

# CONDITIONS FOR THE DEVELOPMENT OF NEW WAYS OF WORKING AND ELECTRONIC COMMERCE in IRELAND

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# 1 INTRODUCTION

## 1.1 *Significance of the Report*

The analysis of trends and developments in teleworking throughout Europe last occurred in 1994 (TELDET<sup>1</sup>). The current report is based on the results of a more recent benchmarking exercise (ECaTT - Benchmarking progress on Electronic Commerce and Teleworking Trends); the scope of which has been extended to include ecommerce as well as teleworking. ECaTT presents important information from decision-makers in companies across Europe and from the general population in ten member states. This information relates to the extent of the adoption of ecommerce and teleworking and the perceived impact and potential consequences. Simultaneously member states carried out case studies illustrating examples of different types of teleworking and electronic commerce, such as teleworking in virtual organisations and on-line banking as an example of electronic commerce.

This report presents the results from the Irish part of this research and places them in the context of recent policy and infrastructural developments, which may support these two leading edge applications of the Information Society. It then draws conclusions about the status of e-commerce and teleworking in Ireland and makes recommendations about their future development.

The report should be of interest to all policy makers in the area, as it provides the largest and most comprehensive survey of e-commerce and teleworking yet undertaken in Ireland. In addition, practitioners of teleworking and e-commerce, companies who may intend implementing teleworking or e-commerce initiatives, and suppliers of teleworking or e-commerce solutions will find material of relevance in this report.

## 1.2 *Aims of the report*

The objectives of this report are to:

- Describe the current situation of teleworking and ecommerce in Ireland, including both existing and projected levels of take-up and the conditions for their further diffusion and take-up as reflected in national policy and other initiatives.
- Make recommendations for further policy and other initiatives that would help to reduce barriers and accelerate the diffusion and take-up of teleworking and ecommerce so that the associated economic and social benefits can be achieved.

The report is based on the Irish contribution to the EU-wide ECaTT study. It represents a landmark in the benchmarking of the information society, teleworking, and ecommerce developments in Ireland. It provides, for the first time:

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<sup>1</sup> Telework Developments & Trends: A compilation of information on telework: case studies and trend analysis

- Representative data on existing and projected levels of usage by individuals and companies, in a format that is directly comparable with each of the other countries in the EU
- A synthesis and analysis of all the main policy and other initiatives that relate to the development of the information society, teleworking and ecommerce
- Recommendations for further policy and other initiatives to help Ireland maintain and advance its position Vis a Vis our European partners and better achieve the economic and social benefits in these areas.

### **1.3 Short account of ECaTT**

Against this background, the ECaTT project evolved with the following aims:

1. to make available representative, reliable and comparable data and information on the diffusion of new ways of working (telework) and electronic commerce, categorised according to the main EU countries, sector, size of establishment, types of employees and types of household, etc;
2. to develop an inventory of service provision and demand factors of electronic commerce on a representative, empirical basis, which can be updated regularly, so that current data relating to level of knowledge, practice, interest and potential of the different forms of electronic commerce and new ways of working can be made available;
3. to carry out a representative analysis of current obstacles to electronic commerce and telework from the viewpoint of decision makers in business;
4. to produce an analysis of the potential of electronic commerce and telework with projections of developments to the year 2005;
5. to carry out a comparison between developments in Europe and in the USA which in many respects are looked upon as the leaders in the fields of electronic commerce and telework;
6. to derive an understanding of conditions for the diffusion of electronic commerce and telework, which can be influenced by political or business action, while considering the differences between countries.

### **1.4 Approach and methods**

ECaTT was conceived as an "observatory project" which should be repeated annually in order to give reliable trend information together with a regularly updated market overview. The European Commission within the framework of the ESPRIT programme and the ACTS programme financially supports the ECaTT project.

The data and analysis presented in this report is based on a common, European-wide benchmarking approach developed within the ECaTT initiative. Four main methods were used in ECaTT:

- Representative surveys of the general population in all 10 countries
- Representative surveys of decision-makers in companies in all 10 countries
- Case studies of leading edge examples of telework and electronic commerce in almost all members states

- Documenting and analysis of policy and other initiatives that provide the background conditions in almost all member states.

The result has been a unique picture and benchmarking of the overall European situation and the relative positions of each of the 10 countries. Comparative data has also been compiled for the US and Japan, enabling assessment of the global position as well.

The representative Irish samples covered 547 members of the general population and 374 business decision-makers.

### ***1.5 Areas and issues covered by the report***

This report reviews policy initiatives in the area of telework and new forms of business. It highlights the main findings from the ECaTT project and contrasts government policy with practice in Ireland, for example:

- ‘ Recent public and private sector initiatives
- ‘ Telecommunications - current situation, policy developments and initiatives
- ‘ Implementing telework - the barriers
- ‘ Demand side of telework
- ‘ Usage of ICT in Ireland
- ‘ How the public uses on-line services in relation to e-commerce
- ‘ Data exchange with suppliers/customers, and
- ‘ Irish companies and uses of e-commerce

Finally, conclusions and recommendations are proposed for both telework and electronic commerce.

## 2 POLICY BACKGROUND IN IRELAND ON TELEWORKING AND ECOMMERCE

The development of the information society represents a major strand in government policy. It aims to help Ireland become an important international centre for electronic commerce and the Internet. To facilitate this aim a number of policies and other initiatives have been implemented and these are described and discussed in this chapter. The fact that there are a number of high-level initiatives, reporting in some instances to the Taoiseach (Prime Minister), is testimony to the government's commitment to making Ireland an international information technology and communications centre for new forms of working arrangement and new forms of business.

### 2.1 Policy on telework

Up until quite recently, there was no explicit national policy regarding the development of teleworking in Ireland and it appears that 'Ireland does not as yet have a culture of telework-centred organisations'<sup>2</sup>. Teleworking occurs predominantly on an ad hoc informal basis with few large companies having a formal policy in place<sup>3</sup>. In the early nineties the main focus of policy interest in areas related to teleworking concerned the attraction of back-office, satellite or off-shore operations to Ireland in support of economic development, job creation and, to a certain extent, rural development.

During this period, government policy on job creation identified telemarketing and telephone-based technical support as one of its major target sectors for job creation. In conjunction with the Industrial Development Authority, the government embarked on a three-year job creation programme. By 1992 2,000<sup>4</sup> new jobs were created in this sector. In addition to job creation, the programme established sixteen internationally traded service companies using satellite offices to provide offshore telemarketing and tele-services. Growth has been particularly impressive in internationally traded services. This growth led The National Advisory Council on Teleworking in 1999 to conclude that internationally traded services represent 'the core of opportunity in teleworking'<sup>5</sup>.

At a rural level, a number of telecottage initiatives were developed, often in the context of various EU programmes such as, Telematique, LEADER and NOW and these helped to bring an awareness of information and communication technologies to rural areas. Overall, however, there was very little awareness of the wider concept of teleworking amongst government departments, employer bodies, trade unions, and the public.

### National Advisory Council on Teleworking

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<sup>2</sup> "New Ways of Living and Working: Teleworking in Ireland"., (June 1999), Report of the National Advisory Council on Teleworking to the Minister for Science, Technology and Commerce, Brunswick Press Limited, Ireland, page 21

<sup>3</sup> MAST Survey Findings, ADAPT Programme, September 1998, The Work Research Centre Ltd.

<sup>4</sup> Korte, W.B., Wynne, R., (1996) "Telework: Penetration, Potential and Practice in Europe", European Commission DG X III-8, IOS Press, Ohmsha, page 97

<sup>5</sup> "New Ways of Living and Working: Teleworking in Ireland"., (June 1999), Report of the National Advisory Council on Teleworking to the Minister for Science, Technology and Commerce, Brunswick Press Limited, Ireland, page 42

By 1998, explicit government action on teleworking was formalised with the establishment of the National Advisory Council on Teleworking (NACT). The Council was charged with 'advising the government on the development of teleworking employment opportunities in Ireland and recommending attainable actions to contribute to the realisation of those opportunities'<sup>6</sup>.

Its objectives were threefold, as follows:

1. to create awareness of teleworking,
2. to recommend actions for increasing awareness of teleworking, to encourage education and training, and to promote teleworking as a viable business and job creation solution, and finally
3. to produce a Code of Practice for Teleworking in Ireland.

At the end of the NACT's tenure it published a report in June 1999<sup>7</sup> that outlined a strategy for action to promote teleworking under four action areas: Awareness, Developing Employment Opportunities, Training, Education & Support and Fiscal Environment. Under the Awareness Action is drew up a Code of Practice for Teleworking in Ireland. (See Box 1) It is hoped that companies will adopt the NACT's Code of Practice as part of best practice procedures in implementing teleworking arrangements.

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<sup>6</sup> "New Ways of Living and Working: Teleworking in Ireland"., (June 1999), Report of the National Advisory Council on Teleworking to the Minister for Science, Technology and Commerce, Brunswick Press Limited, Ireland, page 7

<sup>7</sup> "New Ways of Living and Working: Teleworking in Ireland"., (June 1999), Report of the National Advisory Council on Teleworking to the Minister for Science, Technology and Commerce, Brunswick Press Limited, Ireland

## **STRATEGY FOR ACTION**

### **Four Action Areas: Awareness, Developing Employment Opportunities, Training, Education & Support, and Fiscal**

#### ***Action Area 1: Awareness***

- Initiate a Government awareness campaign
  - National media campaign to promote teleworking
  - Provision of support structures
    - Practical assistance and dissemination of information to industry and employees
    - Support mechanisms at local, regional and national levels and on the Internet
    - Support for managers
    - Promotion of the Code of Practice for teleworking (Annex 1)

Formation of a Government teleworking policy

- This requires all Departments to introduce teleworking options into their mainstream working and to provide a status report on progress in their annual general reports
- All publicly funded organisations are required to formulate a teleworking policy option, to include benchmarking criteria that will enable a minimum of 10% of all employees to become involved in teleworking
- Endorsement and adoption of the Code of Practice for Teleworking (Refer to Annex 1)
  - Take the necessary steps to have the Code of Practice endorsed and adopted by the social partners.

#### ***Action Area 2: Developing employment opportunities***

- Establishment of new business models
  - Pilot teleworking initiatives to be funded as demonstrations
  - A central resource and database of available Irish teleworking skills and services to be developed for the Web, and properly staffed, maintained, and promoted
  - An international promotional campaign to promote Ireland as a source of tradable skills
  - Where necessary, skills be sourced from elsewhere in the EU but marketed under an Irish "brand-name"

#### ***Action Area 3: Training, education and support***

- Implementation of "telework friendly" training and education initiatives
  - Develop and implement a comprehensive education and training strategy to facilitate the adoption of teleworking
  - Set up web-based "introduction to telework" training aimed at business owners, employees, and contractors
  - Establish a research programme dealing with advanced teleworking issues such as the establishment of virtual corporations, motivation of virtual teams, transnational issues etc.

- Formation of a Telework Action Forum
  - Establish a Forum with permanent resources to ensure that all initiatives are properly managed and carried through, to include representatives from business, trade unions, government, academia, teleworkers, regional authorities and local interests

**Strategy for Action cont'd**

**Action Area 4: Fiscal and telecommunications environment**

- Make Ireland "telework friendly" from a fiscal and environmental point of view
  - Financial incentives/tax credits for setting up remote offices in low population areas
  - Financial incentives/tax credits for organisations to encourage employees to work from home or form telecentres with the aims of reducing transport congestion and pollution, increasing employment in socially disadvantaged areas, reduction of rural/urban job creation imbalances, rural re-population and renewal
  - Capital Gains Tax to be revised so as not to discourage teleworking
  - Teleworking and e-commerce services to be added to the list of services incorporated in VAT (Fourth Schedule)
  - First £5,000 of employer contribution to the costs of setting up a home worker to be exempt from benefit in kind; exempt provision of home computer from benefit in kind
  - Provide additional financial incentives to facilitate the employment of people with disabilities as teleworkers
  - Establish guidelines on home offices within planning laws
  
- Ensure that the Irish telecommunications environment facilitates the adoption of teleworking as a mainstream method of working:
  - In licensing arrangements, standardise capital costs for provision of services and infrastructure throughout the country
  - Establish flat rate calling throughout the country
  - Roll-out wideband access everywhere in the country within 3 years

In June 1999 the NACT recommended eight action points in relation to its four action areas and many of the Council's recommendations are being translated into action plans under Enterprise Ireland's National Business Teleworking Awareness Campaign for 2000. A summary of the Council's recommendations is presented below.

**Table 1 Summary of NACT Recommendations according to Action Area**

<b>SUMMARY OF NACT RECOMMENDATIONS ACCORDING TO ACTION AREA</b>
<b>ACTION AREA: AWARENESS</b>
• The initiation of a Government Awareness Campaign
• The formation of a Government Teleworking Policy
• Endorsement and adoption of the Code of Practice for Teleworking
<b>ACTION AREA: DEVELOPMENT EMPLOYMENT OPPORTUNITIES</b>
• The establishment of new business models
<b>ACTION AREA: TRAINING, EDUCATION AND SUPPORT</b>
• The implementation of 'telework friendly' training and education initiatives
• The formation of a Teleworking Action Forum
<b>ACTION AREA: FISCAL ENVIRONMENT</b>
• That Ireland becomes 'telework friendly' from a fiscal and environment point of view
• That the Irish telecommunications environment facilitates the adoption

of teleworking as a mainstream method of working.

### **Enterprise Ireland - Business teleworking - a 3 year development strategy**

In October 1999, Enterprise Ireland under the auspices of the National Telework Forum (formerly the National Telework Advisory Council) and the European Union's Small Business Operational Programme (SBOP) launched the National Business Teleworking Awareness Campaign for 2000.

The primary goal is awareness raising and promotion of business teleworking in order to enhance business competitiveness in Ireland.

