springfield	▲		✓	✓	(★)	(★)	(★)	
Stewartstown	▲		✓	✓	(★)	(★)	(★)	
Stoneyford	▲		✓	✓	(★)	(★)	(★)	
Strabane	▲●	■	✓	✓	✓	✓	(★)	★
Strangford	▲		✓	✓	(★)	(★)	(★)	
Swatragh	▲		✓	✓	(★)	(★)	(★)	
Tandragee	▲		✓	✓	(★)	(★)	(★)	
Templepatrick	▲		✓	✓	(★)	(★)	(★)	
Tempo	▲		✓	✓	(★)	(★)	(★)	
Toomebridge	▲		✓	✓	(★)	(★)	(★)	
Trillick	▲		✓	✓	(★)	(★)	(★)	
Tulnacross	▲		✓	✓	(★)	(★)	(★)	
Waringstown	▲		✓	✓	(★)	(★)	(★)	
Warrenpoint	▲		✓	✓	(★)	(★)	(★)	
Whiteabbey	▲		✓	✓	(★)	(★)	(★)	
Whitehead	▲		✓	✓	(★)	(★)	(★)	

# 6

## Getting Started

If in-house expertise is not available, contact can be made with companies that offer advice on how to put your core business processes on-line and how to sell your merchandise or services over the Web most efficiently. Government agencies or business organisations such as IBEC and CBI, can provide information on companies with the expertise you require. The directory section in this guide contains links to a number of such companies. The telecommunications network and service providers can also give guidance as to the options available. These are also featured in the commercial features section and/or the directory.

Some of the Government departments, state agencies and business development agencies that can offer assistance and support for in the Digital Age are detailed below. Their e-business initiatives include:

- providing advice on e-business;
- providing a series of guidelines on good Web design;
- local support centres.

### 6.1 Government Departments, North & South

#### 6.1.0 Industrial Research & Technology Unit (IRTU) ([www.irtu-ni.gov.uk](http://www.irtu-ni.gov.uk))

The Industrial Research & Technology Unit (IRTU) is an Agency within the Department of Enterprise, Trade and Investment for Northern Ireland. IRTU's role is to encourage and support local companies to become more competitive through innovation and investment in industrial research and development. Located at Lisburn, Co Antrim, the Agency administers a range of financial support programmes and provides scientific, technological and environmental services to industry and Government.

#### 6.1.1 Department of Enterprise, Trade & Investment (DETI) ([www.nics.gov.uk/deti](http://www.nics.gov.uk/deti))

DETI is the main Government Department in Northern Ireland concerned with economic development. The Department and its agencies have a wide-ranging remit, which in Britain falls to two Departments:

- Department of Trade and Industry
- Department of Employment and their associated agencies.

DETI has responsibility for the promotion of inward investment and the development of larger home industry (*through the Industrial Development Board*); promotion of enterprise and small businesses (*through the Local Enterprise Development Unit*); promotion of industrially relevant research and development and technology transfer (*through the Industrial Research and Technology Unit*).

#### 6.1.2 Department of Enterprise, Trade and Employment ([www.entemp.ie](http://www.entemp.ie))

The role of the Department of Enterprise, Trade and Employment is to promote a competitive enterprise environment that will foster and sustain enterprise development to meet the emerging challenges and opportunities of a modern global knowledge-based economy.

The Department helps Irish enterprise to meet the technological, competitiveness and strategic challenges posed by the new Information Communication Technologies (ICT) and to prosper in the new Knowledge Economy in a number of ways. It collaborates with other Departments, its development agencies (Forfás, IDA Ireland, Enterprise Ireland and Shannon Development), County Enterprise Boards and the private sector to ensure that the policy requirements to promote e-business and the competitiveness of enterprises are achieved. The Department's work in this regard is focused in particular on improving Ireland's telecommunications infrastructure and reducing costs, building awareness, improving access to information and communications technologies, promoting investment in education, skills and training and promoting investment in research and technological innovation. The Department is also centrally engaged at national and at international level in the formulation of an appropriate e-regulation framework that is conducive to businesses harnessing the full potential of the new knowledge economy, through its representation on a number of key European Union, WTO, OECD and UN committees. The Department of Enterprise, Trade and Employment also has overall responsibility for the delivery of electronic Government to businesses.

### 6.1.3

#### Department of Public Enterprise (DPE) ([www.irlgov.ie/tec](http://www.irlgov.ie/tec))

The Department of Public Enterprise is a Government Department in Ireland with the following mission:

***To promote the provision, development and regulation of competitive, safe, secure and high-quality services as well as optimum asset utilisation in the transport, energy, communications and earth resources sectors.***

The Department promotes the provision, development and flexible regulation of competitive, high quality and world-class services in the communications, electronic and mobile commerce sectors, to make a positive contribution to national competitiveness, attract inward investment and provide for an inclusive knowledge society and to ensure that electronic and mobile commerce can develop and grow in an enterprise-friendly environment.

The Department led the public-private partnership that brought the Global Crossing international connectivity project to Ireland. The Minister for Public Enterprise led the e-Commerce Act, 2000 through the Oireachtas. The Department is also spearheading the e-commerce and communications investment measures of the National Development Plan, 2000-2006. In 1998, the Minister brought forward the full liberalisation of the telecommunications market and is continuing to ensure that the regulatory framework contributes effectively to facilitating a fully competitive marketplace.

Government-assisted investments in broadband have included:

- the 13 Broadband projects assisted under the Economic Infrastructure and Interreg Operational Programmes 1994-99 (26.5 million euro of public funding leveraging a total investment of nearly 70 million euro in broadband networks in the less-developed regions of Ireland);
- the effective underwriting by Government of the international connectivity project which was provided by Global Crossing following a competitive tender process for the provision of the capacity;
- the support from Government and EU funds for investment in e-commerce and advanced communication infrastructure and services in the regions under the National Development Plan 2000-2006. (A provision of in excess of 200 million euro of Exchequer and ERDF funds, which will leverage private sector investment).
- the recent call for proposals under the National Development Plan, with 77 million euro funding available for Year 2000 alone. There is also a £1 million VSAT call for proposals.

**6.1.4 Confederation of British Industry (CBI) ([www.cbi.org.uk](http://www.cbi.org.uk))**

The Confederation of British Industry is the UK's premier independent business organisation. It exists to ensure that the government of the day, the European Commission and the wider community understand both the needs of businesses in Northern Ireland and Great Britain and the contribution it makes to the well being of UK society.

**6.1.5 Irish Business and Employers Confederation (IBEC) ([www.ibec.ie](http://www.ibec.ie))**

The Irish Business and Employers Confederation (IBEC) represents and provides economic, commercial, employee relations and social affairs services to some 4,000 companies and organisations from all sectors of economic and commercial activity. IBEC works to shape policies and influence decision-making in a way that develops and protects members' interests and contributes to the development and maintenance of an economy that promotes enterprise and productive employment. IBEC represents members' interests to Government, state agencies, the trade unions, other national interest groups, and the general public.

The Telecommunications and Internet Federation (TIF) within IBEC promotes the development of this sector in Ireland. With Special Interest Groups focused on key aspects of telecommunications infrastructure and Internet-related service provision, the Federation seeks to support the development of Ireland as the optimum location within Europe for e-business activities.

TIF hosts its annual conference focused on topical issues, which have to date included m-commerce developments, developments in cable and broadcast technology, and development of the regulatory environment in Ireland. TIF also publishes policy papers relevant to the development of the sector within Ireland, and liaises with Government, Regulatory and User interests on matters affecting the sector.

**6.1.6 IDA Ireland ([www.idaireland.com](http://www.idaireland.com))**

IDA Ireland is working with Irish Government Departments and the private sector to ensure the necessary telecommunications infrastructure is in place. It is also working with existing and new overseas companies to provide e-business services, such as web hosting, application service providers, and web based customer care companies. It has proactively targeted overseas e-business, multimedia and related sectors with a view to attracting suitable companies and establishing digital projects in Ireland. Many of these projects will be from overseas companies that already have operations here.

Developments in the ICT sector are monitored by IDA Ireland at home and abroad. This is central in the move towards establishing Ireland as a leading European location for digital business.

IDA Ireland has worked with the private sector to develop the National Digital Park at CityWest business park in Dublin. Advanced telecommunications support on the site has been installed with links to the global telecommunications operators. The Digital Park will support enterprises with high ICT needs and stimulate the take-up of advanced services.

#### 6.1.7 Forfás ([www.forfás.ie](http://www.forfás.ie))

The role of Forfás is to promote enterprise, science and technology for economic and social development in Ireland.

Mission Statement: *“Forfás encourages and promotes the development of enterprise, science and technology in Ireland through its own actions, by empowering and supporting the industrial development agencies Enterprise Ireland and IDA Ireland and by working with the Minister for, and Department of, Enterprise, Trade & Employment in the formulation of industrial policy.”.*

Forfás is the national policy and advisory board for enterprise, trade, science, technology and innovation. It is the body in which the State's legal powers for industrial promotion, trade 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 for the promotion of inward investment.

#### 6.1.8 Enterprise Ireland ([www.enterprise-ireland.com](http://www.enterprise-ireland.com))

Enterprise Ireland is the organisation in Ireland charged with assisting the development of Irish enterprise. Its core mission is

*“to work in partnership with client companies to develop a sustainable competitive advantage, leading to a significant increase in sales, exports and employment.”*

Enterprise Ireland's clients are primarily Irish manufacturing and internationally traded service companies employing ten or more people, and overseas natural resources companies operating in Ireland. It focuses on six key drivers of profitable growth:

- Creating profitable new fast-growth businesses
- Increasing the number of companies exporting
- Deepening the marketing presence of Irish companies overseas
- Enhancing research and development capability and investment
- Building people skills in Irish enterprise
- Accelerating the implementation of e-business strategies.

# 7

## Advertorials

- 7.1 BT Northern Ireland
- 7.2 Cable & Wireless
- 7.3 Chorus (Irish MultiChannel)
- 7.4 Data Electronics Group Ltd
- 7.5 Eircell
- 7.6 *eircom*
- 7.7 ESAT Digifone
- 7.8 ESAT
- 7.9 Formus
- 7.10 Interxion
- 7.11 Mason Communications
- 7.12 nevada tele.com
- 7.13 ntl
- 7.14 Orange
- 7.15 Trade and Business Development Body
- 7.16 Wolfe Technologies
- 7.17 WorldCom
- 7.18 360 Networks



## 7.1 Corporate Northern Ireland 2000



**Hanif Lalani**  
Chief Executive  
BT Northern Ireland

Developments in communications technology have meant that e-business is playing an increasingly important role in the global economy of the new millennium.

Hanif Lalani, the 37 year old high-flier who took over the helm of BT Northern Ireland last October feels that this is particularly significant for businesses in Northern Ireland,

*"Northern Ireland's peripheral status within Europe is no longer an issue as Internet development continues and firms increasingly recognise the savings to be made by embracing e-business. In the world of e-commerce geography has no relevance.*

*"We predict that within five years up to 20% of all trade will be conducted electronically. The Internet is the way of the future. It provides us with not only the level playing field which we have been craving for so long but allows us to leapfrog ahead of what is happening around the world. It is a great opportunity but it needs to be exploited."*

We are undoubtedly working and living in very exciting times in terms of the radical impact that new technologies and the 'Online' Revolution is having economically and personally on our lives. BT in Northern Ireland is committed to helping Northern Ireland grasp these new opportunities.