The key elements of the strategy include:

<p>National help desk tools</p> <p>Web based services</p> <p>Case studies</p> <p>Training network</p> <p>Media and Annual Review</p>	<p>Development/evaluation</p> <p>Recruitment forum</p> <p>Biannual Survey</p> <p>Branding and accreditation</p>
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### **Telework Ireland**

Telework Ireland is the Professional Association of Teleworkers in Ireland. It was established in 1993. It provides an information service to existing and potential teleworkers and telecommuters and professional consultancy to employers. The association's membership has grown to 250, including freelance teleworkers, telecommuters, individuals, and organisations with an interest in teleworking, and companies that have and / or planning to have a teleworking policy. The association maintains close links with the corporate sector, particularly with SMEs. Furthermore, it has developed a training programme in Teleworking and Software Localisation under the ADAPT Human Resources Initiative.

### **Specific telework policies**

In addition to national level policy, there have been a number of other specific teleworking initiatives, which are noteworthy. Most notable of these are EU funded initiatives under the ADAPT human resources community initiative supported by the ESF. It has funded a number of teleworking and e-commerce initiatives under the following measures:

- Measure 1 Adaptation of the workforce to industrial change
- Measure 7 Building the Information Society

The following table highlights current projects under ADAPT measures 1 and 7 relating to new forms of working arrangement and ICT.

**Table 2 Summary of ADAPT Projects and new forms of working arrangement/ICT**

<p><b>Measure 1:</b>  <b>Adaptation of the workforce to industrial change</b>  Lead Promoting Organisation: <i>Emerge</i></p>	<p><b>Project Title:</b>  <i>Flexible Working Arrangements</i></p>
<p><b>Measure 7:</b>  <b>Building the Information Society</b>  Lead Promoting Organisation:</p>	<p><i>Telework Development and Support Systems for Micro Companies in the Information Society</i></p>

<i>Telework Ireland</i>	
<b>Measure 7:</b> Lead Promoting Organisation: <i>Work Research Centre Ltd.</i>	<i>Managers in Support of Teleworking (MAST)</i>
<b>Measure 7:</b> Lead Promoting Organisation: <i>Goldenvale plc.</i>	<i>Mid Career Employees Embracing Technology</i>
<b>Measure 7:</b> Lead Promoting Organisation: <i>Magee Weaving</i>	<i>Managing Human Resources in the Implementation of Information and Communication Technologies in a Textile Company</i>
<b>Measure 7:</b> Lead Promoting Organisation: <i>Sifa Ltd</i>	<i>Using ICT to Enhance Self-Directed Team Performance and Development</i>

## **2.2 Summary of Policy on Teleworking in Ireland**

Prior to the establishment of the NACT in 1998 the government's position on teleworking was relatively silent and indeed growth in this area was impeded by a lack of organisational models of teleworking, poor data on patterns of teleworking, and little if any input into awareness raising, education and training. However, with declining connectivity charges, tightening labour markets and greater employee interest in more flexible forms of working arrangement government action has emerged under a number of forms. Firstly, in June 1998 the National Advisory Council on Teleworking was formed and after a period of one year presented eight recommendations under its four action areas. The NATC recommended the establishment of a National Telework Forum and under its auspices, Enterprise Ireland will address many of the Council's recommendations. Secondly, Enterprise Ireland's three-year development strategy continues and develops the work started by the NACT in awareness raising and promotion of business teleworking in order to enhance business competitiveness. Other actions are being continued by Telework Ireland and ESF funded initiatives under the ADAPT programme. These initiatives should help to develop a culture of telework-centred organisations within three years.

### 2.3 Policy on electronic commerce

At a policy level, e-commerce is seen to have great importance and potential for Ireland, both as an instrument of economic and regional development and for the achievement of greater social equity through the distribution of employment opportunities and improved access to Government services.

In Irish policy, e-commerce is defined in its broadest sense to include all aspects of business that take place over networks such as the Internet. It includes goods and services that are delivered over these networks, such as software and music, and goods ordered over the networks but delivered in some other way, such as personal computers. It covers the whole range of business functions required to support these activities from marketing to production to delivery and service and includes the hardware, software, content-generation, telecommunications, and support services that make all this possible.

The following Table gives an overview of the major initiatives and players in e-commerce in Ireland:

**Table 3 Overview of major initiatives and players in e-commerce**

NAME OF PLAYER	ROLE OF PLAYER In ECOMMERCE POLICY
<b>Department of the Taoiseach: Implementing the Information Society in Ireland: An Action Plan</b>	Overall responsibility and co-ordination of government efforts to develop and implement policy in e-commerce and IT. Action Plan launched in January 1999 covering communications, infrastructure, development of e-commerce and business opportunities, enabling and legislative measures, ICT and delivery of public services. <a href="http://www.irlgov.ie/taoiseach">www.irlgov.ie/taoiseach</a> Inter-departmental Implementation Group
<b>The Information Society Commission</b>	The Information Society Commission is an advisory body to Government. Its main function is to shape a public policy framework for the evolving Information Society in Ireland. The Commission also has an important role in promoting general awareness of the opportunities presented by modern information and communication technologies (ICTs). <a href="http://www.inforsocomm.ie">www.inforsocomm.ie</a>
<b>Department of Public Enterprise</b>	To develop a framework for national policy on electronic signatures, electronic contracts certification service provision and related matters. <a href="http://www.irlgov.ie/tec">www.irlgov.ie/tec</a>
<b>Department of Enterprise, Trade and Employment</b>	To support the development of e-commerce business through the various bodies in the Department, e.g. Forbairt (indigenous companies), the IDA (international companies). <a href="http://www.irlgov.ie/entemp">www.irlgov.ie/entemp</a>
<b>Department of Justice, Equality and Law Reform</b>	To develop strategies on the illegal and harmful use of the Internet. Report of the Working Group already issued (July 1998). <a href="http://www.irlgov.ie/justice">www.irlgov.ie/justice</a>

<b>Joint Ireland-US Communiqué on Electronic Commerce</b>	<p>Digital signing of an agreement which sets down common principles, which will underpin e-commerce development in Ireland and America.</p> <p>This joint communiqué outlined the role of government and the removal of unnecessary legal and regulatory barriers. In addition, Ireland endorsed the American view that the development of e-commerce should be essentially market-led and driven by private initiatives.</p>
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The government has identified five priority areas for economic development as follows:<sup>8</sup>

1. Telecommunications Infrastructure and Costs
2. Education in the use of ICTs
3. Upskilling the existing business sector
4. Effective regulation, and
5. Research and development.

Ireland has taken action in all the above areas swiftly and according to the National Competitiveness Annual Report (1999) continuous public policy action in the areas of e-commerce and technology can make a major contribution to Ireland's medium term competitiveness performance.<sup>9</sup> What is required is a multi-disciplinary approach to the challenges presented by the Information Society.

### **Recent policy initiatives**

#### **Legal Situation**

Outline legislative proposals on electronic signatures, electronic contracts, certification service provision, and related matters were published in August 1999. The following topics were covered:

Legal recognition and non-discrimination:

- Electronic and advanced electronic signatures
- Electronic writing
- Electronic contracts
- Electronic delivery
- Electronic original
- Admissibility of electronic signatures, contracts, writing and originals in legal proceedings

Provision of certification services:

- Accreditation of certification service providers
- Liability of certification service providers

Miscellaneous:

- Registration of Domain names
- Prohibition of the misuse etc. of electronic signatures
- Lawful access

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<sup>8</sup>Report of commerce: The Policy Requirements for Enterprise, Trade and Employment

<sup>9</sup> Forfas, "National Competitiveness Council, Annual Competitiveness Report 1999", p12

- Penalties.

### **Taxation**

The Irish taxation authority (Revenue Commissioners) published a report on "Electronic Commerce and the Irish Tax System" in June 1999. This was intended to inform and stimulate the national debate on the taxation implications of e-commerce. It summarises the current situation concerning taxation and provides an analysis of how the main issues are likely to progress over the next few years and of Ireland's likely preliminary position on these issues.

### **eBusiness Guides**

The state agency Enterprise Ireland has published a number of guides to eBusiness with the objective of helping Irish businesses to address the main issues that they will face when going on-line<sup>10</sup>. The topics covered are:

- Internet/Business
- eBusiness Strategy
- Email: eBusiness Tool
- Legal Issues
- Fulfilment and Logistics
- Security
- Developing a Website, and
- Marketing.

### **E-commerce corporate infrastructure programme**

The objective of this ERDF-funded programme is to support cost-effective e-commerce infrastructures by providing assistance of not more than 40% of eligible capital cost for selected projects. A list of the first projects selected for funding is contained in Annex 2.

A recent report<sup>11</sup> by the main government agency Forfas, which is the policy advisory and co-ordination board for industrial development and science and technology, examined the sectoral implications of e-commerce for Ireland and the requirements for a conducive business environment with a view to the formulation of strategies for:

- the attraction of e-commerce-related inward investment
- And the development of Irish-owned enterprise in the digital economy.

Although the report recognised that e-commerce provides both opportunities and threats, overall it is viewed as offering a new route to overcoming some of Ireland's strategic challenges, including peripheral location, the high proportion of SMEs within indigenous industry, and regional imbalances in the distribution of industry. Some particular sectoral opportunities/targets identified in the report and the more

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<sup>10</sup> <http://www.enterprise-ireland.ie/ebusiness/guides.asp>

<sup>11</sup> e-Commerce: The Policy Requirements; Forfas, July 1999

general requirements for a supportive environment are summarised in the boxes overleaf.

## Box 2 Sectoral Opportunities/Targets

Sector	Opportunity/Targets
Software	<p>Opportunity to become a major world-centre for the digital distribution of software, specifically:</p> <ul style="list-style-type: none"> <li>Management of the associated intellectual property rights, customisation, credit control, services and support</li> <li>Consolidation of software related marketing functions at present located in a number of countries into a single centre based in Ireland</li> <li>Meeting the increased outsourcing needs of companies based in Ireland and elsewhere for e-commerce-related products and services</li> </ul>
Digital content and intellectual property management	<ul style="list-style-type: none"> <li>Digital distribution of content products</li> <li>Intellectual property management (royalties, licence fees etc.)</li> <li>Electronics Hardware</li> <li>Sub-suppliers (SMEs) can link into the major supply chains using e-commerce</li> <li>Ireland could become a location for command and control centre investment</li> </ul>
Support Services	<ul style="list-style-type: none"> <li>Localisation services</li> <li>Marketing and advertising</li> <li>Graphic artists and design</li> <li>Electronic data analysis and warehousing</li> <li>Creative writing</li> <li>Internet services provision</li> <li>Specialised Software Developers</li> <li>Server farms and mirror sites</li> <li>Fulfilment and digital distribution</li> <li>Contract shared services provision</li> <li>Settlement and credit management</li> </ul> <p>Also, increased availability and competitiveness of these is needed to support the development of e-commerce more generally</p>
Food	<p>Ability to link into the supply chains of the major Irish, UK and other European multiples as e-commerce accelerates the move to "just in time" delivery.</p> <p>Global market opportunities for firms producing high-quality products at a competitive price: food producers can command a price premium if they offer full traceability on raw materials</p> <p>Sell directly to consumers over the Internet - mainly in specialist areas such as non-perishable gourmet foods and chocolates.</p> <p>Products that can be purchased in bulk, such as pet foods, will also be sold directly to consumers.</p>
Education & Training	<ul style="list-style-type: none"> <li>New digital-based education and training products</li> <li>Digital conversion of existing textbooks and other material</li> <li>Distance-education</li> </ul>
Tourism	<ul style="list-style-type: none"> <li>Market directly to tourists around the world</li> <li>Develop communities of interest in Irish tourism products.</li> </ul>
Logistics & Fulfilment	<ul style="list-style-type: none"> <li>Physical delivery</li> <li>Logistics</li> <li>Opportunities for the postal services. Small Business</li> <li>E-commerce is leading to new business opportunities for all SMEs, which account for over 99 percent of companies in Ireland. E-</li> </ul>

	commerce provides the means for overcoming disadvantages of scale and geographical position.
Electronic evidence and dispute resolution	Opportunity for Ireland to develop as an international centre for arbitration of disputes on electronic transactions.

**Box 3 Actions needed to create a favourable environment include**

TITLE	ACTION
Regulatory & legislative framework	Move ahead of other European countries, provide a clear, certain, and secure environment for electronic business.
Certification & trusted 3rd parties	<p>A draft Consultation Paper has been prepared (Outline Legislative Proposals on Electronic Signatures and Certification Service Provision, Department of Public Enterprise, April 1999). A Bill to implement its proposals is expected in the third quarter of 1999.</p> <p><i>It is recommended to:</i></p> <p>Enact legislation to ensure the legitimacy and enforceability of e-commerce contracts. The legislation should also ensure certainty on the applicable jurisdiction. Pending agreement at EU level, this legislation should be based on a contractual model, which the United Nations has developed.</p> <p>Ensure contracts made and signed electronically have the same force in law as if they had been made and signed physically.</p>
Copyright	A Copyright Bill is being prepared by the Department of Enterprise, Trade and Employment to be passed into legislation by the end of 1999. It accommodates all outstanding EU and World Trade Organisation (WTO) directives, and will provide international protection for copyright material in Ireland. Ideally, the legislation should enable the promotion of Ireland as the most secure place from which to do digital business.
Electronic contracts	<p>A Directive on certain legal aspects of electronic contracts is under discussion at EU level, but it could be 2001 before an agreed directive is implemented. Ireland should move in the interim to provide a framework of legal certainty.</p> <p><i>It is recommended to:</i></p> <p>Enact legislation to ensure the legitimacy and enforceability of e-commerce contracts. The legislation should ensure certainty on the applicable jurisdiction. Pending agreement at EU level, this legislation should be based on a contractual model, which the UN has developed.</p> <p>Ensure contracts made and signed electronically have the same force in law as if they had been made and signed physically</p>
Skills	E-commerce skills are required in key areas of management, marketing and strategic planning. A variety of content management, multimedia and design expertise is required. All disciplines should have modules that provide IT and e-commerce skills to enable graduates to work in an e-commerce environment.
Research & technological	Encourage and support e-commerce-related RTD

innovation	
VAT	Seek EU approval for services to be taxed at the VAT rate in the country in which they are consumed. Examine the issues and options relating to the development of a VAT regime in Ireland that will best facilitate the growth of e-commerce, including the option of reducing the standard rate
Performance indicators	Benchmarks must be developed to monitor e-commerce developments at enterprise sub-sector level. The objective of this work is to determine best practices and potential and to set targets for the adoption of e-commerce. Benchmarking should monitor the comparative take up of e-commerce in the enterprise sector in Ireland

### Significant private sector initiatives

#### IBEC and the Information Society Commission

IBEC (the Irish Business and Employers Confederation) and the Information Society Commission are running a nation-wide series of seminars on electronic commerce targeted at Chief Executives, IT professionals or executives involved in business strategy. Each seminar targets SMEs particularly from the services sector.

#### The Electronic Commerce Association of Ireland ECAI

The Irish EDI association, established in 1989, has evolved into the ECAI (1996). This change reflects the move away from traditional EDI to more Internet based technologies. The ECAI was established to promote an awareness of Electronic Commerce and Electronic Data Interchange and its implications for Irish business.

Nationally the ECAI provides information on e-commerce users and potential users in Ireland and operates as a general forum for companies with an interest in e-commerce issues. Internationally, it enables the Irish business community, public and private, to participate in the development of international e-commerce.

### 2.3 Educational policy regarding ICT

#### *Skills shortages*

IT skills shortages are a feature of the labour market in Europe and the USA and a pressing reality in Ireland. A recent survey of the Irish software industry<sup>12</sup> showed that 70% of companies surveyed have reported difficulties in recruiting staff with an information technology background and this was further hampered by rising wage levels. The study also found that 80% of companies said they planned to increase their IT workforce over the next year. The annual business survey undertaken by the Irish Software Association in 1998 found that shortages of technical skills are affecting up to 85% of software companies, in particular in companies employing more than 50 people. Many of these companies plan to increase employment here by 25% over the next year. However, 28% of those surveyed (46% of companies employing more than 50 people) stated that recruitment was a primary restraint on growth. The Information Society Commission also published a survey in late 1998 which found that only 30% of large companies believe that staff with IT skills are easily available, compared to nearly three-quarters in 1996. The report of the Expert Group on Future Skills Needs found that there is a shortfall of 2,000 software workers each year. The

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Carried out by CSR, a recruitment agency specialising in IT staff.

labour shortage is such that Ireland is now the third largest employer of French men after Britain and Germany, with hundreds of computer graduates coming to Ireland to find work according to the latest French State agency figures.

The shortage of software and electronics engineers may be associated with an apparent lack of linkage between industry and education. The National Software Directorate suggests that if there is a sufficient number of graduates, the industry will employ well over 20,000 people by the year 2000. However, there are insufficient places available at third level to meet this demand. In 1996, 2,600 Leaving Certificate students chose Computer Studies as their first preference on CAO applications but only half of these got places. Concerns such as these led to the creation of a further 2000 places on computer programming and technical courses in 1997. A pilot scheme for the recruitment and training of 300 technicians for the high technology industry has also been implemented by the Dept. of Education. Successful participants of this pilot programme will be awarded a National Certificate in Technology.

The Report of the Expert Group on Future Skills Needs has quantified the future skill requirements of the IT sector until 2003. It concluded that an extra 2,200 technical specialists would be needed in each of the next five years. This is on top of the 6,100 people with engineering and computer qualifications who enter the jobs market each year. The report predicts that a further 900 engineering, computer professionals, and 1,300 technicians in the same areas will be needed each year until 2003. The report suggested that among other measures which could offset this shortfall were the up-skilling of existing employees in the IT sector. Another recommendation was an investigation of the high dropout rate from technical courses (35% non-completion rate). Furthermore, it recommended that efforts be made to entice many skilled and qualified Irish people working abroad in this sector to return to Ireland. To this end, 'Opportunity Ireland' was launched in early 1998. Its aim is to encourage 5,000 skilled software and electronics professionals to return to Ireland over the coming three years.

### **Educational initiatives**

In addition to investments in ICT infrastructure, the government has also allocated IRE365 million to various educational initiatives aimed at improving innovation and boosting the skill pool. The educational initiatives include the following:

1. Over the next 4 years, IRE75 million will be available to create an additional 5,400 new third level college places in high technology courses.
2. Over a 3 year period, IRE250 million (The Technology Investment Fund) will be available to 'renew and modernise third level infrastructure'
3. 'The Schools IT initiative, under which the Government is investing IRE40 million aims to facilitate the integration of ICTs into Ireland's schools, including the provision of hardware and support services in schools and skills development for teachers.'

### **Training of existing workers**

The Information Society Commission survey (1998) found that, while 85% of companies said that they expected their workers to be able to use a PC, a third admitted that they gave their staff no IT training. Furthermore, where 88% of

companies said that they believed that their staff needed regular re-training only 13% actually provide frequent training.

#### *Training for the unemployed*

Recently a joint government/industry venture has been set up with the aim of providing training in IT skills for 3,500 long-term unemployed people.

#### *Other initiatives*

FAS and Enterprise Ireland have also been actively spreading 'the e-commerce gospel'. FAS plans to spend IR£3.2 million on the provision of Electronic and Software Courses in this year alone. Enterprise Ireland will spend IR£2 million per annum assisting indigenous firms 'to adapt their management and business processes to on-line trading conditions'.

Universities and colleges have also responded in various ways to the new demands of the information society and ecommerce, for example, the National College of Ireland (see Box overleaf).

#### Box 4 E-commerce in under-graduate programmes

Certain private initiatives, stemming from government policy, are already taking place; for example, NCI - The National College of Ireland - has set up an Electronic Advisory Group 'to help the college identify opportunities and initiatives that will enable the college to become a leader in this area'. The Advisory Group is made up of leading experts in business and education and, to date, has recommended the following actions:

### **ELECTRONIC COMMERCE in UNDERGRADUATE PROGRAMMES**

From 1999, all undergraduate students will participate in a series of lectures on electronic commerce. The aim is to expose all studies to e-commerce and 'to stimulate students to think of e-commerce business ideas that they might develop to commercial exploitation'.<sup>13</sup>

The following areas will be included in the lecture series:

- The Building Blocks of E-commerce
- Characteristics of the Digital Economy
- Successful Web-based Company Case Studies
- Principles of Web-based Successful Companies
- The one-to-one Enterprise

In addition to the above initiative, NCI is also offering an on-line course targeted at managers (NCI On-line certificate in e-commerce for managers), a Graduate Diploma in E-commerce and other initiatives at post graduate level. The latter initiative 'Post graduate Research in E-commerce' aims to develop research and development knowledge of e-commerce, which was one of the areas, highlighted in the recent Policy Requirements Report from Forfas.

The above actions on the part of NCI are aimed at increasing the skill pool to aid Ireland's competitive advantage in commerce.

**University College Dublin**, Graduate School of Business has launched an MBS in E-commerce in response to the national skill deficit.

#### Box 5 ESF Initiatives

Under the ADAPT Thematic Impact Projects the Chambers of Commerce of Ireland have recently received funding for *Building on Experience in Developing E-Commerce in Ireland*. Enterprise Ireland is a promoting organisation in this project.

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<sup>13</sup> Grevin, Gerry, (1999), Business and Finance

## 2.4 Information Society initiatives

There are two national information society initiatives in Ireland – the Information Society Commission and the Inter-Departmental Implementation Group on the Information Society. There is also the private sector initiative “Ennis Information Age Town” sponsored by Telecom Eireann/Eircom, the main telecommunications operator.

### Information Society Commission

This body was appointed for an initial three-year period, from 1998 until the end of 2000. Its role is to shape and oversee the implementation of a strategic framework for the development of the Information Society in Ireland. Its functions are to promote, co-ordinate and monitor the implementation of the actions required from Government and other key actors in the development of the Information Society, in particular:

- to identify quantifiable benchmarks for the development of the Information Society in Ireland and monitor the achievement of these on an annual basis
- to develop and implement awareness programmes in conjunction with other relevant bodies in the public and private sectors, targeted at all sectors of the community
- to recommend measures to increase access to information and communications technologies in homes, schools, businesses and public offices, particularly measures aimed at disadvantaged groups
- to establish advisory groups that would highlight specific sectoral issues and develop recommendations for action
- to encourage and monitor initiatives especially at the local and regional level in the delivery of public services and information
- to prepare an annual report for the government.

The latest annual report was published in April 1999<sup>14</sup>. Three areas were identified for particular attention in 2000, as follows:

**Table 4 Building the Information Society - Recommended actions**

AREA	ACTION
IT access for all	Work in this area will include development and costing of a proposal to give an e-mail address to everyone in Ireland.
Content	This will focus on the educational and training requirements for multimedia skills, a Multimedia Park, and the creation of Irish content
Benchmarking	Development of improved methods and approaches to measuring the Information Society in Ireland and comparing it with international developments.

### Implementation of Information Society Initiatives: Interdepartmental Implementation Group

<sup>14</sup>Information Society Ireland: Second Report of Ireland's Information Society Commission

The Government's Inter-Departmental Implementation Group is responsible for the actual actions that are needed to promote the Information Society in Ireland. This group has produced a Framework for Action, an Action Plan, and a first Progress Report<sup>15</sup>. The main elements of the Plan are summarised overleaf.

The Framework for Action<sup>16</sup> outlined an initial action plan and discussed in some detail the underpinning rationale. This was followed by the actual Action Plan<sup>17</sup> itself. The Action Plan underlines the main thrust of Irish policy in a number of areas to ensure that Ireland becomes both an early mover and a global player in the Information Society. It is felt that failure to take appropriate action could mean a reduction in the economic performance gains of recent years, particularly in terms of re-location of international companies now operating in Ireland. A lack of action could also restrict opportunities to improve social inclusion through ICTs.

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<sup>15</sup> Progress Implementing the Information Society: Second Report of the Inter-Departmental Implementation Group, July 1999.

<sup>16</sup> Implementing the Information Society: A Framework for Action. First, report of the Inter-Departmental Implementation Group on the Information Society. December 1998.

<sup>17</sup> Implementing the Information Society in Ireland: An Action Plan. January 1999.

Box 6 Implementing the Information Society in Ireland: An Action Plan

TITLE	ACTION
Telecommunications infrastructure	<ul style="list-style-type: none"> <li>• Organise large-scale international interconnectivity with global connectivity provider</li> <li>• Clarify and accelerate procedures for granting of submarine cable licensing</li> <li>• Establish the necessary co-ordination between the telecommunications regulator (ODTR), the Competition Authority, the Independent Radio and Television Commission and the new body to oversee the implementation of digital television</li> <li>• Allocate EU structural funds to assist in providing nation-wide broadband connectivity</li> <li>• Accelerate the discussions on a North-South digital corridor</li> <li>• Encourage competition for local access, including unbundling of the local loop and provision of wireless local loop access</li> <li>• Complete the divestiture of the main Cable TV company from the main operator, and the public flotation of the main operator</li> <li>• Establish an industry communications infrastructure group</li> </ul>
Development of Electronic Commerce and Business Opportunities	<ul style="list-style-type: none"> <li>• Establish a second Digital Park</li> <li>• Finalise an action programme for the development of electronic commerce and associated business and employment opportunities, both in the area of foreign direct investment and indigenous industry development; including the encouragement of the development of an entrepreneurship culture</li> </ul>
Enabling Measures	<p><i>Access</i></p> <ul style="list-style-type: none"> <li>• Ensure that PCs, ISDN connections and internet access are installed in every public library</li> <li>• Expand the programme of providing computer facilities and training to community and voluntary organisations</li> <li>• Examination of measure to extend access to the Internet for those who do not have it, including the option of dedicated kiosks and other nation-wide networks such as schools, post offices etc.</li> </ul> <p><i>Internet access costs</i></p> <ul style="list-style-type: none"> <li>• Continue to encourage lower internet access and usage costs from ISPs and telecommunications operators</li> </ul> <p><i>E-mail for all</i></p> <ul style="list-style-type: none"> <li>• Invite the Information Society Commission to conclude its assessment of the possibility and merit of providing an e-mail address and internet access for every citizen</li> </ul> <p><i>Certification authorities and digital certificates</i></p> <ul style="list-style-type: none"> <li>• Establish at least one such entity immediately; consider the role, if any, of public agencies in this area; finalise legislative proposals for recognition of certificates issued by foreign authorities</li> </ul> <p><i>Protection of rights and data</i></p> <ul style="list-style-type: none"> <li>• Monitor international developments and accommodate self-regulatory approaches within the context of meeting international legal obligations</li> </ul> <p><i>Public service access interfaces</i></p> <ul style="list-style-type: none"> <li>• Develop common access interface for access to public services by citizens, building on the legislative framework for Personal Public</li> </ul>