The 'Online' Revolution is not just something for twenty-something techies. Everyone should look at the opportunities it offers. Old companies and old methods are being replaced by thrusting new business people with new ideas and opportunities. We can all gain from the increased efficiency of information technology that can now be developed, which is not just a fad.

Businesses today can no longer hide from these technology developments – IT has arrived and it is here to stay, so we must get with it! It is predicted that Europe will be the fastest-growing region for e-commerce with a 118% annual growth rate. Internet business-to-business growth will be six times greater than business-to-consumer transactions. However we must not ignore the home shoppers and the net companies that serve them. E-Commerce is the biggest revolution since the invention of money. Shops are already having to rethink. Rather than bricks and mortar it is now clicks and mortar.

In terms of the 'Online Revolution', America is five years ahead of the rest of the world and has a huge pool of talent and resources. Europe however is a largely untapped market but it is ready to explode!

It has been estimated that the value of the global internet will reach £1,700 billion by 2003, which is about 7% of world gross domestic product. Currently today's internet is not fast enough for reliable commercial operations and almost £1,000 billion a year will be needed to support growth. E-business alone will grow annually at 86% to top £800 billion in 2003, with thousands of businesses shifting to the web from traditional methods.

BT Northern Ireland is playing its part in encouraging the Internet revolution in Northern Ireland and has invested £500,000 in a groundbreaking initiative aimed at putting the region's small firms on the first rung of the Internet ladder. Under the unique scheme every firm in Northern Ireland is entitled to a free website, effectively giving them free space to advertise their business on the Internet. The site is designed and hosted by BT and housed in a



new virtual business park for the region entitled NI for Business.

We already offer firms free Internet access, this initiative is about taking it further and giving firms a free Internet presence. We've removed the hassle associated with having your own website – cost and expertise – and we're encouraging thousands of firms to take advantage.

BT is planning investment of up to £100 million per year on new information highways technology which will allow the company's customers to have simultaneous phone, fax, video and Internet access – all down one phone line.

The aim is to continuously add value to peoples's lifestyles, providing them with the products and services they need, be it to enable them to work from home or save them time and money. One such example is Asymmetric Digital Subscriber Line (ADSL). Besides its obvious uses for business communication, this technology also opens up possibilities such as video on demand – where you simply call up your favourite film on the phone and then watch it on your TV. This ultimately will impact the corner video store.

We have the choice to either ignore and hope this 'Online' Revolution will go away or, we can open our minds to the new opportunities this new IT era can bring and make the conscious decision to get on board – be it by simply getting online at home or in the office, or investing in a solution that will bring significant benefits to your business.

It is up to us, especially the young, to discipline ourselves, to exploit the opportunities offered, concentrate on the advantages and avoid the time wasting. Globalisation, about which we hear

so much, is being made a reality by IT. Everyone can circumnavigate the globe at the touch of a button without moving from the office (or home) or chair – IT is there 24 hours a day.

Even those businesses which already have an Internet presence will have to change their attitude and start using the web in more practical ways.

*"The number of firms who are making transactions on the net is doubling every month – they are saving money and making money. Businesses will have to go much further into e-commerce and start working their way down the supply chain.*

*BT has been at the forefront of the frenetic pace of change in Internet development.*

*Advancements in technology has meant significant investment by BT in Northern Ireland - £40 million each year over the last 10 years – in infrastructure alone.*

#### **As Hanif Lalani puts it,**

*"The Internet can bring business here two things: savings.com and makingmoney.com. That is what we are all about. Our challenge at BT Northern Ireland is to continue to provide the products and services which will help businesses and individuals to leapfrog ahead of their competition: to make them competitive with access to the latest technologies. Those businesses that join us in embracing the concept of e-business will find rewarding and lucrative opportunities awaiting them."*

## 7.2 Cable & Wireless - Ireland's leading communications company



**Gordon Morrice**  
Customer Director  
Cable & Wireless

A leading provider of IP solutions

**Cable & Wireless is a global telecommunications business with annual revenues of over £9 billion and customers in 70 countries. The company offers a range of services spanning broadband data, Internet and voice services within Ireland, North and South and around the world.**

Cable & Wireless' priority for expansion is the fast growing market of IP and data services for business customers. Cable & Wireless is continually investing in the development of advanced networks and services in the US, Europe and the Asia-Pacific region to build the world's leading global IP infrastructure. With the capacity of this advanced infrastructure and its presence in key business markets, Cable & Wireless holds a unique position in terms of global coverage and services.

Operating in Ireland for the past 10 years, Cable & Wireless is continually investing in its Network 2000 strategy that is giving Irish businesses access to the very latest in technology. As a result of this Cable & Wireless can offer customer solutions designed to ensure their business works at maximum efficiency.

### Global Network

Cable & Wireless' global network provides one of the most resilient and future proof networks in the world and is the result of a £3.6 billion investment. It incorporates the latest developments in speed and capacity to deliver solutions to the business world.

The Cable & Wireless network in Ireland is a wholly fibre SDH/Sonet based network, that allows provision of customised solutions for businesses comprising an integrated portfolio for voice, data, Internet and video applications.

Cable & Wireless' network is monitored 24/7 by the Global Network Management Centre, providing the security customers need to ensure that their business can communicate wherever and whenever need be.



**CABLE & WIRELESS**

### Voice Services

Irish based businesses can now avail of the Cable & Wireless direct voice service DirectLink, which offers savings of up to 62% on national, UK and international calling. It provides multiples of 30 high-quality voice channels that can be used for outgoing calls. DirectLink can also support fax, modem and voiceband data traffic at 64kbit/s (ISDN).

The transition to DirectLink is seamless with no need to replace existing equipment. Also, the number portability programme means that companies can keep existing line numbers.

When it comes to service, Cable & Wireless customers know that they can rely on remote monitoring to ensure exceptional service levels.

### Network System Integration

Cable & Wireless Data Services is an end-to-end Enterprise Network System Integrator serving customers complete LAN/WAN needs, from cabling to enterprise management to customer security solutions and beyond. With a particular focus on the fast growing market of IP and data services, many leading international and indigenous customers have chosen Cable & Wireless Data Services as their primary data partner.

Cable & Wireless is committed to being the number one supplier of data and networking services in Ireland. The recent acquisition of a leading independent networking supplier clearly demonstrates this intent. This merger creates an organisation with the necessary scale and expertise to deliver on the real promise of end-to-end solutions.

When customers choose Cable & Wireless Data Services as their data and networking partner, they choose:

- Ireland's largest dedicated team of manufacturer certified engineers
- Best solutions from all leading vendors including Cisco, Nortel Networks and Motorola.
- Access to Cable & Wireless' global telecommunications network.

In a recent survey of Network Managers in Ireland, 80% of respondents ranked Cable & Wireless Data Services as one of the best or the best supplier of customer service in IT industry. When it came to technical expertise, 92% said that Cable & Wireless Data Services was one of the best or the best in the IT industry.

Services from the Network Integration group include:

- Intelligent LAN/WAN and Access Solutions
- Data Services including IP and Frame Relay
- Managed Networks
- Network Security
- Enterprise Cabling
- Professional Services including Training, Consultancy and Placement

For further details on any voice, data or Internet solutions, please call Cable & Wireless on (01) 404 0333.

### 7.3 Chorus (Irish MultiChannel)



**Bart Bonsall**  
Chief Executive  
Chorus

**Chorus provides telecommunications services to customers throughout Ireland. Chorus is the new identity of Princes Holdings Limited which until recently traded as Irish Multichannel. The company is licensed by the Office of the Director of Telecommunications Regulation for the provision of General Telecommunications Services, and for both analogue and digital television re-transmission (multichannel tv).**

During 1999 Irish Multichannel was ranked highly in the competition for fixed wireless point to multi-point access (wireless local loop) and has been awarded the narrowband and broadband FWMPA licences.

Chorus (then IMC) launched its indirect telephony service in June of 1999. Today, Chorus provides telephone service to 5,000 plus customers. The launch of direct telephony services using Chorus' own switches and networks is planned for autumn 2000. Following the launch of direct services Chorus will be in a position to offer its customers direct service on its broadband networks, Chorus will offer geographic and non-geographic number portability and carrier pre-selection at very competitive rates.

Chorus is now positioned to provide multichannel television services to over 600,000 homes in Ireland. We currently serve 260,000 customers spread over 70% of Ireland. Work is underway on the infrastructure to provide cable and wireless digital services. Trials in the wireless environment are currently taking place and we will move to a wider trial group of 500 participants in the next few weeks. Digital services will be rolled out on a phased basis throughout our licensed service areas beginning in Autumn 2000 in some of the cable communities, followed by areas near Mount Oriel in the north east and Keeper Hill in the Mid West of Ireland. Initially Chorus' digital service will offer 20 channels in the access pack with a choice of up to 60 channels, a Video-on-Demand service together with a variety of special live



events. Digital programming will be available in the form of a 20 channel Access Pack which can be supplemented by with additional programme offerings. Customers who wish to pre-register for digital service can do so by contacting us on 1890 200 337.

Chorus currently produces and distributes the only comprehensive, local programming service in Ireland. It is envisaged that this service will be expanded and enhanced in line with the local and community programming provisions of the Broadcasting Bill.

Headquartered in Limerick and served through offices and depots in 12 service areas, the company employs 500 people directly with an additional 150 indirectly as Contractors and Service Agents. With additional planned growth in the market, Chorus looks to continue its role as a major Irish employer.

Chorus is the trading identity of Princes Holdings Ltd. Princes Holdings Ltd., through its licensed operating companies provides telecommunications services throughout the 26 counties of Ireland, including the principle cities of Cork and Limerick. In recent months Princes Holdings Limited and its shareholders have acquired both Cable Management Ireland Ltd. and Suir Nore Relays Ltd. and work is currently in progress to integrate both companies into the group. Princes Holdings Ltd. is a joint venture of Independent Newspapers plc and Liberty Media Inc.

Princes Holdings also has a 50% share in Internet Ireland (an ISP trading as Unison) and a 51% holding in Switchcom, a provider of residential and business telecommunications services.

## 7.4 Data Electronics Group Ltd



**Liam Kehoe**  
Managing Director  
Data Electronics



**Maurice Mortell**  
Group Director  
Data Electronics

Data Electronics Group is the largest and most respected **Neutral** and **Independent** provider of co-location services in Ireland. The company is now twenty-five years in network and facilities management and is supported by a team of expert personnel committed to customer service. The Group has constructed a major new **120,000 sq ft. Data Exchange** with adjoining offices in NorthWest Business Park, Dublin 15, the first phase of which will be available for occupation in the last quarter of 2000.

### The new facility

The physical and technical characteristics of the new facility, known as the Dublin E-Switch, will meet the highest international industry standards, and was designed and specified by industry-recognised specialists.

The facility will have the following support features:

- Combined Heat & Power station with N+1 redundancy provision, generating independent power supply to anticipate highest power user requirements
- Dual fuel and mains power backup
- Uninterruptible rotary power supply
- HV air-conditioning with N+1 redundancy provision to maintain optimum temperature parameters
- Environmental control to maintain optimum humidity parameters
- Internal environmental shielding
- Fire detection & pre-action fire suppression systems

- Raised modular floors with loading of 10-15 kn. per m<sup>2</sup>
- 24 x 7 x 52 high level security with uniformed personnel, digital card entry, CCTV & perimeter alarms
- 24 x 7 x 52 monitoring system for electrical, environmental, fire detection and security controls
- 'Meet Me' suite providing customers with physical interconnection to diverse fibre optic cables

### Service Carriers

All the major carriers will have Points of Presence with S.D.H. resilience in the facility and include:

Cable & Wireless, Eircom, Esat, MCI Worldcom, ntl, Global Crossing, 360Networks, Formus

### Products and Services

#### **"Offering Total Solutions Not Simply Space"**

Competitive edge through complete service solutions:-

- Circuit ordering and management of bandwidth delivery
- Customer billing and further customer administration
- Rack/ cage purchasing and equipment installation
- Equipment purchase
- Three tier equipment maintenance program

- Help desk & logistical support
- Cable installation & testing
- Project management including network planning & implementation
- Added value services reducing the need for customers' own staff
- Staging areas for testing of customers equipment

#### ***"A Total Outsourcing Solution"***

- Leasing of shared area space for single and multiple racks or cages.
- Leasing of private area space, enclosed suites or large spaces.

The office element of the E-Switch will have conference rooms and serviced office space available to meet customer requirements. The Data Switch will offer a campus environment for ISP's, ASP's, SSP's, Carriers, Web Hosting, Business Continuity and Mirror Imaging suites.

#### **Our Existing Customers**

The Data Electronics Group, at their existing facilities in Dublin, Cork, Belfast, Shannon and Dublin Airports, are proud to currently house and maintain equipment for major Corporates including:-

- Associated Press
- Bloomberg Financial Services
- Financial Times Information Services
- IXNet
- PSInet

- SITA Equant
- UuNet / Compuserve
- Toyota Ireland
- Via NET.WORKS

#### **Our Mission**

**Data Electronics will provide a secure neutral state of the art facility, meeting the technical, maintenance, power communication and staffing requirements of our customers, cost effectively.**

#### **Data Electronics Group Ltd.**

12 Shamrock Villas,  
Harolds Cross,  
Dublin 6 W.  
Ireland.

Contact: Maurice Mortell or Shay Walsh  
Ph: 003531 4971478 or 003531 4782724  
Fax: 003531 4968818.  
or email mmortell@dataelec.com  
swalsh@dataelec.com

Our new facility number:  
003531 8262010.  
www.dataelec.com



## 7.5 Eircell



**Stephen Brewer**  
Chief Executive  
Eircell

**Eircell is Ireland's leading mobile phone operator with a customer base of over 1 million people and a total of 1100 employees.**

Eircell holds 62% of the market share in Ireland and, with 33% of the population owning an Eircell phone, it ranks in the Top 5 in Europe in terms of national penetration.

Revenue in 2000 grew by 40% to IRE384 million from IRE347 million in 1999. Eircell now accounts for 22% of *eircom's* overall Group revenue.

The company's corporate philosophy "Coverage, Care and Choice" underpins everything that it does and earlier this year Eircell officially opened a £6 million dedicated customer care centre in Dundalk. Nearly half of the company's staff works in the area of customer care, providing 24 hour, seven-day a week customer support. Eircell also offers a comprehensive range of tariffs to cater for a broad spectrum of mobile phone users. To ensure the highest quality customer experience, the company invests an average of €5 million per month in network upgrades and enhancements.

Eircell has been a consistent innovator in the Irish market. It was the first to introduce WAP technology to Ireland bringing the power and functionality of the Internet to mobile phone users. Eircell's WAP service currently provides access to regular news bulletins and information relating to finance, travel and entertainment in addition to enabling customers to engage in transactional based services with a growing number of partners. Eircell was also the first in Europe to introduce prepaid WAP which is expected to lead to an explosion in the use of the mobile device for e-commerce services.



**WHAT BOUNDARIES**

As part of its introduction of WAP, Eircell has participated in the world's first WAP/eCommerce trial in Ennis, which enables mobile phone users to conduct end-to-end secure mobile transactions. Eircell was also the first to introduce mobile banking to Ireland in conjunction with AIB and Ulster Bank.

In April 2000, Eircell launched High Speed Data (HSCSD) offering users data speeds up to three times faster than those that were previously available. HSCSD brings a wide range of benefits to the remote user including the ability to send and receive e-mail when away from the office and full LAN access off site. This high-speed service has been widely embraced by the company's corporate customer base and is an example of Eircell's leadership role in the whole area of mobile data.

In May 2000, Eircell launched e-merge, the company's wireless World Wide Web.

e-merge, ([www.e-merge.ie](http://www.e-merge.ie)) is Eircell's mobile ISP and portal, and is the umbrella brand for Eircell's range of mobile Internet services giving its customers access to the mobile Internet when and where they want it.

Eircell is continually developing and expanding its mobile data and Internet services. Further speed and quality enhancements will be experienced through the deployment of GPRS later this year. Eircell will also participate in the competitive tendering process for one of the 3G licences to be awarded by the ODTR early in 2001.

## 7.6 eircom



**Alfie Kane**  
Group Chief Executive  
*eircom*

Established in January 1984, *eircom*, Ireland's largest communications company, is the principal provider of fixed line and mobile telecommunications services in Ireland, offering a wide range of advanced voice, data and multimedia services. The company's consolidated turnover was €1,955 million for the financial year ended 1 April 2000.

The company was floated on the Irish, London and New York stock exchanges on 8th July 1999 and changed its corporate identity from Telecom Eireann to *eircom* on 6th September 1999.

*eircom* has one of the most technologically advanced telecommunications networks in the world, with 100% digital exchanges and over 1.58 million telephone lines connected to its network. Eircell, *eircom*'s mobile communications subsidiary, offers a broad range of mobile communications services. As at 1 April 2000, Eircell had 1.049 million customers, representing approximately 62% of the Irish market.

The rapid growth in the use of the Internet in Ireland has continued apace. *eircom* has achieved a leading position in this increasingly important sector of the market through its two Internet service providers *eircom* Net and Indigo. *eircom*'s total ISP base at 31 March, 2000 was 243,000, a 175% increase on the previous year. The company continues to focus on the development of its e-business and e-commerce strategies and has made a number of acquisitions and investments to enhance its position in these key areas.

### *eircom*'s Growth Strategy

*eircom*'s strategic objective is to strengthen its market leader position as the principal provider of communications services in Ireland and to become a recognised provider of selected services in the extended home market of Great Britain and Northern Ireland, as well as in other locations where *eircom* has existing customers or traffic.

The key elements to *eircom*'s strategy are:

- reinforcing *eircom*'s market leadership and improving productivity in fixed line telecommunications services;
- exploiting growth opportunities in mobile communications services;
- extending the home market by making targeted investments in telecommunications related businesses in Great Britain, Northern Ireland and elsewhere;
- expanding our multimedia and interactive services; and
- identifying and developing domestic growth opportunities.

### *eircom* NI

*eircom* NI was established in Northern Ireland in 1998. Headquartered in Belfast, the company has grown significantly since then through both organic growth and the acquisition of the largest independent communications equipment supplier in Northern Ireland. *eircom* NI offers the SME and corporate customers a comprehensive portfolio of products and services. The company is at the forefront of current technology in Northern Ireland, and is ideally placed to help businesses gear up with the right systems to deal with future developments.

### *eircom* UK

Also established in 1998, *eircom* UK's principal business is the supply of voice and data services for the business market. *eircom* UK operates as a fully licensed, full service telecommunications provider with a network that offers the powerful combination of reliability, resilience and reach. Anticipating the explosion in telecommunications needs for businesses today, *eircom* UK aims to provide a single solution to the challenges of multi-dimensional business environments.

Interest	Company	Business
100%	<b>Eircell Ltd</b>	Provision of mobile telephony services.
100%	<b>Irish Telecommunications Investments plc.</b>	Telecommunications financing and treasury management
100%	<b>eircom (UK) Ltd.</b>	Provision of telecommunications and related services
100%	<b>eircom Ireland (US) Ltd.</b>	Marketing of <i>eircom</i> services in the US
100%	<b>Eirtrade Services Ltd.</b>	Provision of electronic trading services
100%	<b>eircom Ireland International Ltd.</b>	Provision of treasury management and consultancy services
100%	<b>eircom PhoneWatch Ltd.</b>	Installation, monitoring and maintenance of residential security systems
100%	<b>Eirpage Ltd.</b>	Marketing of radio paging service
100%	<b>Indigo Services Group Ltd</b>	Provision of internet services
100%	<b>TNI (Telecom) Ltd</b>	Provision of telecommunications and related services
100%	<b>eircom Retail Ltd</b>	Sale of CPE equipment and provision of Network Services
100%	<b>Atlas Communications (UK) Ltd</b>	Selling and Maintenance of communications and fire alarm equipment
100%	<b>Lets Talk Phones Ltd</b>	Selling of mobile communications
100%	<b>Lan Communications Ltd</b>	Datacommunications networking
100%	<b>Continuous Communications Systems, (CCS)</b>	Network and Communications providers
86%	<b>Local Ireland Ltd</b>	On-line information systems development
63%	<b>Golden Pages Ltd</b>	Directory publishing.
51%	<b>ebeon</b>	Internet Business Solutions
30%	<b>Flexicom Ltd</b>	Provider of systems for the global card and payments industry.
45%	<b>Broadcom Eireann Research Ltd</b>	Broadband telecommunications research and development.
33%	<b>Accuris Ltd</b>	Telecom Software Solutions
33%	<b>Apion TI</b>	Telecom Software Solutions
30%	<b>Viasec</b>	Internet security products
25%	<b>Person to Person Ltd</b>	Selling of mobile communications
20% stake in US 50% stake in Ireland and UK	<b>OneMade.com</b>	e-business arts and crafts company
20%	<b>Nua Ltd</b>	Internet Consultancy



**Barry Maloney**  
Chief Executive  
Esat Digifone

**Operating in Ireland since 1997, Esat Digifone is Europe's fastest growing second mobile phone operator with over 40% of the Irish GSM market and in excess of 700,000 customers on its network (as of end of June '00). Digifone is positioned on the market based on three principles - A state of the art quality network that is second to none; Real customer care, twenty-four hours a day, every day of the year and a guarantee of a superior service at a price that represents genuine value for money.**

Esat Digifone's headquarters are based in Dublin, with the customer care centre located in Limerick. The company employs over 780 staff nationwide, headed by CEO, Barry Maloney.