	<p>Service Number and the Public Services Card, including encryption and certification to permit secure electronic transactions</p> <p><i>Electronic payment mechanisms</i></p> <ul style="list-style-type: none"><li>• Request financial institutions to prepare proposals and establish a consultation mechanism to take forward the area rapidly</li></ul>
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TITLE	ACTION
Legislative and Regulatory Measures	<ul style="list-style-type: none"> <li>• Finalise drafting of legislation on digital signatures and encryption</li> <li>• Investigate the situation regarding electronic evidence in Courts and the scope for legislation</li> <li>• Provide for appropriate data protection within existing legislation</li> <li>• Early enactment of draft legislation on copyright</li> <li>• Draft legislation to facilitate telecommunication infrastructure development – rights of way, sharing of infrastructure by operators etc.</li> <li>• Consider the need for legislation to clarify the role of the ODTR</li> <li>• Finalise the draft legislation relating to digital TV regulation</li> <li>• Promote the Irish Government’s position in international developments regarding e-commerce, including the view that specific taxes are not required</li> </ul>
ICTs and Delivery of Public Services	<p><i>Information services</i></p> <ul style="list-style-type: none"> <li>• All Departments to have up-to-date web sites, with all published material available on the web at the same time as through other media</li> <li>• E-mail to be incorporated into the normal range of contact methods; “push” technologies to be used as much as possible to disseminate information</li> <li>• Establish and implement service-wide guidelines and practices for Websites, including accessibility for people with special needs</li> <li>• Establish databases to present public information electronically in a client-centred manner</li> <li>• Prepare and implement educational and developmental initiatives to ensure that public servants are up-to-date and apply the ICTs</li> <li>• <i>Interactive services</i></li> <li>• All new ICT-based service delivery projects to comply with the Action Plan’s principles concerning electronic delivery, payments and exchange methods for data communication between departments, and the use of digital signatures</li> <li>• Establish flagship pilot projects: <ul style="list-style-type: none"> <li>Electronic tax returns</li> <li>Electronic filing of annual company returns</li> <li>Services for electronic delivery using the Public Services card/Integrated Citizen’s <ul style="list-style-type: none"> <li>Access concepts; continue with the pilot project on delivery of benefit payments by electronic card</li> <li>Electronic service for patient identification and tracking of healthcare records</li> <li>Electronic submission of grant application forms for farmers</li> <li>Electronic processing of driving license applications, including payment of test fee</li> </ul> </li> </ul> </li> <li>• Secure sectoral intranets for local authorities, health boards and schools</li> <li>• Consider the scope for a public service delivery channel in the context of digital TV</li> </ul>

Other measures	<ul style="list-style-type: none"> <li>• Rapid application of ICTs in all schools (Schools IT 2000 initiative)</li> <li>• Lifelong learning</li> <li>• Future skills needs</li> <li>• ICTs for older people and disabled people</li> <li>• Market information and benchmarking progress</li> <li>• Research and development</li> </ul>
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### **Policy on electronic signatures and cryptography**

Ireland's policy on cryptography and the use of encryption techniques is guided by the following: that there is the balance between the rights of the individual in regard to privacy, the need to ensure security of communications, the development of the cryptography industry in Ireland and the requirements of law enforcement agencies in regard to legal access.<sup>18</sup>

### **Telecommunications**

Telecommunications policy in Ireland has been advancing rapidly since deregulation occurred over a year ago. Deregulation of the telecommunications industry resulted in the entry of many global players into the Irish market. Some of the major players include Eircom, which before deregulation was the sole telecommunications provider; MCI/Worldcom, BT/Esat and Stentor Communications. Telecommunications form a pivotal role in Ireland's economic development strategy as evidenced by expenditure of US\$ 5 billion in telecommunications over the last decade. In general, the current government focus is on accelerating telecommunications competition and improving the existing infrastructure with a view to supporting the competitiveness of Irish businesses and attracting new inward investment. Current government policy is focused on attracting e-commerce and related activities to the country because of the importance of inward investment for job creation and the economy in general.

At the end of 1998, an Advisory Committee on Telecommunications reported to the government. The Committee focused on three areas pertaining to the creation of a fully open and internationally competitive telecommunications market to stimulate investment.; ensuring that Ireland becomes a global leader in information-based employment, internet-based industries, and e-commerce; and enabling all citizens to have access to and fully participate in the Information Society. Practical recommendations by the Advisory Committee addressed telecommunications competition, Internet access and connectivity, electronic commerce and citizen access, and human resources.

Following on from the recommendations of the Committee, the National Competitiveness Council recommended the following:

- The establishment of a co-ordinated set of programmes to accelerate investment in broadband and promote the use of broadband and adoption of ICTs by companies
- The establishment of a regime to monitor Ireland's performance against competing countries
- The development and implementation of a national policy framework for advanced telecommunication deployment

<sup>18</sup>Department of Public Enterprise, "Outline Legislative Proposals on electronic signatures, electronic contracts, certification service provision and related matters" Consultant Paper, August 1999

- The establishment of a position amongst the leaders in the world for digital businesses/electronic commerce
- Rapid development of digital TV as a platform for digital business.

These recommendations have formed the basis of much government policy and subsequent action in the telecommunications area. In particular, a public-private partnership approach is being applied to encourage investment in key areas of infrastructure.

### **Liberalisation**

The Irish telecommunications market was fully liberalised on December 1, 1998. Since then, the number of licensees in the marketplace has doubled. Competition has been strongest in long-distance and international markets and is now beginning to increase in the local market. Recent developments have dealt with the early liberalisation of the market (December 1, 1998), privatisation of the main operator (Telecom Eireann, now Eircom), and divestiture of the main Cable TV operation (Cablelink) from Eircom.

*Ongoing developments include:*

- Clarification of the respective roles of the Office of the Director of Telecommunications Regulator (ODTR), the competition authority, and broadcasting authorities, including responsibility for digital TV.
- Consultation on unbundling of the local loop and
- Competition for eight wireless local loop licences.

### **Services**

Developments in services include:

- Carrier selection will be available for subscribers from the start of 2000
- Mobile Web access (WAP) available from providers.

### **Tariffs**

Overall, the main reductions have been for business customers as this is where the new telecommunications operators have targeted. In relation to tariffs, competition and the new regulatory regime in Ireland has benefited international business (PSTN) tariffs, where Ireland's competitiveness compared with other countries has increased. In other areas – national business (PSTN), national leased lines, international leased lines and international residential (PSTN) – Ireland's relative position has stayed about the same, indicating that although prices have fallen so have those in other countries. In fact, in the case of national residential (PSTN) tariffs Ireland's relative position has deteriorated.

### **Internet access and pricing**

Pricing remains uncompetitive compared with the US situation. In Ireland it is neither free nor available at a flat rate. A consultation paper is being prepared by ODTR. Government policy is to encourage ISPs and operators to reduce prices. Table 4 overleaf, provides an illustration of the tariffs charged from a variety of Irish communication providers.

Table 5 Telecommunication charges and services from main providers<sup>19</sup>

SERVICE	EIRCOM	EIRCOM	ESAT-CLEAR	ESAT-CLEAR	ESAT-CLEAR	OCEAN
<i>Type of Service</i>	<i>Free</i>	<i>Subscription</i>	<i>Surf free</i>	<i>Surf no limits</i>	<i>Roaming Access</i>	<i>Ocean-free</i>
Free software	Y	Y	Y	Y	Y	Y
Unlimited Internet access	Y	Y	Y	N	Y	
Unlimited Internet access during off-peak, i.e. after 18:00 weekdays and all weekend	N	N	N	Y	N	Y
No registration or subs charges	Y	N	Y		Not available	
Subscription Rates Monthly: IRP 12 +VAT Annual: IRP 120 +VAT	N	Y	N	N	Not available	
Subscription Rates Monthly: IRP 17 +VAT	N	N	N	Y	Not available	
Registration and configuration of s/w for subscription account through Technical Support	N	Y	N	N	N	Y
Unlimited email addresses	Y	Y	Y		Y	
Free email	N	N	N	N	N	Y
10MB free web space	N	N	Y	Y	Y	
20MB free webspace	Y	N	N	N	N	
100MB free webspace	N	Y	N	N	N	
Technical Support over the telephone	Y	Y	Y	Y	Y	Y
Technical Support over telephone, email or www	?	?	Y	Y	Y	Y
Discounted access call rates	N	Y	N	Y	N	
Dial up charges only - local call rates	Y	N	Y	Y	Y	
No call charges for off-peak surfing				Y	N	Y
Peak Calls 12p for first 3 minutes 4p per minute thereafter	Y	N	N	N	N	

<sup>19</sup> Information compiled from WRC research, January 2000

Peak Calls 12p for 7.5 minutes 20p per minute thereafter	N	Y	N	N	N	
Peak Calls 3.8p per minute	N	N	Y	N	N	
Peak Calls 3p per minute	N	N	N	Y	Y	
Off-Peak calls 12p for 15 minutes 1p per minute thereafter	Y	Y	N	N	N	
Off-Peak Calls 1.7p per minute	N	N	N	N	Y	
Off-Peak Calls 0.8p per minute	N	N	Y	N/A	N	
Suitable for infrequent users, e.g. using email only	?	?	Y	N	N	
Suitable for off-peak users/families	?	?	N	Y	N	
Suitable for users whose access point changes regularly	N	N	N	N	Y	

### **Infrastructure**

Concerted efforts in Ireland over the last decade have resulted in a reliable fully digital telecommunications system. The advanced nature of Ireland telecommunications systems attracted many foreign companies to establish offices in Ireland. However, in relation to the full exploitation of e-commerce certain infrastructural barriers need to be addressed, for example, limited local and international broadband access and limited international Internet connectivity.

### **Broadband infrastructure**

A report to the government by Analysys suggested that market forces alone would not be sufficient to simulate enough private sector investment in broadband to reach all parts of the country. A 55 Meuro investment of EU structural funds and national funds is being committed to extend the broadband infrastructure nationwide and provide much wider local access.

### **International connectivity**

The approach in this area aims to establish an infrastructure which will enable the provision of low cost international bandwidth based on open access as a result of alliances between telecommunications operators. The government's role is one of pump priming facilitation of alliance formation and co-investment with the alliance. The plan is to increase current capacity by factor 15, with highly competitive costs for capacity and direct access to 24 European cities and the US.

## ***2.5 Summary of Policy on Electronic Commerce in Ireland***

E-commerce at policy level in Ireland is a tool for economic and regional development, which requires a multi-disciplinary approach if Ireland is to remain competitive in the medium and long terms. Government action regarding education is aimed primarily at meeting the future IT skills needs of the economy.

This action is supplemented by initiatives from the private sector, primarily in the software sector. Government and private sector players, e.g. IBEC, the employers' body, the ECAI, and the Information Society Commission, have adopted the role of raising awareness of electronic commerce. Sectoral initiatives are aimed at maximising the opportunities presented by electronic commerce. Several initiatives have already begun in sectors such as software, food, tourism, logistics and fulfilment, etc. However, before industries can take full advantage of electronic commerce certain actions are required to create a favourable environment. For example, the need for a regulatory and legislative framework, an immediate passing of the Copyright Bill, to bring forward a framework for voluntary certification, exploration of VAT options, etc.

In relation to telecommunications, the deregulation of the market has seen the number of licenses doubling. Most activity to date has been in the international market, however attention is now targeted at local markets. Consequently, the liberalised telecommunications' market is more competitive. However, Internet access and tariffs still remain uncompetitive when compared with the United States of America and only the most efficient pricing structures will develop through a competitive market. Much remains to be done if according to Forfas' Annual Competitiveness Report, Ireland is to position itself in the top quartile of OECD and EU countries by the year 2000.

Two barriers have been identified which if not tackled will impede Ireland's development in electronic commerce. Firstly, there is limited broadband infrastructure and secondly, limited international connectivity. Government policy in this area is aimed at accelerating investment in telecommunications on a partnership basis, and monitoring Ireland's progress with other countries.

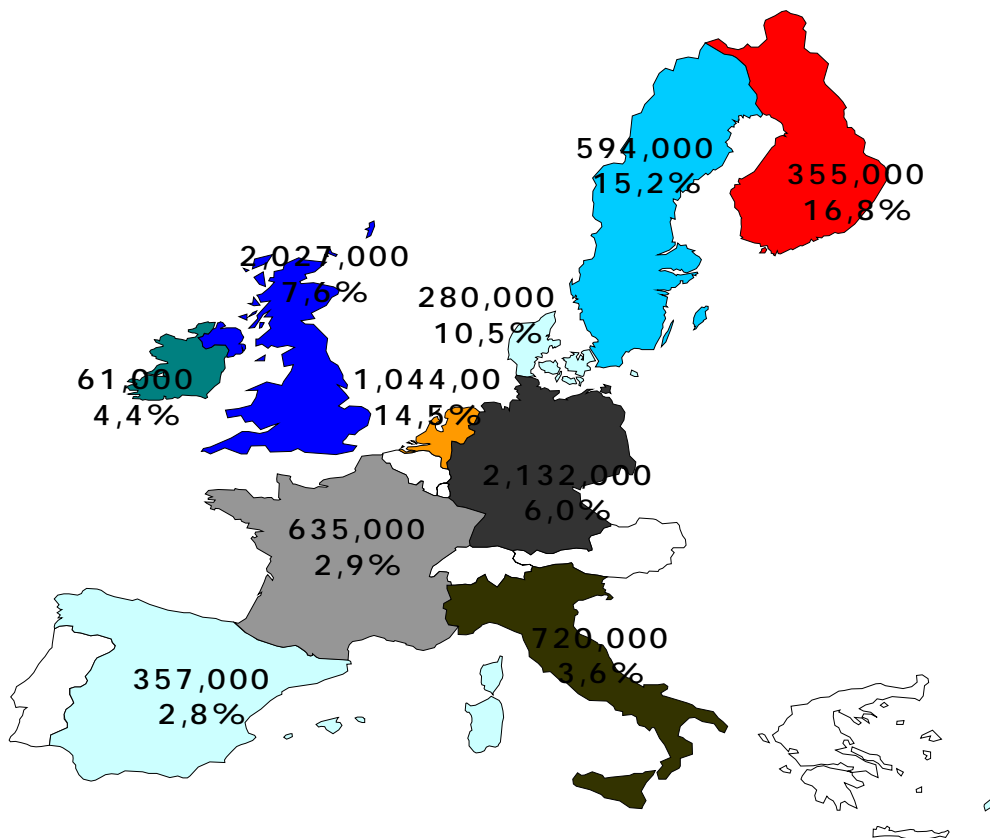
The next section reviews the findings from the ECaTT study (1999) and presents an Irish portrait of teleworking and electronic commerce trends. Although the complete findings cannot be discussed here, a full report is contained on the ECaTT project web site [www.ecatt.com](http://www.ecatt.com).