### Products and Services

Digifone recently announced a significant investment (£50 Million) in dol (Digifone-On-Line) Ireland's first seamless fixed and mobile ISP and Portal. dol, as an ISP, will spearhead unprecedented Internet usage by facilitating both mobile and fixed line access for Irish Internet users for the first time. This initiative will encourage many people who have never had access to the Internet before to now log on for the first time with the most personal of devices, the mobile phone.

dol customers experience a common look and feel from the dol portal as they switch seamlessly from a fixed line to their mobile and vice versa. This enables them to send and receive e-mails, SMS messages and avail of a range of data and m-commerce initiatives while always using the same email and passwords. This facility is not available through any other ISP on the Irish market, with all other options only offering either mobile or fixed Internet access solutions. Other services offered include: Mobile banking, SpeakEasy top up, Mcommerce shopping, News, Business, Weather, Sports, Entertainment and travel, SMS information tailored to the individuals personal needs.

Digifone was already one of the first operators in the world to bring the Internet over GSM to reality, with the launch of dot Digifone-on-line in September 1999.

### Tariffs

In October 1999 Digifone introduced "Select" a radical pricing system designed to offer pre paid customers significant savings. The Select tariffs (1, 2, & 3) are currently the most competitive available in the marketplace by approximately 15%. In addition there are four Plus options, each with a monthly service charge - Weekender Plus, World Plus and Message Plus.

In June 2000 Esat Digifone also introduced a new Timeshare option for the SME market. An umbrella pricing structure, Timeshare allows individual businesses to choose packages of 1,000, 2,500 or 5,000 bundled minutes per month, which can be shared within a company to meet the different needs of the individual mobile user.

### Pre-Paid

SpeakEasy from Digifone is Ireland's first pre-paid option to offer two choices of competitive tariffs - Early Bird or Night Owl. In June of this year Speakeasy tariffs were reduced by over 35%, and a new weekend rate of 10p per minute was introduced for all Speakeasy customers. Digifone also reduced the weekly Speakeasy peak tariff rate to 50p per minute (from 75p) and its off peak tariff rate to 15p per minute (from 20p).

### Data Update

Digifone has also invested significantly in a new data GPRS (General Packet Radio Service) network having signed a £32 million deal with Nortel. This will enable customers to send data instantaneously via the mobile network at speeds of up to 115kb per second, 10 times faster than current systems allow. The system, which is IP (Internet Protocol) based, is internationally recognised as the next phase in data for mobile users. Digifone plans to have the product available by the end of 2000.



**Richard Cooke**  
Chief Executive of  
Esat's Broadband  
Business Division

### Esat - Your business transformed

In March 2000, BT purchased Esat Telecom and Esat Digifone. Subsequently it combined its existing business in Ireland, OCEAN, with the new organisation now known as Esat.

Esat's broadband business offers world class voice, data and Internet communications solutions designed to bring the benefits of the new information age to your enterprise. From systems integration to ecommerce, our innovative products and services are based upon leading edge technology, specialist expertise and an unrivalled commitment to customer service. Esat will always deliver the full power of communications and enable you to transform the way you do business.

### Portfolio of Services

Esat's network offers a full range of broadband services, some of which have never been commercially available to the corporate market in Ireland before. These include integrated voice, data, Internet and internal network solutions:

#### 1. Voice Esat's extensive voice portfolio includes:

**Business Voice** - Our premium voice service provides customers with per second billing through direct connectivity to our fibre optic network or indirect connectivity via carrier pre-selection.

**Telenumbers** - Esat can also provide businesses with premium rate, cost shared and free phone numbers.

**Conference Connect** - an advanced Audio Conferencing service which facilities more than three participants communicating at any one time by telephone.

**Easycard** - our post-paid global calling card.

### 2. Data

We can provide a range of Data Products tailored to suit your needs. The speed required and the technology employed is dependent on your specific requirements. Our data applications include:

**Managed Bandwidth** - managed metropolitan national or international point-to-point connection over the core Esat Network.

**Broadband LAN Interconnect** - enables customers to connect geographically dispersed local area networks at full native speeds.

**Business Continuity Service** - A disaster recovery service is offered over the Esat Network between a customer's primary computing facility and the BPSL data recovery centre.

**Frame Relay** - is a high-speed, data-switching and transmission network that carries data at speeds from 64Kbit/s to 2Mbit/s. Frame Relay is suitable for companies with many locations who require managed, cost effective private networking solutions, with specific performance parameters.

**ATM** - enables simultaneous transmission of integrated voice, data and video on one platform, while providing an increased level of capacity, resilience and management.

**Channel Extension** - offers a fully managed, high speed, resilient solution between two or more locations. Esat uses 'Dense Wave Division Multiplexing' technology to deliver this service over a resilient fibre optic ring. ESCON, Fibre Channel and FICON are among the protocols supported.

**Managed IP** - facilitates the development of corporate intranets and extranets, offering virtual private networking, integrated Internet access, and remote dial access.

### 3. Internet

As Ireland's first, and largest, corporate Internet Services Provider (ISP), Esat Net provides complete eBusiness solutions to organisations of all sizes, including:

#### **High-speed Internet access**

Email; web hosting services, security products, individually tailored eBusiness solutions and consultancy

Resilient, diverse routing bandwidth capacity with four separate carriers (two via Europe and two via the USA)

### 4. Systems integration

Esat is uniquely positioned to offer totally integrated, managed and secure desktop to desktop solutions. We can design, implement and manage local or wide area networks whether it be in within a centralised office, large campus setting or between geographically dispersed office locations. We will offer a total network care portfolio, offering comprehensive network support and a full information service.

### 5. Concert

Concert solutions include a complete range of Voice, Data and Internet solutions offering global reach to multinational companies located in Ireland and to growing Irish companies.

Through its global partnerships Concert provides connectivity to more than 1,000 cities in over 280 countries, with private line and public international networks in 52 countries and now serves over 40% of the Fortune 'Global' 500.

**To find out more about Esat, call us on  
1 800 924 924 or check out our website at  
[www.esat.ie](http://www.esat.ie)**



## 7.9 Formus



Terri McNulty  
Managing Director  
Formus

**Formus Broadband intends to be Ireland's premier provider of flat rate, always on Internet access and data services to the business community. Formus Broadband is a customer centric organization that prides itself on giving customers both the technology and professional assistance required to compete in the new economy.**

Formus Broadband is investing in the new **iFAST** network. This next generation of Internet and data network will enable those businesses connected to **iFAST** to maximize broadband communications technology and the Internet to the benefit of their businesses.

**I** is for Internet, at the heart of the broadband revolution.

**F** is for Flat rate - out highly competitive pricing enables businesses to spend as much time online as they wish - no restraint on usage - no unexpectedly high bills - ability to budget accurately going forward.

**A** is for Always on - iFast is permanently connected to the Internet - there are no failed log on attempts - no call charges - no dialling in to check, send or receive e-mail.

**S** is for Scaleable - **iFAST** gives you unique bandwidth, on demand, so that your business can grow without having to install additional infrastructure or lines. Simply contact Formus Broadband and they will turn up the bandwidth

**T** is for Time - the business critical benefits of **iFAST** Internet access and data services can be installed within weeks - with limited disruption to your existing infrastructure – Formus Broadband simply install an **iBOX** (the size of an alarm box) on the roof top of your building, and your business has a "plug and play" solution to broadband Internet access and data services.



***“Formus Broadband...showing you the way to a broadband future”***

**Formus Broadband International Connectivity**

Formus Broadband has signed an alliance agreement that will provide it access to 12 fibre-based STM-1 communications links.

The links will form the basis of a Formus Broadband pan-European backbone network. These critical international network connections, managed by Formus Broadband in Ireland, will interconnect Formus Broadband' local networks throughout Europe and with the global Internet.

**Formus Broadband (Europe)**

Formus Broadband is building broadband networks to provide its customers with high-speed Internet access, value-added Internet solutions, and local, national and international voice and multimedia services. Focusing on the European market, Formus Broadband intends to use broadband access technologies including broadband wireless access (BWA), point-to-point microwave and digital subscriber line (DSL) for delivery of services. Formus Broadband and its affiliates presently hold, or have been notified they will receive, telecommunications licenses or operating authority in ten European countries. Through an affiliate, Formus Polska, Formus Broadband was the first operating company in Europe to provide commercial broadband multipoint BWA service.

In addition to its operations and licenses in Austria, Germany, Poland, Ireland, Norway, Finland, and Switzerland, Formus Broadband is

also part of the AbraRed consortium, which has a nationwide BWA license in Spain. In the United Kingdom, Formus Broadband recently received a public telecoms operator license. Formus Broadband is operating trial BWA projects in Belgium, France and Hungary.

Formus Broadband is also a shareholder in VeloCom Inc., an international communications company with fixed wireless interests in Argentina, Brazil, and Uruguay.

**To find out more about Formus Broadband please contact us**

Email: [jsharpe@formus.ie](mailto:jsharpe@formus.ie)

Website: [www.formus.ie](http://www.formus.ie)

Phone: +353 (0)1 8878200

Formus Broadband  
AIG House  
North Wall Quay  
Dublin 1

## 7.10 Interxion



**Tom Cahill**  
Managing Director  
Interxion

**With headquarters in Amsterdam, Interxion designs and operates a growing number of carrier-neutral Internet Exchange Centers™ (“IECs”) across Europe. Interxion is in the business of building, managing and constantly improving the European internet infrastructure, providing customers with connectivity solutions that help them run their core businesses more effectively and efficiently.**

Interxion's Internet exchange centers™ (IECs) are at the heart of all internet activities. In these IECs Interxion offers integrated solutions for connectivity, equipment housing, storage and maintenance needs of internet related companies. These include ISPs, ASPs, content providers, media companies, web hosting companies and other enterprises that intend to engage in outsourced IT, as well as datacenters and that are focussed on e-business. As the only neutral full-scale managed connectivity provider of its size in Europe, Interxion enables its customers to join forces, to compete and to exchange services.

All of Interxion's Internet Exchange Centers™ are connected to the networks of major national and international telecom carriers as well as to various European Internet Exchanges. Each IEC has multiple power sources, fire detection and suppression systems, access to multiple telecommunications networks (including mobile, WLL and satellite operator) and is staffed 24 hours a day, 365 days a year with Interxion operations personnel.

Interxion provides secure equipment housing services and a number of value-added services designed for the specific needs of advanced networks, including interconnections between customers, equipment installation, operation and maintenance, telecommunications services, bandwidth trading, data storage, newspeed and caching services.

In each IEC a community of interests is established and an environment of creativity and ideas is nurtured. Synergies arising from the range of e-business enablers and solution providers, multi-national corporations, SMEs and start-up businesses, together with the kind of business-tailored connectivity for effective remote



**interxion™**  
where the internet lives

access, web-based representation of offerings and e-commerce, together provide for a newly structured internet. Indeed it is this infrastructure which will provide tomorrow's internet.

Interxion currently operates IECs in Amsterdam, Dusseldorf, Frankfurt, London, Paris, Brussels, Copenhagen, Stockholm and Vienna and is rolling out to Dublin, Madrid, Zurich, Hilversum, Helsinki, Lisbon, Oslo and Milan in the near future. Further cities are planned for 2001 – 2002.

Interxion provides solutions and value added services, from the physical to the virtual, from secure locations to a complete range of services in a dynamic community of internet related companies.

These customers lead internet innovation across Europe. Interxion brings customers together, creating partnerships that can benefit from the business opportunities which are offered by the new internet.

We help our clients to build tomorrow's internet in the only way possible: exponentially.



**Harry McDermott**  
Director  
Mason Communications  
Ireland

**Mason Communications is Ireland's leading independent telecommunications and e-business consultancy. From our offices in Dublin we have carried out major consultancy projects throughout the country.**

**Mason also has offices in Manchester, Edinburgh and London.**

With over 250 professional staff, Mason advises clients on how to gain maximum business advantage from the use of telecommunications and information technology. We work across the full spectrum of the communications value chain, dealing with vendors, service providers, end users and policy-making organisations.

Our independence ensures that every assignment we undertake is delivered in an impartial and unbiased manner. Our world-class consulting pool possesses the strategic, commercial and technical expertise to help our clients face up to mission-critical challenges. Our "Concepts to Reality" philosophy delivers maximum added value to our clients.

### **The Irish Telecommunications Market**

Mason's knowledge of the Irish telecommunications market has been developed through our consultancy activities for government, telecom operators and corporates. Our experience and knowledge has been applied in writing this report "Telecommunications for e-Business – A Users Guide". We are also authors of two previous IBEC reports, "Broadband Services in Ireland – Policies for Consumer Choice", published in 1999 and, "Telecommunications After Liberalisation – Policies for Ireland", published in 1998.

### **e-Business**

Mason is currently advising many of Ireland's leading organisations on how to understand converging markets (telecommunications, media, and Internet) and converging technologies (wired and wireless, fixed and mobile).

As a result of this track record, we are increasingly the independent advisors of choice for enterprises, large and small, faced with the challenge and associated risk of operating competitively in the networked economy. We have developed capabilities and service offerings to help our clients understand the issues and choices related to developing and adopting a robust e-strategy.

Enterprises have quickly adopted the Internet to publish corporate information and largely recognize the opportunities presented by e-commerce. However, they are grappling with the business and organisational issues in becoming an "e-business".

Mason can assess a company's readiness, develop e-strategy, and design and implement the businesses processes to help exploit the "e-opportunities" of the networked economy.

#### The Mason Service Offering

- Strategic and Business Planning
- E-commerce Strategy and Implementation
- Network Modelling, Design and Engineering (LAN/WAN, fixed, mobile)
- Procurement (requirement specification, RFP/RFT/ITT, contract negotiation and award)
- Service Level Agreements
- Turnkey Bid Management
- Project Management
- Technology Audit/Due Diligence

#### Our Technology Expertise

- Corporate Data Networks (LAN/WAN) Voice Networks and Call Centres
- Digital Certification & Security
- Internet billing & payments
- Digital TV (Cable, MMDS, Terrestrial)
- Wireless Local Loop
- Cellular and Paging Networks
- Private Mobile Radio
- Satellite Systems
- Transmission and Switching Internet/Intranet
- Control and Information Systems

#### For Further Information Contact:

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Mason Communications Ireland

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E-Mail [Ireland@masoncom.com](mailto:Ireland@masoncom.com)

[www.masoncom.com](http://www.masoncom.com)

## 7.12 Nevada



**Irene Cackett**  
Chief Executive  
Nevada tele.com

nevada tele.com is a leading provider of business communication solutions targeted at the All-Ireland SME, Corporate and Government markets. Formed in Northern Ireland in May 1999 as a joint venture between Northern Ireland's Viridian Group and Energis plc, one of the UK's fastest growing telecommunications and internet providers, nevada tele.com has firmly set its sights on the All-Ireland marketplace with the acquisition of Dublin based Stentor plc in August 2000. Stentor was primarily focused on the International Call Centre market, and has given nevada tele.com Points of Presence in Dublin, Shannon, Cork, London and New York.

nevada tele.com aims to integrate internet and telecommunications technologies to develop and implement world class business communication solutions for its customers.

The Company offers a full portfolio of Voice, Data and Internet solutions designed to meet the requirements of customers through increased efficiency, improved customer service and the provision of innovative and cost effective communications with suppliers, customers and consumers.

### Voice

nevada tele.com prides itself at being at the forefront of technological advances and offers a full range of voice products and services supported by easy to understand tariffs and full Management Information.

The nevada tele.com voice portfolio comprises of:

**Voice** - Your business benefits from an easily installed, high quality and competitively priced telephone service – without having to change your number

**MetroVoice** - A direct connection to our own fibre optic network provides an unparalleled service through improved reliability and a competitive

pricing structure for all of your incoming and outgoing calls

**Number Translation Services** - Enhance your business profile and increase your contactability. Benefit from a full range of services including Freephone, local rate, national rate, premium rate and international numbering schemes

**Call Centres** - nevada tele.com provide solutions from simple Call Centre technology right through to complete multi site networks. Switching calls across international borders, utilising world time zones and in turn, making optimal use of resources

**Data** - 24 hour access to information and real-time communication is critical to every business. nevada tele.com data services can help take your business, regardless of it's size or focus, further and faster than ever before.

The nevada tele.com Data portfolio comprises of:

**Private Circuits** - Dedicated bandwidth between your business sites of high digital quality

**LanConnect & LanConnect Plus** - Connection of your Local Area Networks (LANs) integrates everyone from home-workers to head office employees in a single managed network with the additional option of dedicated secure Internet access to each location

**CellConnect** - Our national Asynchronous Transfer Mode (ATM) service provides your business with fast and future-proof connectivity for your data, voice and video applications

**FrameConnect** - Link your computer and data systems in remote or independent business sites onto one single highly flexible network without the high costs of leased lines with our fully managed national and international frame relay service

**MetroAccess** - Secure Internet access service designed for all businesses onto our own SDH Metropolitan Area Network

**MetroConnect** - Direct voice and secure Internet access service designed for all businesses onto our own SDH Metropolitan Area Network

**Internet** - From the single outlet retailer to the multi-national company, nevada tele.com can provide your business with complete e-Business solutions as follows:

### Internet Access

**NetDial** - The painless way to get your business connected to the Internet for the first time

**NetExchange** - This dial-up service is designed with the small office in mind, providing full email capability, single web page with web space and a customised web address

**NetStart** - A packaged Internet access solution, providing cost-effective connection for your small office network, enabling web browsing and email to the desktop

**NetConnect** - Your business benefits from fixed costs using a dedicated leased line connection and instant, reliable access to the Internet

In addition, nevada tele.com offers a full range of bespoke internet access solutions

### Hosting

**Virtual Hosting** - By sharing a powerful web server with other users, your business benefits from dedicated Internet bandwidth, software and ongoing technical expertise

**Co-Located Hosting** - Your web server is located onto the nevada tele.com premises, allowing us to fully manage it 24 hours a day with dedicated bandwidth that grows with your requirements

### Security

**SecureStart** - A secure connection to the Internet and external email for your staff

**SecureOffice** - The complete package that includes secured multi-user access, Internal / external email, VPN connectivity, Internal / external web servers and file and print servers

**SecureConnect** - Secure solution that includes tailored security policies for your business along with Virtual Private Networks and corporate grade firewalls

### e-Commerce

**EasyStore** - Trade on-line at a low cost. You choose and administer your own customised storefront, allowing your customers to make secure purchases 24 hours day, while you manage orders and payments with complete confidence

In addition, nevada tele.com offers a full range of bespoke e-Commerce and e-Business solutions

For further information regarding the range of products and services offered by nevada tele.com, Freephone:

**Northern Ireland:** 0808 140 1400

**Republic of Ireland:** 1800 927 762

**USA:** 888 200 0982

Or log on to: [www.nevadatele.com](http://www.nevadatele.com)





**Liam Duggan**  
General Manager  
ntl Business

ntl, the complete communications company, deliver innovative communications services to 22 million businesses and homes every day around the world.

ntl is a world leader in the development of digital networks and broadcast systems. As technologies converge, ntl is leading the way into a new era of integrated communications and provides more products and services than any other communications company.

Last year, ntl acquired Cablelink and is currently investing in excess of IRE300 million in upgrading the old Cablelink network to a Digital Broadband Cable Network which will deliver more services and at faster speed than any other technology available.

#### Our Heritage...

ntl, was founded with a dual aim, to become a world-leading complete communications company and to make access to our service simple and convenient for our customers

In 1994, International Cable Tel acquired 14 franchises from the UK's Department of Trade and Industry to form Cable Tel(UK) Ltd. Two years later, International Cable acquired National Transcommunications Ltd, formally the engineering arm of IBA and renamed it ntl. In 1998, Comtel, Comcast & Diamond were acquired, thus making ntl the third largest UK Cable company. Following the acquisition of CWC, ntl is now the largest telecommunications company in the UK next to BT.

ntl have over 400 associates in Ireland and is listed on the NASDAQ and EASDAQ. With businesses in France, Switzerland and Australia, ntl's head quarters is located in Hook, Hampshire (UK).

#### *ntl is not just another telecommunications company...*

We are the only company in Ireland to operate the most extensive network across all key communication technologies - **fibre optic, broadband coax and copper, broadcast, satellite and radio**

- We provide **complete communications**: voice, data, vision and Internet.
- A state of the art wholly owned and managed broadband network using latest technology
- An extensive global network
- A superb track record

#### *ntl – growing all the time...*

##### Acquisitions

In 1998, ntl laid a resilient network across the Irish Sea linking Belfast and Dublin with the UK backbone network. A bi-lateral alliance with IS Internet firm, CoreComm, signifies a major expansion of ntl's network. Combined infrastructure will deliver access to 108 points of presence across the US, UK and Ireland and will significantly reduce reliance on third parties.

After acquiring Cablelink in 1999, ntl went on to acquire Workplace Technologies, a system integrator who provide end-to-end solutions.



#### Investments:-

France Telecom own a 24% stake in ntl thus enabling access to France Telecoms's European network. In addition, Microsoft have a \$500 million strategic investment in the company.

#### DATA SERVICES

- ATM Connectivity 2Mb – 155 Mb
- LAN extension (10/100Mbps Ethernet)
- Token Ring & FDDI Service
- IP Net
- Managed Frame Relay 64KB – 2Mb

#### INTERNET SERVICES

- Managed Firewall
- Dedicated Web Hosting
- Virtual ISP
- PC Internet
- TV Internet
- Cable Modem
- Analogue dial-up Internet Services
- 64Kb – 155Mbps

#### VOICE SERVICES

##### Outbound voice

- Primary Rate ISDN Access
- Basic Rate ISDN
- Centrex
- Analogue PSTN

##### Inbound voice

- FreeFone / Premium Rate/ LoCall
- Call Centre Solutions

#### VISION SERVICES

- Interactive TV
- Digital TV
- Video Transmission & Conferencing
- CCTV
- Business CATV
- VOD ( Video on Demand)

#### For Further Information Contact:

The Sales Team @ ntl  
Tel: (01) 7998500  
Fax: (01) 7998515  
Freephone 1800 92 42 20

## 7.14 Orange



**Eric Carson**  
General Manager  
Orange,

**Orange has played a leading role in the recent growth in Northern Ireland's mobile market since the company launched its network in April 1998. Orange's coverage in Northern Ireland now reaches 98% of the population and is the biggest mobile network in Northern Ireland. Orange's recent acquisition by France Telecom means Orange's Northern Ireland operation is now part of a world-wide wirefree brand.**

### **The future's bright for business**

Central to Orange's approach to business is the firm belief that mobile communications will take over from the fixed line telephone services that are prevalent today – it's what Orange calls the Wirefree Future and they are making sure that Northern Ireland can be part of it.