### 3 TELEWORK AND ELECTRONIC COMMERCE PENETRATION AND TRENDS: THE MAIN ECaTT FINDINGS FOR IRELAND

#### 3.1 Telework Findings

##### The Spread of Telework

A total of 4.4% of the Irish workforce carry out some form of remote working arrangement. This gives an estimated figure of 61,000 teleworkers in Ireland split between 27,000 regular and 35,000 supplementary/occasional teleworkers. This represents an unusual situation since Ireland is the only country to have more supplementary than regular teleworkers in Europe. In Germany for example, there are more regular teleworkers than supplementary by almost 3:1. Likewise in the UK, regular teleworkers outnumber supplementary by 519,000. Figure 1 below gives an overview of the situation in Europe in actual numbers of teleworkers as a percentage of the workforce.



Throughout this report regular teleworkers are made up of home-based, self-employed in SOHO (small office or home based office), and mobile whereas supplementary are 'occasional' teleworkers.

Ireland has the lowest penetration of mobile workers in Europe; i.e. 4,000 (.31% of workforce, EU 10 average 1.57%) with 14,000 home-based telework and 8,000 self-employed in SOHO also being the lowest. This can be partially explained by the fact that Ireland has only recently seen significant increases in formal teleworking initiatives by companies in the last 1-2 years. These numbers are likely to rise given the increasing influence of factors promoting telework development and a supportive public policy. In addition, 67.1% of the public expressed an interest in at least one type of telework reflecting ongoing demand and interest. Interest is greatest from the financial and business services sector. The Irish public spend an average of 20% of their working time teleworking (home-based telework). On the company side, an estimated 51.35% of businesses are either teleworking already or are interested in telework. Practice and interest in mobile telework and occasional telework appear to be the most popular types of telework arrangement according to decision-makers.

### Demographics of Teleworkers: Age, Gender, and Educational Level

The Irish teleworker is 43 years old, and predominately male. He represents 59% of regular and occasional teleworkers. In Ireland, females represent just 8.65% of teleworkers (including supplementary teleworkers) whereas female representation in other member states is as high as 35.6% UK, the Netherlands 31.8% and Sweden 29.7%. In relation to level of education, teleworkers across Europe are highly educated.

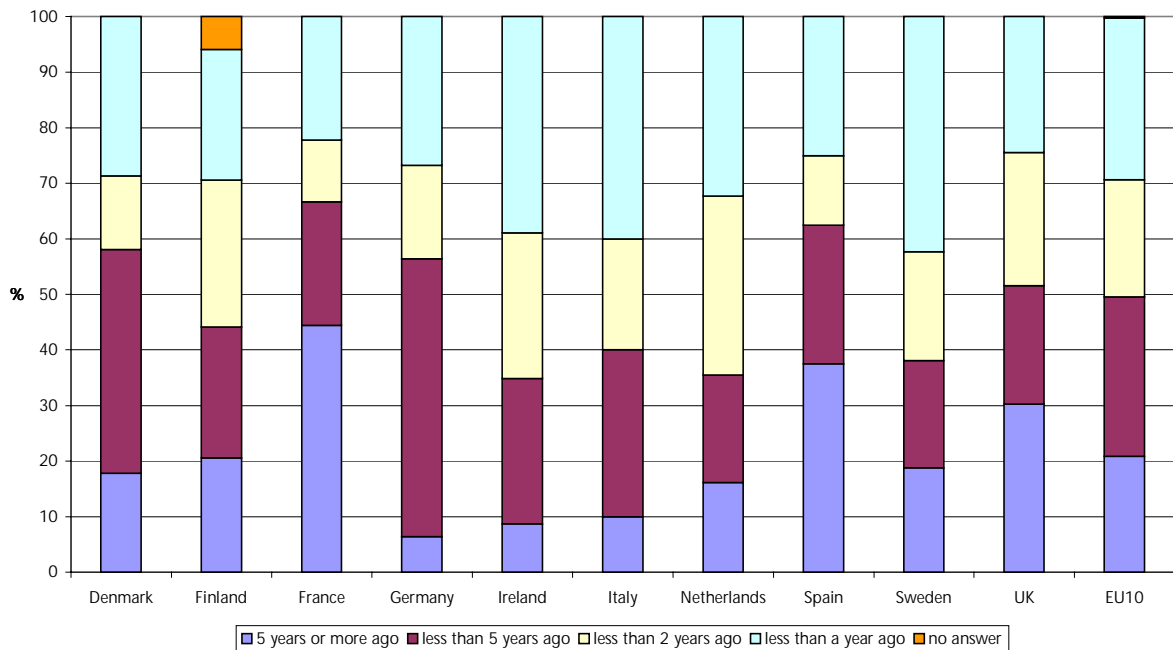
**Table 6 Age and level of education of teleworkers**

Profile of Teleworkers	Ireland	EU10 Average	
Age	43 years	39 years	
<b>EUROPE</b>			
Level of Education	Regular Teleworkers	Supplementary Teleworkers	Non-teleworkers
High Level	59%	59%	27%
Middle Level	36%	34%	45%
Low Level	4%	5%	21%
Other or none	-	2%	6%

### Duration of teleworking

The last two years have seen increased activity in implementing teleworking initiatives. In Ireland 40% of initiatives began less than two years ago which makes it a relatively recent phenomenon.

**Figure 1 Start of Telework (in % of Home-based and Supplementary Teleworkers)**



### Possible downside to teleworking

In Europe, it is estimated that 37% regular teleworkers and 22% of supplementary teleworkers work between 11-20 hours more than contracted hours. When these figures are compared with non-teleworkers only 8% work similar hours on a weekly basis. These findings reveal the possible downside to teleworking of very long working hours. Figures are unfortunately not available for Ireland; however, given the greater numbers of supplementary workers in Ireland, this trend, if applicable in Ireland could be a cause for concern.

### Barriers to teleworking

ECaTT looked at barriers to telework from the business perspective. In some EU countries, (see Table 6) data security problems were perceived as a barrier in >63% of companies, however, in Ireland the top three concerns were about insufficient knowledge by managers of telework, productivity concerns, and difficulties managing teleworkers. In Europe in 1994, the number one concern among decision-makers was insufficient knowledge followed by difficulties of managing and supervising teleworkers. In the mid-eighties, lack of any pressure to change current practice was the number one barrier to telework. It is interesting to see that in the case of Ireland the number one barrier to telework was the number one barrier in 1994. In 1999, decision-makers report data security problems as the number one barrier to telework across Europe.

Table 6 below ranks the barriers to telework across Europe.

**Table 7 Barriers to telework in % of establishments 1999**

Barriers for telework in % of establishments 1999
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	insufficient knowledge managers	Productivity/work quality	difficult-ties managing teleworkers	data security problems	expenses	problems organising communication	lack of pressure for change	health, safety, insurance, legal problems	employees would not want	resistance from trade unions
Ireland	68,11	66,94	66,18	63,99	58,26	54,63	52,55	49,97	33,65	25,28
Denmark	45,61	38,22	36,01	51,47	46,33	36,59	31,76	30,34	33,46	15,53
Finland	44,45	39,01	40,73	52,96	38,25	34,60	45,18	22,48	23,14	12,34
France	60,69	66,94	66,92	77,12	55,81	62,92	60,97	52,96	50,37	47,44
Germany	37,93	42,00	41,83	52,53	42,26	34,72	50,11	27,83	40,35	13,68
Italy	62,77	51,94	48,97	58,35	39,93	41,42	42,30	35,10	26,18	31,07
Netherlands	51,00	59,33	50,00	54,33	32,67	42,33	41,00	38,33	23,00	18,67
Spain	74,43	69,70	65,58	73,38	65,02	59,46	57,53	54,18	45,70	39,50
Sweden	55,28	52,75	49,60	67,65	47,01	37,48	39,61	44,64	37,15	26,65
UK	55,16	58,58	58,93	61,16	52,38	45,78	49,19	45,26	31,01	15,40
Total	56,24	55,28	53,40	61,96	48,72	45,93	48,08	40,82	35,39	25,59
EU 10	54,1	54,9	53,5	61,8	48,1	45,7	50,0	40,3	37,1	25,4

### Practice and interest in telework

In Europe, approximately 35.8% of companies surveyed already practice some form of teleworking. Interest in introducing telework across Europe is 7.61% and 4% of companies surveyed are actively planning to introduce telework. In Ireland, practice and interest in telework is similar to the rest of Europe.

ECaTT also surveyed companies about current practice levels with a reported rate of 13% already practising telework. By comparison to existing practice, the level of interest in introducing teleworking amongst companies is slightly lower at 9%. The rate of telework is generally high in micro companies, i.e. 1-9 employees but, not surprisingly, the actual incidence of teleworkers is highest amongst larger companies (on average 12 teleworkers).

In companies which practice teleworking the average number of teleworkers equals 11.07 (includes supplementary but excludes mobile teleworkers).

From the companies that are interested in introducing or extending telework 40.79% have concrete plans for either introducing/extending permanent telework, 36.32% are interested in alternating telework and an equally high number are interested in supplementary. Of the companies interested in *extending telework* 57.4% of companies are interested in alternating telework, followed closely by high company interest in *exclusive self-employed*. Interest in *permanent telework* was found in 31.76% of companies. Interest in a permanent teleworking arrangement and alternating telework appears to be of most interest to companies. This finding is very encouraging, however interest from companies that do not practice teleworking is less so.

For companies that do not practice telework arrangements, interest in introducing any form of telework is below 10%. Potential interest for teleworking is strongest (19.89%) in companies with 50-199 employees with lowest levels of interest found in micro companies, i.e. 1-9 employees.

Differences between the spread of teleworkers (excluding mobile) across different industry sectors in Ireland vary somewhat as the following table illustrates.

**Table 8 Average number of teleworkers in companies practising telework according to industry sector - median (including supplementary, excluding mobile)**

	Financial & business service	Primary & secondary sector	Distribution, hotels, restaurants, transport, communications	Public administration, health & social services
Ireland	2.5	3.5	5	5

The majority of companies practising telework are based in large cities, which is similar to the rest of Europe. However, the number of rural companies practising telework in Ireland (estimated at 25%) is low by comparison to other member states (such as Finland, Sweden, the UK, etc). In Ireland, 58.86% of companies surveyed have mobile workers. Of this number, 39.31% are mobile teleworkers.

### **Summary of telework penetration and trends: ECaTT**

1. Approximately 4.4% of the Irish workforce telework, (estimated at 61,000) which is amongst the lowest in Europe
2. Most teleworkers in Ireland are 'occasional' not 'regular' which is unusual in Europe
3. Low occurrence of mobile teleworkers in Europe (Ireland .31% of workforce, EU 1.57%)
4. High interest in at least one type teleworking from general population
5. Irish teleworkers are male, highly qualified and in their mid forties
6. Average number of teleworkers per company is 11.07
7. Telework in Ireland is a relatively new phenomenon as evidenced by the duration of teleworking initiatives - most commenced less than two years ago
8. Barriers still exist namely in relation to insufficient knowledge by managers and managing and supervising teleworkers. Productivity is also a high level concern amongst decision-makers. The rest of Europe is predominantly concerned about data security problems
9. Teleworkers generally work many hours beyond contracted hours which raises a number of issues, e.g.
  - Are teleworkers being exploited?
  - Do teleworkers manage their time efficiently and effectively?
  - To what extent is the uncertainty of workload a factor?
  - What are the health and safety implications of this trend?
10. The majority of companies practising telework are urban based
11. Incidence of rural companies practising telework is low by comparison to the rest of Europe
12. Interest in introducing any form of telework is below 10% in companies that do not practice telework arrangements

### **3.2 Usage of information and communication technology in Ireland**

#### **PC Access**

PC access at home is 40.1% actual usage is 27.5% and with growth of 20.8%, Ireland will rank in fifth place in 2001 against the EU 10.

#### **Population use of Email**

In Ireland, 19.9% of the population use email (6th place in Europe) with 54.3% anticipated usage in 2001. At the 2001 level, Ireland will rank in the top three in Europe. Private use of email on the other hand is slightly lower for 1999 but with scheduled growth of 34.4%, the highest in Europe, Ireland will rank in second place.

#### **Internet**

There is an estimated 91% awareness of the Internet with usage of it or other on-line service equalling 35.6%. This places Ireland seventh amongst the EU 10 however, by 2001 we will have risen three places to the fourth most prolific population of users in Europe.

#### **Internet - frequency of use**

In relation to *frequency of use* of the Internet or other online service, we in Ireland use it more than the Germans, French, Italians, etc. but less frequently than our Nordic, English and Dutch counterparts. For example, twice as many Swedes as Irish use the Internet or other on-line service once a month, but roughly the same amount of Swedes and Irish use this service at least once in three months with more numbers of Irish users using it less than once in 3 months or never.

#### **Use of Internet in Irish companies**

In most Irish companies regardless of number of employees, use of the Internet or other on-line service is greater than 40% with one exception. An estimated 35.6% of employees in small companies, i.e. between 5 and 19 employees use the Internet or other on-line service. The type of enterprise with the highest percentage of use of the Internet, etc. is from the business services sector (60.5%) followed closely by the financial services sector (57.2%).

#### **Use on-line services in Ireland**

Table 8 outlines the use of on-line services by the public for activities relevant to e-commerce.