General Manager for Orange in Northern Ireland, Eric Carson, believes the reason for Orange's success is simple: "When people buy a mobile phone they expect it to work wherever they take it and they want the calls to be cheap. We have focused all our efforts on meeting these expectations. As well as offering mobile users the largest network in Northern Ireland, tariffs like Everyday 50 – with off-peak calls at 1p per minute – are attracting customers and usage from the fixed line networks."

"We've also introduced a range of voice, fax, messaging and data services aimed specifically for business users in Northern Ireland. These allow our customers to communicate whenever and however they want – and wherever they are they're always in their very own 'Orange office'. We also offer the cheapest calls to and from the Republic of Ireland." Mr Carson added.

The company currently employs 65 people in Northern Ireland – mainly through 5 Orange Shops – and further growth is planned.

"Expanding our business sales and retail operations will give us a better platform to reach the growing number of mobile users across the Province. We can offer them a range of exciting new Orange products and services that are bringing the two key drivers of the technology



revolution – the mobile phone and the internet – closer together.” Mr Carson said.

**Orange was the first mobile network in Northern Ireland to launch a WAP (or Wireless Application Protocol) mobile phone – which lets you download text from selected websites – and as an Internet Service Provider, orange.net allows users to receive emails to their mobile phone. Orange will lead Northern Ireland’s mobile market into a new dimension with the launch of the first mobile videophone, allowing customers to send and receive video images as well as emails, to access the internet and, of course, to make traditional voice calls.**

In May 2000 Orange was awarded a licence for the 3rd generation mobile networks or UMTS – which is scheduled to be introduced in the UK in 2002. UMTS will deliver a range of advanced multimedia services, including high speed internet access, e-commerce and entertainment services as well as mobile videoconferencing and the ability to download movie clips and sports highlights, all on the move.

**“Of all the mobile operators in Northern Ireland we believe Orange is in the best position to exploit the potential of UMTS. Our network in Northern Ireland has been built deliberately to accommodate UMTS and with the minimum need for additional transmitter sites.”** Mr Carson said.

As a result, Orange believes that the future’s bright for business – and they’re making sure that Northern Ireland companies can be part of that future.

## 7.15 Trade and Business Development Body



**Dr Martin Naughton**  
Chairman of the Board  
Trade & Business  
Development Body



**Mr Liam Nellis**  
Interim Chief Executive  
Trade & Business  
Development Body

**The Trade & Business Development Body is an integral part of the new political and business climate on the island of Ireland.**

**As one of the six Cross-Border Implementation Bodies established under the British-Irish Agreement Act of March 1999, we are more than the culmination of a political process.**

**The business communities of the two jurisdictions of Ireland acknowledge that there is a compelling case for greater economic cooperation and collaboration.**

**After all, doing trade and business between neighbours is the most natural thing in the world.**

The Trade & Business Development Body, working either in partnership or through its own initiatives, can have a major impact on the performance and sustainability of the two economies. We are committed to enhancing opportunities to develop trade on the island and to improve the competitiveness of the important SME sector North and South.

In this age of rapid technological development, there has never been a more exciting opportunity to attempt to raise Irish business and trade to a new level. The facts of the market speak for themselves. Economic prosperity in the South has created a buoyant consumer climate offering Northern businesses access to an affluent 3.5 million market. Simultaneously, the new political climate is encouraging Southern businesses to embrace a neighbouring market of 1.5 million potential consumers and an economic tradition of innovation and success. Encouraging initiatives and developing the knowledge base of the business communities are clear priorities for us. Key linkages with knowledge centres throughout the island are being developed and enhanced.

The position of the Southern economy as the IT and e-business hub of Europe creates a potent economic brand that both border and Northern businesses can profit from, whether it be knowledge share or supply opportunities. The ICT sector is central to the modernisation strategy of every economy, tapping into the human and technological resources available. This area is key to the future policy of the Trade & Business Development Body. We have moved proactively into the promotion of e-business opportunities in regional markets on the island of Ireland, and

will continue to exploit our public and private sector partnerships to ensure ongoing development particularly in the area of skills enhancement.

With the participation of the businessmen and women of Ireland, North and South, and under the Chairmanship of Dr Martin Naughton, the Board and the staff of the Trade & Business Development Body will pursue a strategy which will develop and exploit the electronic-economy for the benefit of the business communities of both jurisdictions.

The opportunities exist and we are open for e-business.

Board Chairman  
Dr. Martin Naughton

Interim Chief Executive  
Mr. Liam Nellis

Address  
Trade & Business Development Body  
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Kilmorey Street  
Newry, Co Down  
BT34 2DE

Tel: (028 - North) (048 South) 3083 4100  
Website: [www.tbdb.org](http://www.tbdb.org)

## 7.16 Wolfe Group



**Geoff Carragher**  
Chief Executive Officer  
Wolfe Group

**Wolfe Group, the Technology Management Company, has their headquarters in Dublin's Park West Business Park. Wolfe is leading the way in Hosted Managed Services in Ireland, and is one of the fastest growing companies in this sector.**

Since inception, almost 3 years ago, this Irish company has specialised in managing technology. Utilising leading edge Enterprise Systems Tools (ESM) tools from suppliers such as Computer Associates, BMC Software and Microsoft, Wolfe has forged ahead in providing client centric solutions in the Irish marketplace in the form of professional services. Some of the organisations to benefit from Wolfe's experience in implementing ESM solutions include Dublin Corporation, CIE, Eircell, ESB. South Dublin County Council and the Central Bank.

Wolfe now has the ability to manage and maintain client web applications and communications infrastructure within the client premises, within other hosted environments or from within the purpose built, world class managed data centre based in Park West. The facilities, offered within the Data Centre coupled with a fully managed, client specific Service Level Agreement, ensures that customers can concentrate on core competencies and leave the IT management to the experts.

### Wolfe Services

Wolfe Group provide Professional and Managed Services to the IT marketplace, specialising in

- IT Operations consultancy
- Architecture design and planning,
- Project Management and Implementation Services
- Remote and On-site Managed Service.



Wolfe provide professional services in the following areas

- IT Operations Consultancy, including Operations Reviews, Site Reviews, Bid Management
- Architecture Design and Planning
- Project Management Services
- Implementation Services
- Enterprise Management Services

Wolfe is a certified consulting partner of Computer Associates and BMC, in addition to being partners of Cisco, Oracle and Sun Microsystems. Wolfe consultants are certified in a range of Operating Environments/Solutions.

Wolfe provides an on-site and remote Managed Service to our clients. Service Management underpins the Wolfe Managed Service offering. The components of Managed Service are

- Baseline Stabilisation
- Service Level Management
- Enterprise Management
- 24 x 7 Help Desk (level 1 and 2 support)
- Database Administration

Wolfe's experience of managing complex environments, and of implementing Operations and Enterprise projects has allowed us to build up a wealth of knowledge and experience which is not easily attainable. In particular the combination of our Service Management, Operational and Enterprise experience allows Wolfe to design and implement iron clad Hosting and Data Centre solutions. The use of software

tools as a part of the ongoing Hosting process allows Wolfe to provide exceptional levels of service to our clients.

The benefits to businesses in outsourcing the Management of their Information Technology and communication activities include:

- Market Reach
- Optimum Time to Market
- Predictability
- Cost-effectiveness
- Increased Flexibility

Wolfe Data Centre (WDC) Highlights

- World Class Facility designed to provide maximum resilience and fail over capability.
- Twin OC3 (155MB) capable direct Internet connections supplied under contract by Cable & Wireless and NTL (both of these agreement options are in place now).
- Physically secured environment.
- Full UPS protection.
- Twin standalone generators.
- 365x24 service and management.
- Pro-active and automated process management of services
- Multi-order of magnitude scalability

The combination of the physical components, the Managed Service and the back to back SLA's, enable Wolfe to offer the Hosting service with 99.9% scheduled connectivity uptime, 15 minute response to fault and 6 hours fault to resolution.





**David Hughes**  
Chief Executive  
WorldCom

**WorldCom, a company born in the digital age, is dedicated to ensuring that its customers have the technology to succeed in the new economy. We are, after all, one of the largest and most successful communications companies in the world.**

**Our network opens the globe, touching every major financial city centre, providing customers with high-speed connectivity to 50,000 buildings.**

WorldCom's involvement in the Irish marketplace dates back to 1994, when it bought into the Irish telecommunications company, TCL Telecom. Since entering this market our commitment has accelerated reporting 177% business growth in the 1999 Fourth Quarter results, and now employing 200 people in our Dublin, Cork, Limerick and Galway offices. Our investment in the Irish marketplace has included over \$110 million invested in the network capacity servicing Ireland and the opening of our custom built headquarters and state-of-the-art technical facility in Erne Street, Dublin in January 2000.

We offer corporate and SME clients world-class voice, data and Internet products and services. However, WorldCom is more than just a voice, data and Internet provider. Our vast resources and experience in data communications and Internet operations are the building blocks for the powerful new digital economy. As a communications industry leader, we offer seamless end-to-end managed services for both emerging and established "e-companies". These services include

- Network & Access
- Hosting
- Web Solutions

Ireland has been selected as the location for one of Worldcom's world-class services centres. This International Data Centre (IDC) will provide racks, caged areas and vaults for housing and hosting services, as well as office space. With direct access to our broadband and IP networks in the major European metropolitan centres, this



IDC will support truly scalable, leading-edge network solutions. The IDC expansion plan complements our recently announced sweeping initiative to extend network, access and Web hosting services to facilitate e-business around the world.

Every day WorldCom empowers its customers to conduct business better and faster.

Whatever services you ask us to provide, you can relax in the knowledge that you have chosen a strong communications partner who takes the time to understand your business and provides you with the best package of services and support, tailored to your exact needs.... and helps you thrive in the new economy.

#### **WorldCom - entrepreneurs get it**

For further information please contact:

#### **Ciara Power**

#### **WorldCom Ireland**

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#### **WorldCom**

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Blackrock  
Co Cork  
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Fax: 021 451 5510

#### **Limerick**

International Business Centre  
Block 2  
National Technological Park  
Limerick  
Tel: 061 335222  
Fax: 061 335270

#### **Galway**

WorldCom House  
Ballybrit Business Park  
Galway  
Tel: 091 773864  
Fax: 061 335270

## 7.18 360networks

360networks is a world-class developer of high-speed high-capacity broadband networks. Through our predecessor companies, we have been designing, engineering and constructing fiber optic communications networks since 1988.

Using low-cost, state of the art technologies and consistent network architecture, our networks are designed to meet increasing global demand for fiber optic capacity and related network services to transmit high-bandwidth data, video and voice. Our customer base includes telecommunication carriers, Internet service providers, application service providers and large organizations with enterprise network requirements.