<b>Table 9 Use of Online Services for Activities with Relevance for Electronic Commerce in % (Ireland) Base: Respondents in Ireland (n = 547), weighted</b>						
<b>Ranking 1999</b>	<b>Purpose</b>	<b>regular users</b>	<b>occasional users</b>	<b>overall users 1999</b>	<b>additional users 1999-2001</b>	<b>Overall users 2001</b>
1	Search for price information	8,5	7,5	16,0	9,8	25,8
2	Search for information about suppliers	9,3	5,3	14,6	11,6	26,2
3	Search for travel information (trains/ hotels)	7,3	6,0	13,3	11,0	24,3
4	Online game-playing	8,9	3,9	12,8	10,0	22,8
5	Registering as Website user	4,0	4,7	8,7	13,9	22,6
6	Search for information on the availability of tickets	2,6	4,0	6,6	15,4	22,0
7	Viewing/ downloading priced information	2,8	2,4	5,2	11,9	17,1
8	Orders of books/ CDs/ videos	1,4	2,3	3,7	15,1	18,8
9	Making payments online	2,0	1,5	3,5	10,7	14,2
10	Orders of train/hotel tickets	1,6	1,4	3,0	16,3	19,3
11	Getting information from bank	2,1	0,6	2,7	13,6	16,3
12	Orders of computer software and hardware	1,1	1,5	2,6	13,8	16,4
13	Orders of paid online services	1,5	0,9	2,4	13,3	15,7
14	Orders of other things	0,9	1,1	2,0	17,2	19,2
15	Orders of admission tickets	0,5	1,0	1,5	16,9	18,4
16	Money transfers	1,4	0,0	1,4	9,9	11,3
17	Orders of groceries, clothes, appliances etc.	0,4	0,6	1,0	8,4	9,4

These are primarily activities with no charge apart from telecommunication costs. There is a tendency to be cautious in relation to transferring money and ordering of any type. This includes groceries, clothes, and appliances, to paid on-line services, to admission tickets, etc. By looking at payments on-line or getting information from the bank provides further evidence. In Ireland, only 3.5% of overall users actually use on-line payment methods. An even smaller number use on-line services for money transfers (1.4%) and even with a 9.9% increase planned for 2001 our ranking position compared to the EU 10 will remain unchanged at eight place. Ireland is also slow to purchase computer software and hardware through

this medium and our ranking position by 2001 will have moved 2 places up to sixth place.

### Barriers to On-line shopping

Currently 12.4% of users in the general population use on-line shopping with 29.5% using it by 2001. Approximately 24.9% of Irish people indicated that a 'lack of equipment' to shop on-line was the most important barrier. Ireland is in equal first position with Germany, Italy, and the UK. 10.6% referred to the comprehensibility, lack of knowledge as another significant barrier and finally costs, only 3.3% perceived this as the 'most important' barrier. Other barriers to on-line buying include product characteristics, data security and danger of fraud ranking 5th of lesser concern.

Irish people like the idea of on-line shopping because there is more variety, less effort, it is swifter, and 46.5% referred to saving money. We prefer to pay COD (Cash on Delivery), we are divided in relation to transmitting our credit card/account number and over 50% would accept on-line payment in the form of Internet currency/e-cash. Finally, on-line services for job searching are relatively popular in Ireland (30.8%).

### Electronic Mail

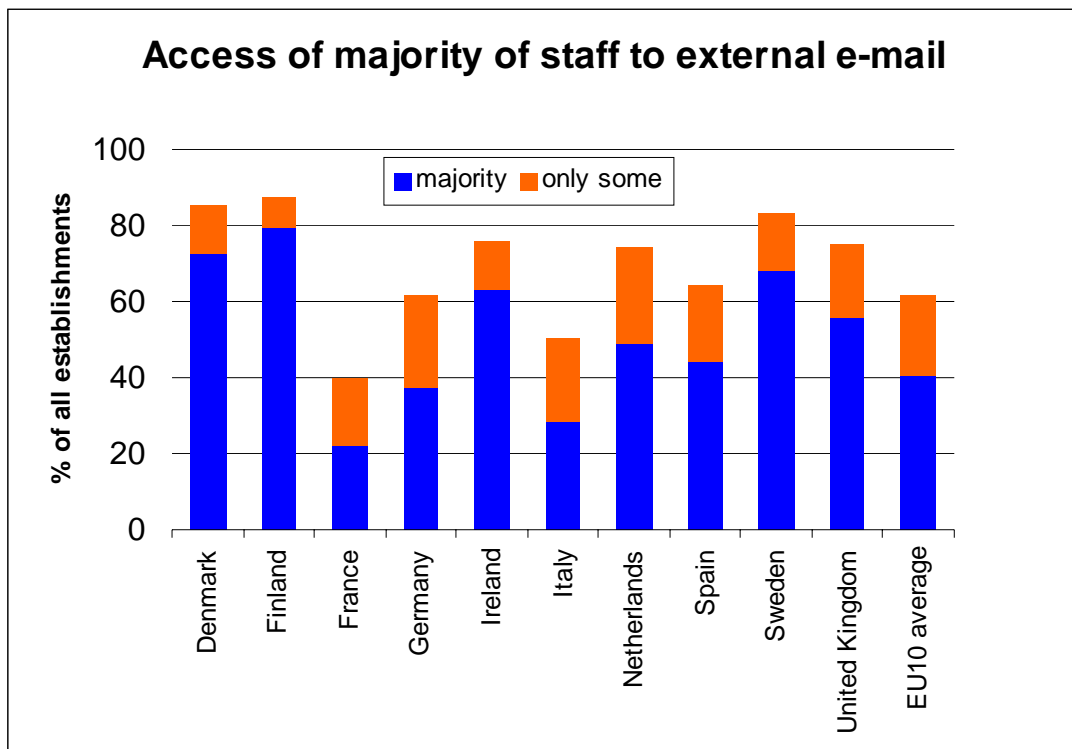
In 1999, 76% of Irish companies used email with an anticipated 11% increase by 2001. In relation to the rest of Europe Ireland's ranks in fourth place (1999) and 6th for 2001.

**Table 10 Use of email %**

Use of E-mail (in %)					
	Users 1999	Additional users 2001	users 2001	ranking 1999	Ranking 2001
Denmark	85,2	8,9	94,1	2	2
Finland	87,6	7,7	95,3	1	1
France	39,9	21,3	61,2	10	10
Germany	61,2	19,5	80,7	8	8
Ireland	76,0	11,0	87,0	4	6
Italy	50,8	14,1	64,9	9	9
Netherlands	75,0	12,3	87,3	6	5
Spain	65,1	16,0	81,1	7	7
Sweden	83,2	7,9	91,1	3	3
U.K.	75,3	12,6	87,9	5	4
<i>Total sample</i>	<i>67,5</i>	<i>13,9</i>	<i>81,4</i>		
<i>EUR10</i>	<i>61,7</i>	<i>16,1</i>	<i>77,8</i>		
<i>Base: All establishments (n = 4.158), weighted</i>					

In Irish business 73% of staff have access to external email whereas the balance does not.

Figure 2 Access of majority of staff to external email



76.1 % of Irish businesses have access to the Internet. In Ireland, email use and access to the Internet according to industrial sector is relatively even among the four sectors, as can be seen from Figures x and y above.

Figure 3 Use of email according to industry sector

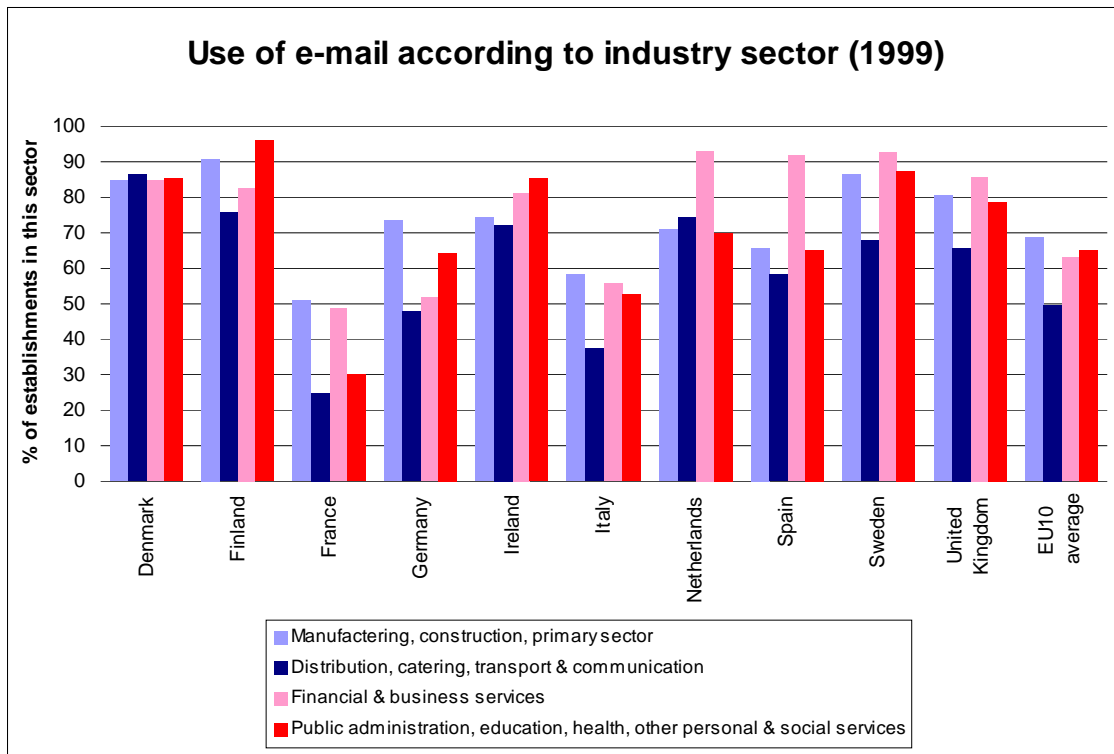


Figure 4 Use of email according to industry sector 1999

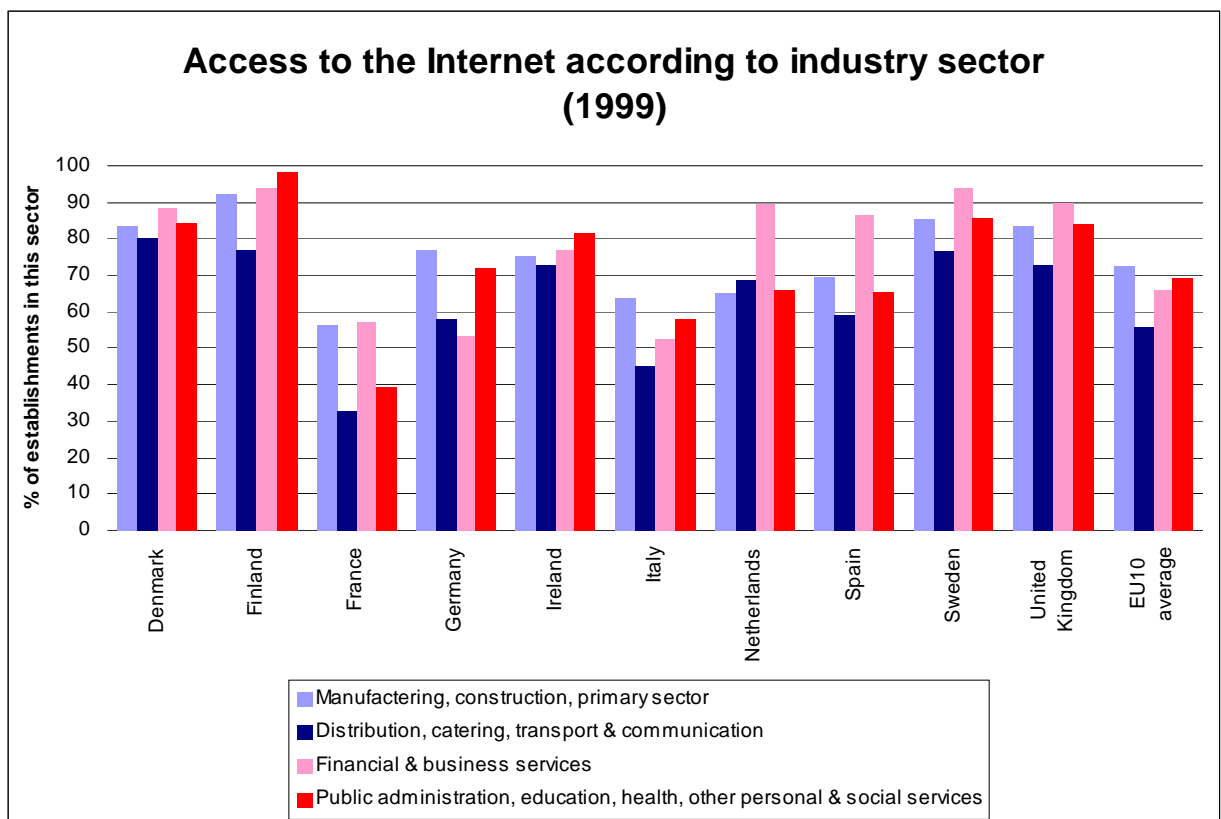
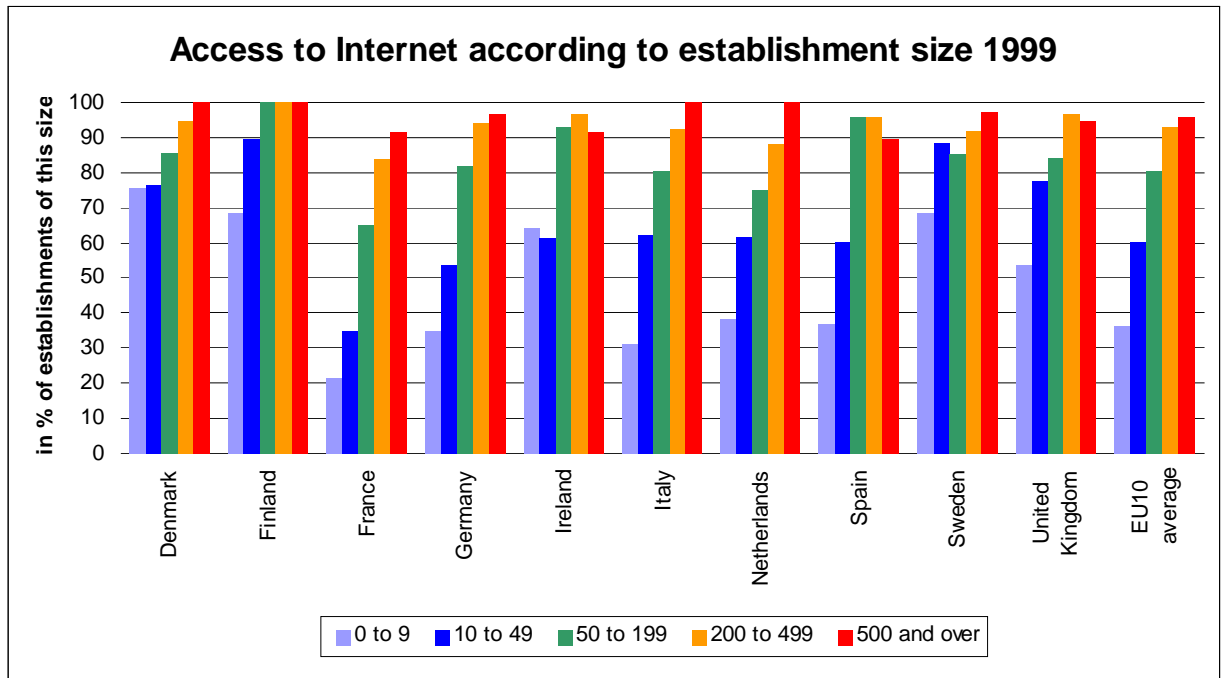