360networks is currently developing one of the worlds most extensive, technologically advanced fiber optic networks. By the end of 2001, this



network will consist of approximately 90,300 kilometers (56,100 miles) of fiber optic cable, linking major international cities through terrestrial networks in North America and Europe and undersea cables linking North America, Asia, Europe and South America.

### Current Network Development

Region	Final Network Coverage	Comments	Connectivity & System Capacity	Completion Date
North America	24,100 miles	12,400 miles completed to date	Seamless connectivity between 50 major cities	Q1 2001
Europe	10,600 miles	4,900 miles completed to date	Connectivity between 11 countries & 35 major cities	Q3 2001
360atlantic (transatlantic cable)	7,600 miles Cable landing in Dublin	Uses the latest in upgradeable fiber optic technology 4-fiber pair, bi-directional line switched ring	10 Gbs per second transmission & 1.92 terabits per second capacity	Q1 2001
South Atlantic	14,000 miles		1.28 terabits per second	Q2 2001
Asia	JV with C2C (Sing Tel)		7.5 terabits per second	Q4 2001

To achieve our vision of one seamless network around the world, we are already planning future fiber optic networks. These include the development of terrestrial networks in South America and Asia, as well as undersea cables linking Asia and North America.

#### Further information:

360atlantic: Using the latest in upgradeable fiber optic technology, this self-healing "ring" will connect landing sites in Boston, Halifax, Dublin and Liverpool providing direct connectivity to major gateway cities in Europe and North America, including London and New York. The self-healing ring provides internal restoration in the event of link outage.

South Atlantic: The primary undersea cable will connect landing sites in New Jersey, Bermuda, Brazil, Venezuela and Florida. Upon completion this network will provide direct connectivity between major cities throughout North and South America.

Asia: In a strategic relationship with C2C - a subsidiary of Singapore Telecommunications - 360networks is jointly developing a diversified undersea network linking Japan, South Korea, Taiwan, the Philippines, Hong Kong, Singapore and, subject to regulatory approval, China. It will be the most extensive in the region and have ultimate capacity of 7.5 terabits per second by the fourth quarter of 2001. 360networks will also have capacity on fiber optic networks from landing sites on the C2C network to points of presence (POPs) in major Asian cities.

#### 360networks in Ireland:

Our facility in Clonsaugh, Dublin will provide

- Resilient broadband with International connectivity at Ireland's doorstep
- State of the Art, secure hosting/co-location services (165,000 square feet)
  - High level security
  - Guaranteed network resilience
  - Reliable and redundant power source
  - Controlled environmental conditions
  - High QoS at an attractive price
  - Availability of large bandwidth
  - Access to diverse fiber networks

#### "CONNECTING IRELAND TO THE WORLD"

#### Contacts:

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### **Budget Telecom**

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### **Cable and Wireless Ltd**

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### **Esat Telecom**

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### **Formus Broadband**

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### **GTS**

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### **Interoute Ireland t/a Spirit**

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**OCEAN Communications Ltd**

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**PSINet Transaction Solutions**

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**Switchcom**

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### Network International Cargo

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## Stockbrokers

### **Goodbody Stockbrokers**

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### **Data Electronics Group Ltd**

Providers of co-location services.  
Please see advertorial in Section 7.4.

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### GoldenCommunications

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Golden Communications provides copywriting, research and public relations services to international communications companies and publications.

### Jupiter Communications

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Provider of low cost telecommunications services to the small and medium sized business sector.

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PwC help clients to harness the opportunities of the eBusiness age while minimising the risks associated with operating on a global basis. Services include Network Penetration Testing (ethical hacking), Public Key Infrastructure Consultancy, Global Certification Authority Services, Operational Resilience and eBusiness Security Infrastructure Design.

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### **Telecommunications and Internet Federation**

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## Internet Service Providers

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### **Esat Net (IOL/PostGEM)**

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### **Eurokom**

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### **VIANET.works (MediaNet/Club Internet)**

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# 9

## Glossary of Telecommunications Terms

<b>ADSL</b>	Asymmetric Digital Subscriber Line. Access technology over the ordinary telephone copper cables that allows a maximum of 8 Mbit/s downstream towards the user and 640 kbit/s upstream.
<b>Analogue</b>	An electrical signal in which the voltage continuously varies. Easily susceptible to interference and degrades in quality as the signal is boosted and re-amplified.
<b>ASP</b>	Application Service Provider. A company that offers individuals or enterprises access over the Internet to application programs and related services that would otherwise have to be located in their own personal or enterprise computers.
<b>Asynchronous</b>	A method of transmitting data where each character is sent separately.
<b>ATM</b>	Asynchronous Transfer Mode - ATM is a fast switching and multiplexing technique that allows voice, data, audio, video and other kinds of telecommunications traffic to be carried on the same network.
<b>Authentication</b>	Authentication on the Internet can, for example, be performed using digital certificates issued and verified by a Certificate Authority (CA) as part of a Public Key Infrastructure (PKI.)
<b>B2B</b>	Business-to-Business, a subset of e-commerce, is the exchange of products, services or information between businesses.
<b>B2C</b>	Business-to-Consumer, a subset of e-commerce, is the electronic trading between business and consumer.
<b>Backbone Network</b>	A high-capacity network that links together other networks of lower capacity, usually local area networks.
<b>Bandwidth</b>	Also known as 'capacity'. In simple terms, how much information or traffic can be carried on the telecoms infrastructure in a given amount of time. The simple rule is that the greater the bandwidth, the greater the opportunities for commerce. As a specific example; with low bandwidth, transferring the contents of a music CD via the internet is not feasible; with higher bandwidth, it is entirely feasible.
<b>Bits per second (bit/s)</b>	A 'bit' is a unit of information. The speed of a communications link is often represented as bits per second. 1 Mbit/s is a million bits per second

<b>BRA</b>	Basic Rate Access: ISDN Line consisting of two channels and a slow-speed data channel 2B+D.
<b>Broadband</b>	A high-speed telecommunications link, allowing transmission at 2 Mbit/s or higher.
<b>Browser</b>	A program used to access the World Wide Web.
<b>Cable Modem</b>	A device that enables you to connect your PC to a Cable TV line and receive data at high speeds. A Cable Modem can be added or integrated with a set-top box that provides your TV set with channels for Internet access.
<b>CAD</b>	Computer Aided Design: using computers to aid the design and drafting process.
<b>CAD/CAM</b>	Computer Aided Design/Computer Aided Manufacture: integrating CAD information in the manufacturing process.
<b>CATV</b>	Community Antenna TV: a type of cable TV system; shorthand for all cable systems.
<b>CD-ROM</b>	Compact Disc with Read Only Memory; compatible with computers, compact discs are inexpensive, high-capacity storage devices for data, text and video.
<b>Cellular</b>	Cellular, and specifically cellular technology, refers to communications systems, especially the Advance Mobile Phone Service (AMPS), that divide a geographic region into sections, called cells.
<b>CLI</b>	Calling Line Identity. A facility that allows the telephone number of the calling party to be displayed on the recipient's phone equipment before the call is answered.
<b>Co-location</b>	The sharing between communications operators of the use of physical infrastructures, e.g. local exchange buildings and ducts, for the purposes of providing communications services.
<b>Connectivity</b>	A term for the quality and quantity of connections between communications networks.
<b>Convergence</b>	The 'coming together' of formerly distinct technologies, industries or activities; the most common usage refers to the convergence of computing, communications and broadcasting technologies.
<b>CPE</b>	Customer Premises Equipment. Anything that the telecommunications subscriber attaches to their telephone line, e.g. Fax, answering machine, etc.



<b>CRM</b>	Customer Relationship Management. The art and science of acquiring, retaining, and growing profitable customer relationships. The products and solutions that make up the CRM industry include: Sales force automation solutions, call centre products, marketing automation applications, automated support products and other customer contact solutions.
<b>CTI</b>	Computer Telephone Integration. Used to describe the marriage of any telephone function with computer control: Voice Response, Predictive Dialling, Call Centre scripting and such like.
<b>Data Centre</b>	A Data Centre provides facilities for co-location, Web and server hosting, network and support services.
<b>DECT</b>	Digital Enhanced Cordless Telephony. Provides good call security to cordless phones. Digital Information expressed in binary patterns of ones and zeros.
<b>Digital</b>	Information expressed in binary patterns of ones and zeros.
<b>Digital Certificate</b>	A digital certificate is an electronic "credit card" that establishes your credentials when doing business or other transactions on the Web. It is issued by a certification authority (CA).
<b>Digital Signature</b>	A digital signature (not to be confused with a digital certificate) is an electronic rather than a written signature that can be used by someone to authenticate the identity of the sender of a message or of the signer of a document. It can also be used to ensure that the original content of the message or document that has been conveyed is unchanged.
<b>DSL</b>	Digital Subscriber Line. See 'xDSL'.
<b>DTMF</b>	Dual Tone Multi-Frequency. More simply described as 'tone dialling'. Each button generates a combination to two tones (high and low) and allows access to advanced network features such as Voicemail and call diversion services.
<b>DTT</b>	Digital Terrestrial Television: digital television broadcast from ground-based antennae.
<b>DTV</b>	Digital Television. The transmission of television signals using digital rather than conventional analogue methods.
<b>DWDM</b>	Dense Wavelength Division Multiplexing. A relatively new technology that allows a significant increase in the capacity of a single fibre pair.
<b>e-Business</b>	e-Business (electronic business) refers to all business processes that use Internet technology to operate more efficiently.

<b>e-Commerce</b>	e-Commerce (electronic commerce or EC) is the buying and selling of goods and services on the Internet, especially the World Wide Web. e-Commerce is one component of e-business that has the potential to involve monetary transactions.
<b>EDGE</b>	Enhanced Data rates for GSM Evolution. This will allow GSM operators to use existing GSM radio band to offer wireless multimedia IP-based services and applications at speeds of up to 384kbit/s through packet switching.
<b>EDI</b>	Electronic Data Interchange. Allows information in agreed formats to be exchanged between organisations.
<b>e-Government</b>	The use of Internet technology to transform the internal and external Government processes, the way in which the Governments work and trade, and improving access to their public services.
<b>e-mail</b>	Electronic mail. Probably the most-used feature of the Internet, it is a very cheap method of sending a message to almost anywhere world-wide. E-mail can be used to send a message, to send a document or to transfer files (attached to e-mail messages.)
<b>Encryption</b>	Encryption is the conversion of data into a form, called a cipher, which cannot be easily understood by unauthorized people.
<b>FDDI</b>	Fibre Distributed Data Interface. A high-speed backbone for mission-critical and high traffic networks. It can transport data at a rate of 100 megabits per second, and can support up to 500 stations on a single network. FDDI was designed to run through fibre cables, transmitting light pulses to convey information between stations, but it can also run on copper using electrical signals.
<b>Fibre Optic</b>	A modern transmission technology using lasers to produce a beam of light that can be modulated to carry large amounts of information through fine glass or acrylic fibres.
<b>Frame Relay</b>	Frame relay is appropriate for organisations with bursty data, three or more locations, and mid- to high-bandwidth needs. It is a form of data networking based on packet switching, and accommodates applications such as wide area interconnection of LANs at 56kps and 1.544 Mbps. Voice services using Frame Relay are available, and still under development. Although Frame Relay is quite popular today, it is gradually being replaced by faster technologies, such as ATM.
<b>Gigabit</b>	A Gigabit (Gbit) is one thousand Megabits (109) bits.