Figure 5 Access to Internet according to establishment size 1999

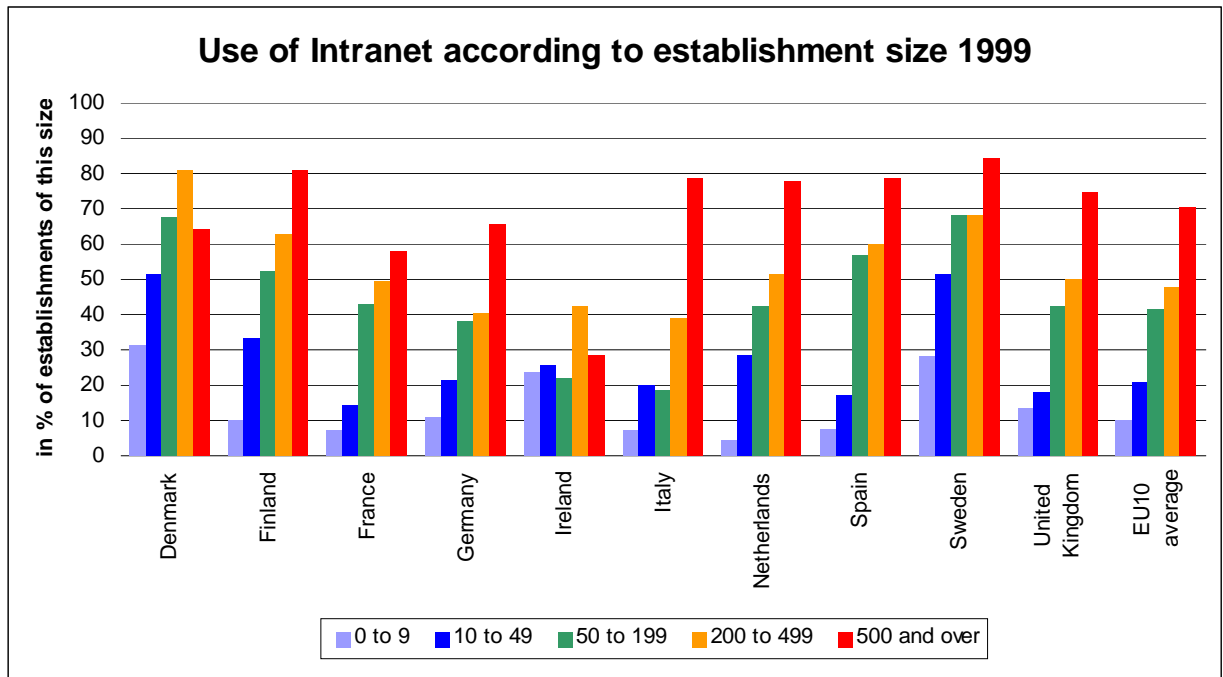


In Ireland, access to the Internet according to establishment size is greatest amongst companies with 200-499 employees. In companies with 50-199 employees it is slightly below and internet access in the 500 plus size companies (90%) ranking third highest. The picture from seven of the other member states is slightly different since most internet access falls into the 500 plus size companies. In Finland both 500 plus companies and 200 plus have 100% Internet access. The UK like Ireland has greater access to the Internet in the 200 plus size companies. This is not surprising given the size of Irish industries.

## Intranet

Intranet usage in Irish companies in 1999 occurs in approximately 27% of companies with 20% new users in companies predicted by 2001. Its use is mainly found in companies with 200 plus employees and not in the 500 plus category as expected. Similar to internet and email use, intranets are more pervasive in the public sector.

Figure 6 Use of Intranet according to establishment size 1999



## Video Conferencing

An estimated 16% of companies surveyed use video conferencing with increased usage rates anticipated by 2001. As expected, access to video conferencing by the majority is rare in all member states and predominately occurring in the large companies (500 plus) and greatest in public administration etc.

## GroupWare Tools

The use of (other) GroupWare tools in companies in Ireland is the highest in the EU 10 and remaining so by 2001 also (70.1%).

Figure 7 Use of (other)GroupWare Tools

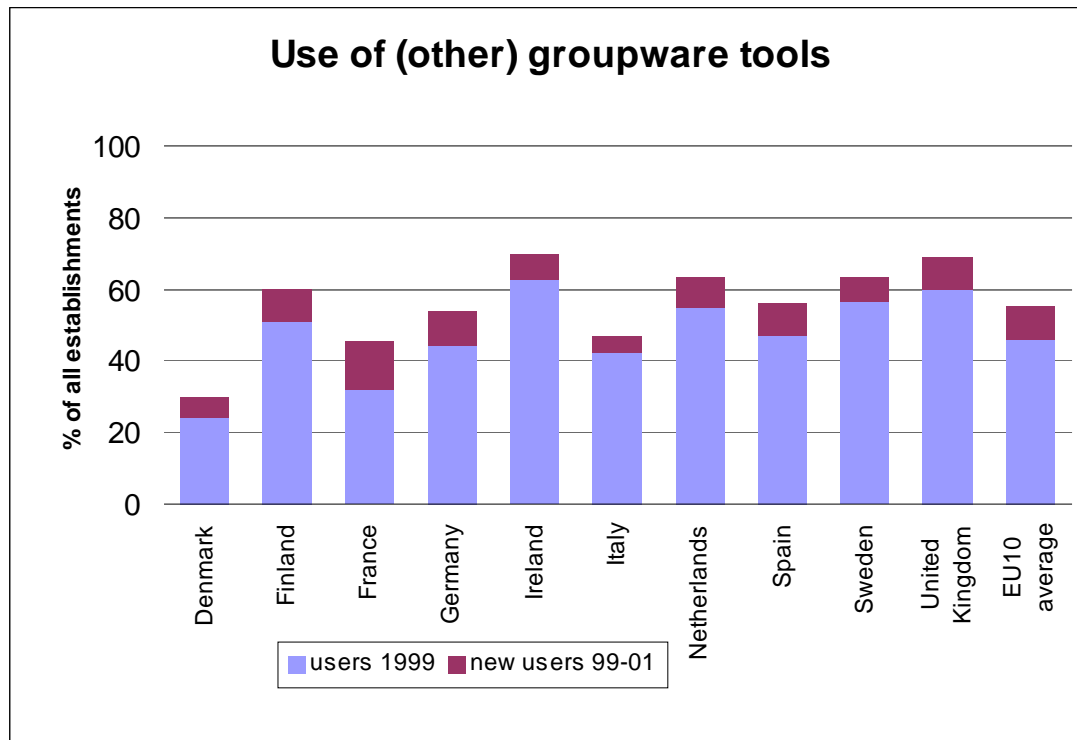


Table 11 Kind of presence on the Internet or other on-line service (1999) %

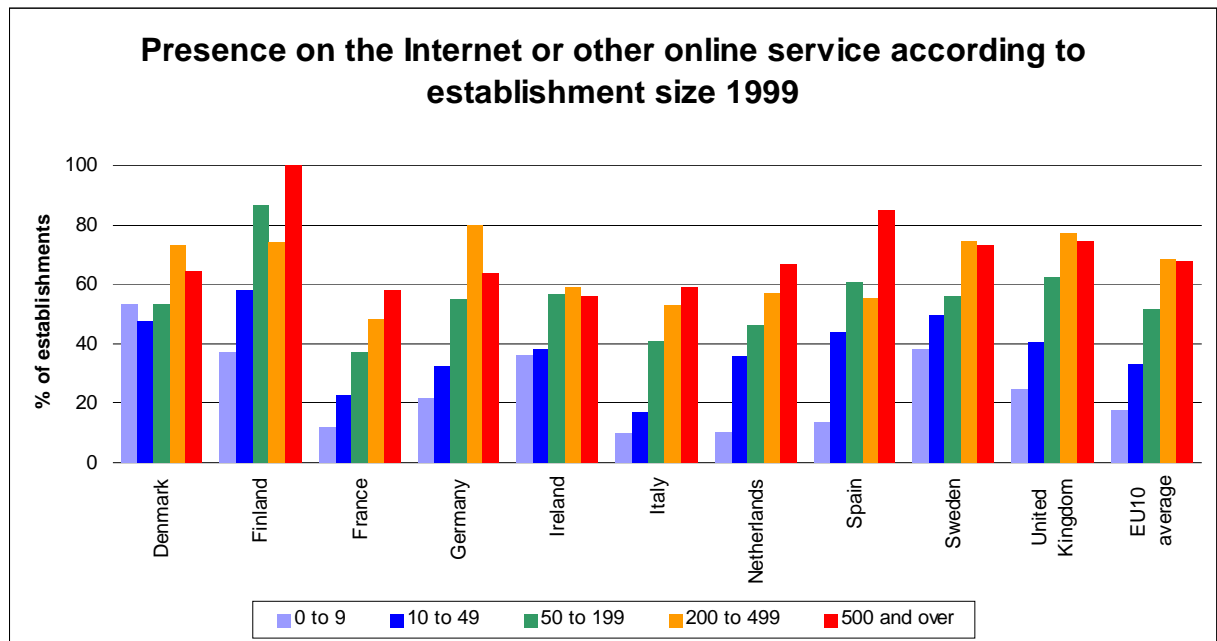
Kind of Presence on the Internet or other Online Service-1999 (in %)			
	Website	only other kind of presence	ranking (Website)
Denmark	53,4	2,2	2
Finland	63,7	2,4	1
France	23,0	5,0	9
Germany	41,1	5,7	5
Ireland	39,0	7,1	7
Italy	20,4	2,9	10
Netherlands	39,0	2,7	6
Spain	35,6	5,9	8
Sweden	49,3	4,9	3
U.K.	49,2	4,2	4
<i>Total sample</i>	<i>39,7</i>	<i>4,4</i>	
<i>EUR10</i>	<i>36,8</i>	<i>4,6</i>	

*Base: All establishments (n = 4.158), weighted*

**Presence on the Internet or other on-line service**

ECaTT also looked at the kind of presence on the Internet or other online service and discovered that 39% of companies have a Website.

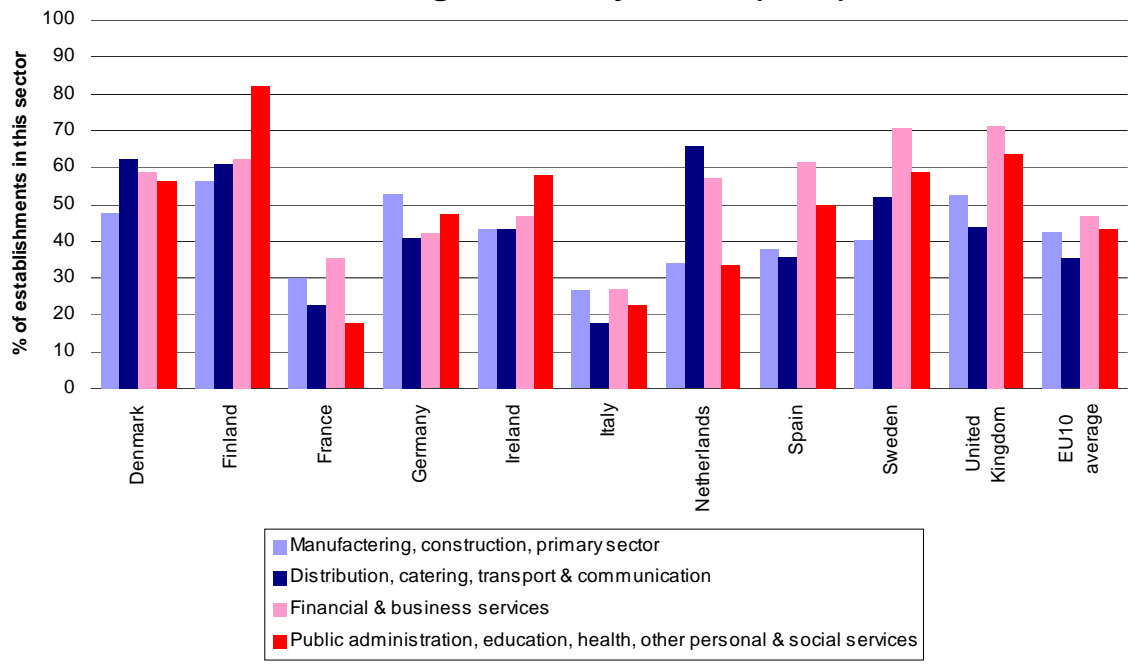
Figure 8 Presence on the Internet or other on-line service according to establishment size 1999



In Ireland a presence on the Internet or other on-line service is undifferentiated amongst companies with employees numbering between 50 and 500 plus. In approximately 60% of these companies there is a presence on the Internet or other on-line service; whereas in small companies the occurrence is less than 40% with very little difference between organisations which have a maximum of 9 or 49 employees. Also the largest number of companies viz. industrial sector having Internet or other on-line service, is also in public administration followed by financial services with negligible difference between the remaining two sectors.