<b>GIS</b>	Geographical Information Systems are an integrated set of software tools for the collection storage, integration and analysis of geographically located data. They are of increasing use in geographical research for the testing of theoretical developments concerning the development of spatial patterns in medical geography, social and economic geography and in geographical aspects of resource management.
<b>GPRS</b>	General Packet Radio Service. Offers a fast (up to 115kbit/s) connection for the transmission of data to the mobile phone. GPRS, which supports a wide range of bandwidths, is an efficient use of limited bandwidth and is particularly suited for sending and receiving small bursts of data, such as e-mail and Web browsing, as well as large volumes of data
<b>GSM</b>	Global System for Mobile. A digital two-way cellular system developed in Europe and launched in 1991.
<b>HDSL</b>	High-Speed Digital Subscriber Line, access technology that allows two-way transport up to 2 Mbit/s over 2 or 3 twisted pair copper cables.
<b>Hosting</b>	Hosting, also known as Web site hosting, Web hosting, and Web hosting is the business of housing, serving, and maintaining files for one or more Web sites. More important than the computer space that is provided for Web site files is the fast connection to the Internet.
<b>HSCSD</b>	High Speed Circuit Switched Data. A mobile network technology that offers data rates of up to 57.7 kbit/s.
<b>ICT</b>	Information and Communication Technology.
<b>IN</b>	Intelligent Network. A network offering high levels of sophistication, and capable of identifying the profile of its users or subscribers. IN will allow for seamless integration of the different technologies.
<b>Interconnection</b>	The physical and logical linking of telecommunications networks in order to allow the users of one network to communicate with users of another network. Interconnection costs refer to the payments made by a telecommunications network operator to another operator to carry traffic to and from customers on their behalf.
<b>Internet</b>	The interactive global network linking millions of computers, transmitting, storing and providing information for users.

<b>ISP</b>	Internet Service Provider. Organisations that provide individuals and businesses with access to the Internet, (including commercial web sites). ISPs may be wholesalers or retailers or both. A wholesaler normally resells bandwidth and certain other services to smaller ISPs who act as retailers. The most significant component of the sale price is the amount of bandwidth purchased.
<b>IP</b>	Internet Protocol. IP forms the basis for a connectionless packet delivery service. New cellular services like GPRS will make use of IP to provide an always-on Internet and email connection.
<b>ISDN</b>	Integrated Services Digital Network. Usually offered in two forms – Basic ISDN (2 x 64kbit/s channels) and the faster Primary ISDN (30 x 64kbit/s channels).
<b>LAN</b>	Local Area Network: A high-speed communications system designed to link computers and other data processing devices within a small geographic area.
<b>Leased Line</b>	A leased line is a telephone line that has been leased for private use. In some contexts, it's called a dedicated line. A leased line is usually contrasted with a switched line or dial-up line. Typically, large companies rent leased lines from the telecoms operators to interconnect different geographic locations in their company. The alternative is to buy and maintain their own private lines or, increasingly, to use the public switched lines with secure message protocols.
<b>LLU</b>	Local Loop Unbundling. Allows other telecommunications companies and service providers access to the former incumbent's local network and provide services directly to the customer.
<b>LMDS</b>	Local Multipoint Distribution System. A system for broadband microwave wireless transmission direct from a local antenna to homes and businesses within a line-of-sight radius bringing high-bandwidth services to users.
<b>Local Loop</b>	The physical wires, usually copper, that run from a customer's site to their telecommunications company's local switch or exchange.
<b>Long-Run Incremental Costs</b>	These are the additional costs (per unit) that a telecommunications operator incurs in carrying out a particular activity on a long term basis.
<b>MAN</b>	Metropolitan Area Network: a high-speed digital network, which allows the sharing of voice and data communications over a relatively large area, within a city.

<b>m-Commerce</b>	m-Commerce (mobile commerce) is the buying and selling of goods and services through wireless handheld devices such as cellular. Known as next-generation e-commerce, m-commerce enables users to make transactions through the Internet 'on the go'.
<b>MMDS</b>	Multi-channel Microwave Distribution System: an analogue broadcasting medium which allows distribution of a number of analogue television channels (typically ten). Used to provide 'cable television' in areas where cable-laying is not viable.
<b>Modem</b>	Short for 'mo(dulator)/dem(odulator)', a device that translates the digital signal from a computer into analogue signals that can travel over a standard telephone line.
<b>Multiplexer</b>	A device that can combine and reformat different signal streams over a single line. A similar device at the receiving end unscrambles the stream back to its component parts.
<b>ONP</b>	Open Network Provision: a European Commission policy initiative to provide open access to the networks of dominant telecommunications operators.
<b>Packet Switching</b>	Refers to protocols in which messages are divided into packets before they are sent. Each packet is then transmitted individually and can even follow different routes to its destination. Once all the packets forming a message arrive at the destination, they are recompiled into the original message.
<b>PC</b>	Personal Computer.
<b>Peering</b>	Arrangements made between Internet Service Providers and Internet Exchange Administrators for the exchange of data traffic at Internet exchanges.
<b>Petabit</b>	A petabit is one quadrillion (10 <sup>15</sup> ) bits and is used in discussing possible volumes of data traffic per second in a large telecommunications network. A petabit is one thousand terabits. Petabits per second can be shortened to Pbit/s.
<b>PDH</b>	Plesiochronous Digital Hierarchy. Legacy technology used in the backbone network. Traditionally used to link every local exchange in the country for voice, but not well suited for the provision of broadband services. PDH is being phased out and replaced by SDH.

<b>PKI</b>	A PKI (public key infrastructure) enables users of a public network such as the Internet to securely and privately exchange data and money through the use of a public and a private cryptographic key pair that is obtained and shared through a trusted authority
<b>Point of Presence (PoP)</b>	A point at which one network operator can hand traffic onto the network of another.
<b>Port</b>	A connector on a computer to which peripheral devices, such as a printer or modem, are attached. Typically, these are serial ports, parallel ports and modem ports.
<b>Portal</b>	Portal is a new term, generally synonymous with gateway, for a World Wide Web site that is or proposes to be a major starting site for users when they get connected to the Web or that users tend to visit as an anchor site. A vertical portal is a Web site that provides a portal to information related to a particular industry, such as health care, insurance, automobiles, or food manufacturing.
<b>POTS</b>	Plain Old/Post Office Telephone Service.
<b>PRA</b>	Primary Rate Access. ISDN line consisting of 30 channels of 64kbit/s.
<b>Protocol</b>	A standard procedure for regulating data transmission between computers.
<b>PSTN</b>	Public Switched Telephone Network. Traditional telephone system over a copper pair, carrying voice at 64 kbit/s and data at up to 56 kbit/s.
<b>Server Hosting</b>	Businesses can use the facilities of a third party to supply their server needs. The business therefore does not have the expense of supplying the hardware or the overhead of maintenance.
<b>SDH</b>	Synchronous Digital Hierarchy - a standard for high capacity transmission. Designed with ATM in mind, SDH has many advantages over previous transmission technologies (such as PDH) including flexibility in managing the transmission, reconfiguration and control and switching at data rates to 622Mbit/s and beyond.
<b>Server</b>	A node that permits other nodes on the LAN to access its resources. The server may be dedicated, in which case this is its sole function, or non-dedicated, where the node can be used in other ways, such as a workstation.
<b>Set Top Box</b>	A device that enables a television set to become a user interface to the Internet and also enables a television set to receive and decode digital television (DTV) broadcasts.

<b>SLA</b>	Service Level Agreement. An agreement between the service provider and customer that defines and guarantees the way in which the services have to be provided, and the level of the services. Typical parameters in an SLA area availability, latency, lead times to delivery of circuits, liability, security, etc.
<b>SMDS</b>	Switched Multimegabit Data Service: high-speed switched data service, used in broadband backbone networks.
<b>SME</b>	Small and Medium sized Enterprise.
<b>t-Commerce</b>	Use of the television set to conduct e-commerce.
<b>Telehousing</b>	Telehousing is the locating of servers at a dedicated facility designed with resources which include a secured premises, regulated power, dedicated Internet connection, security and support.
<b>Terabit</b>	In measuring data transmission speed, a terabit is one trillion bits (10 <sup>12</sup> bits.)
<b>Third Generation Mobile Services</b>	The third generation of mobile telephony (known as Universal Mobile Telecommunications Service), designed to be a worldwide broadband, digital system. See 'UMTS'.
<b>TO</b>	Telecommunications Operator: term used to describe both a national dominant supplier of public telecoms services and infrastructure and a private company operating public telecoms services and infrastructure, nationally or locally, either as a concessionary monopoly or in competition with others.
<b>UMTS</b>	Universal Mobile Telephone Service is a Third Generation (3G) mobile system being developed by ETSI™ within the (International Telecommunications Union) ITU's IMT-2000 framework. UMTS is a European System, which is attempting to combine cellular, cordless, low-end wireless, local area network, private mobile radio, and paging system. It will provide data speeds of up to 2Mbps, making portable videophones a reality.
<b>Videoconferencing</b>	Video and audio communication between two or more parties via a video-codec (coder/decoder) at either end linked by digital circuits. Formerly needing in excess of 300Mbit/s bandwidth, systems are now available offering acceptable quality for general user at 128kbit/s and high-quality 7kHz audio.

<b>Virtual Circuit</b>	A link that seems and behaves like a dedicated point-to-point line or a system that delivers packets in sequence, as happens on an actual point-to-point network. In reality, the data is sent delivered across a network via the most appropriate route. The sending and receiving devices do not need to be aware of the options and the route is chosen only when a message is sent. There is no prearrangement, so each virtual connection exists only for that one transmission.
<b>VPN</b>	Virtual Private Network. The provision of private voice and data networking from the public switched network through advanced public switches. The network connection appears to the user as an end-to-end nailed-up circuit without actually involving a permanent physical connection, as in the case of leased line. VPNs retain the advantages of private networks but add benefits like capacity on demand.
<b>VSAT</b>	Very Small Aperture Terminals: Suitable for point-to-multipoint applications such as transmission of voice and data from head office to branch office providing bandwidth from 9.6Kbit/s up to 45 Mbit/s.
<b>WAN</b>	Wide Area Network. A computer network capable of transmitting data over large geographic areas.
<b>WAP</b>	Wireless Access Protocol. A technology which will allow your mobile phone to browse the Web. It is a protocol for the transmission of data over low bandwidth wireless networks.
<b>Web Hosting</b>	Web hosting is a turnkey service providing businesses with a Web site and a complete Internet suite of applications, including E-mail, Intranet and search engines.
<b>WLL</b>	WLL - Wireless Local Loop. Provides access to a customer's premises over a wireless link. WLL provides an access alternative to the copper local loop network.
<b>WWW</b>	World-Wide Web - the system that links topics on the Internet, making it easy for users to find what they want.
<b>xDSL</b>	An umbrella term for the next generation of dedicated subscriber line technologies which allows high speed broadband communications over existing copper wires.



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