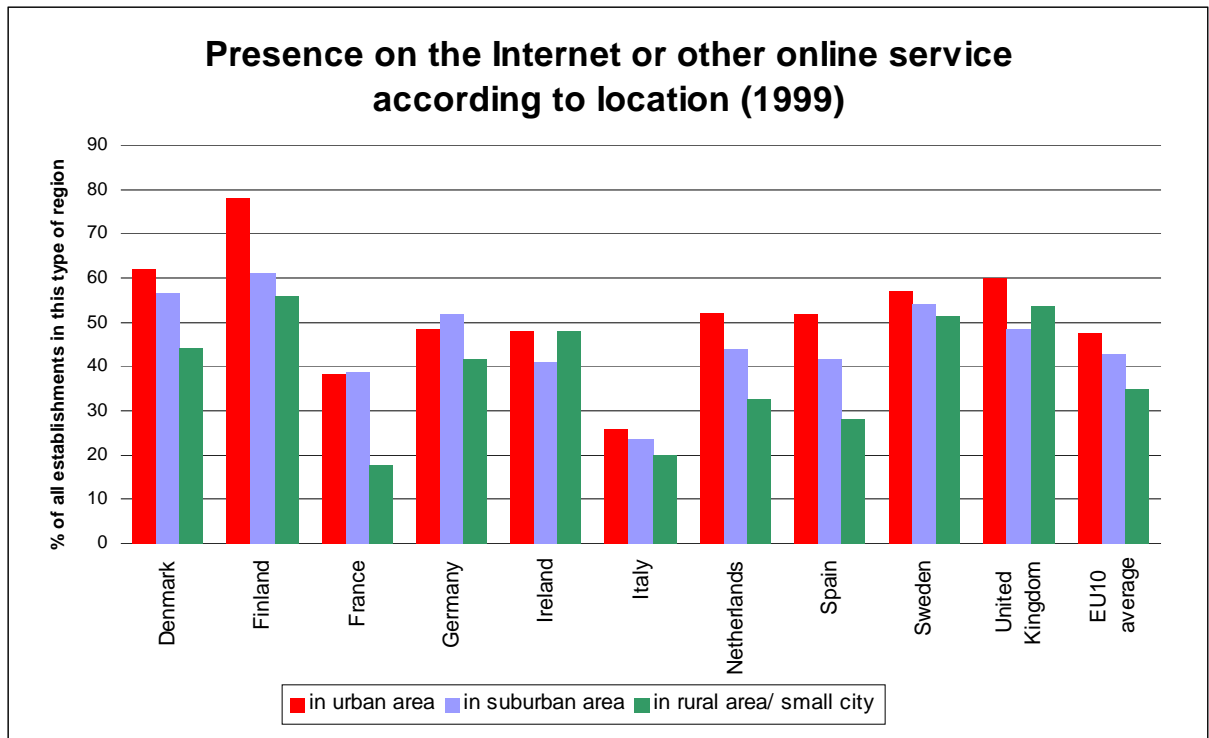
Figure 9 Presence on the Internet or other on-line service according to industry sector 1999

### Presence on the Internet or other online service according to industry sector (1999)



In Ireland a presence on the Internet or other online service is the same regardless of location.

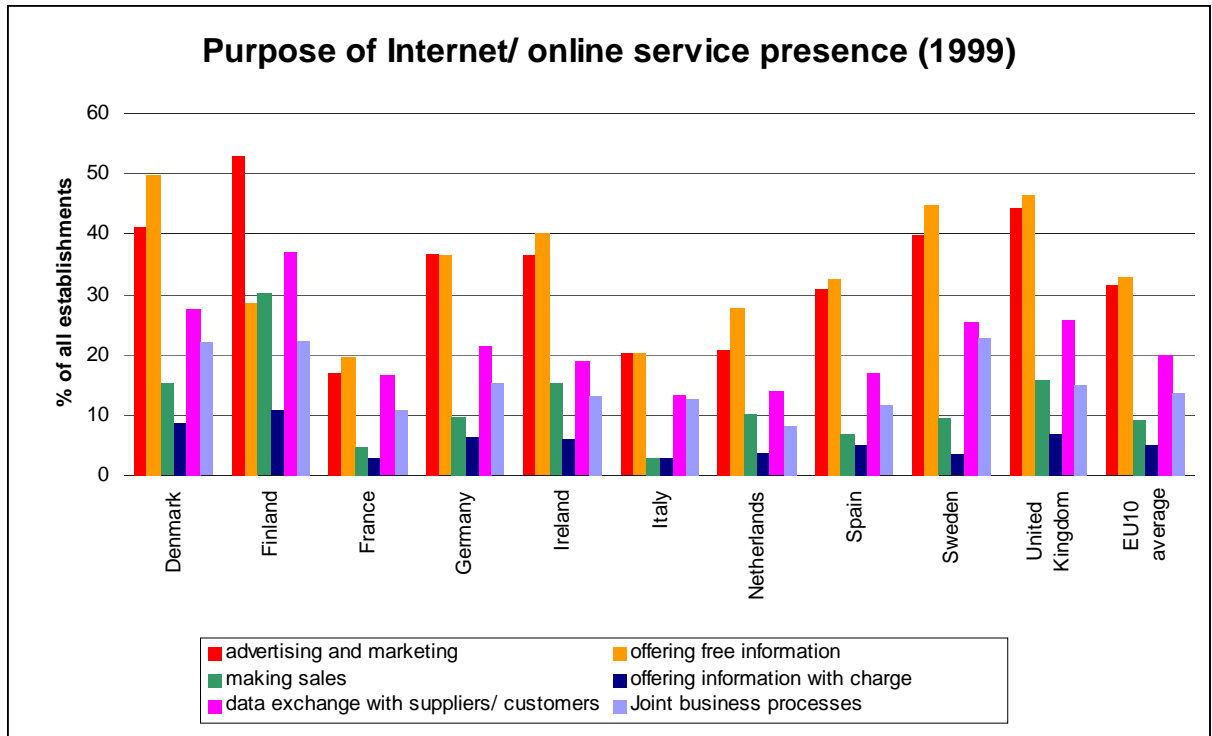
**Figure 10 Presence on the Internet or other on-line service according to location 1999**



**Purpose of the Internet/on-line service**

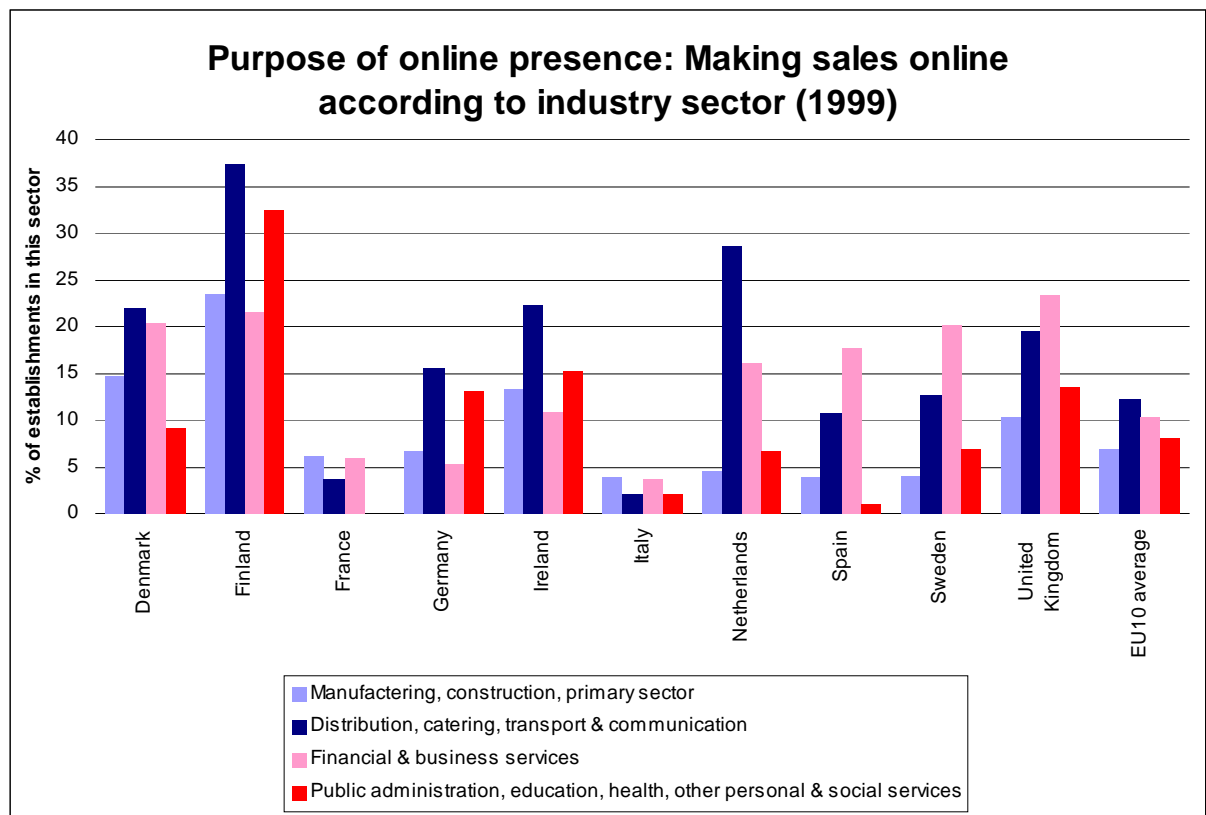
In Ireland, the purpose of the Internet/on-line service is predominately for offering free information, followed by advertising and marketing with a significantly lesser proportion or companies using it for data exchange with suppliers, making sales and joint business processes.

Figure 11 Purpose of Internet/on-line service presence 1999



## Making online sales

Figure 12 Purpose of on-line presence: making sales on-line according to industry sector 1999



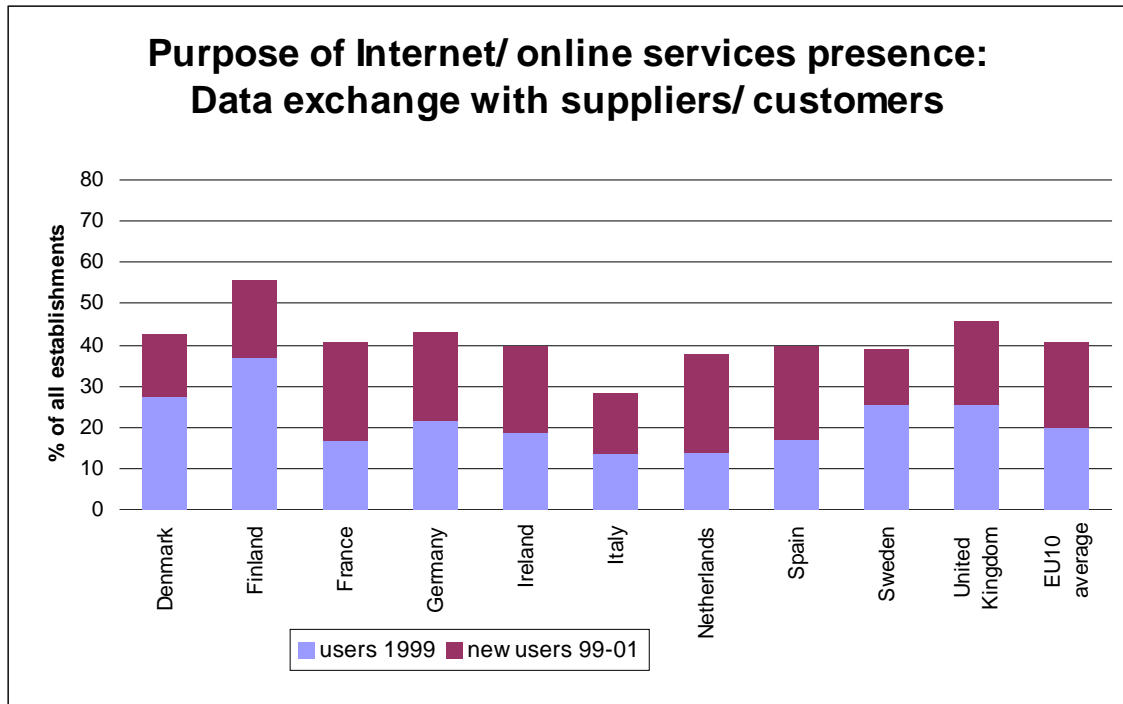
In Ireland, electronic commerce is predominately used by 23% of companies in the distribution, catering, transport, and communications sector, followed by public administration at just over 16%. Financial services companies although showing the least amount of usage in 1999 intend to achieve 38.8% penetration by 2001.

Interestingly the location of the majority of online sales comes from rural companies with urban companies 5% behind and suburban companies lower again.

### Data exchange with suppliers/customers

An estimated 20% of Irish companies use the internet/online services for data exchange with suppliers/customers occurring mostly in the distribution, catering, transport, and communication sector (50%).

Figure 13 Purpose of Internet/on-line services presence: Data exchange with suppliers/customers



**Joint business processes with suppliers/partners**

In Ireland the use of Internet/online services for joint business processes with suppliers/partners is just under 15% in 1999, however it is hoped that by 2001 the number of companies extending ecommerce laterally and vertically throughout the value chain will increase by 15%. In 1999 joint business process development predominates in the manufacturing and financial services sector.

Figure 14 Purpose of Internet/on-line services presence: joint business processes w. suppliers/partners

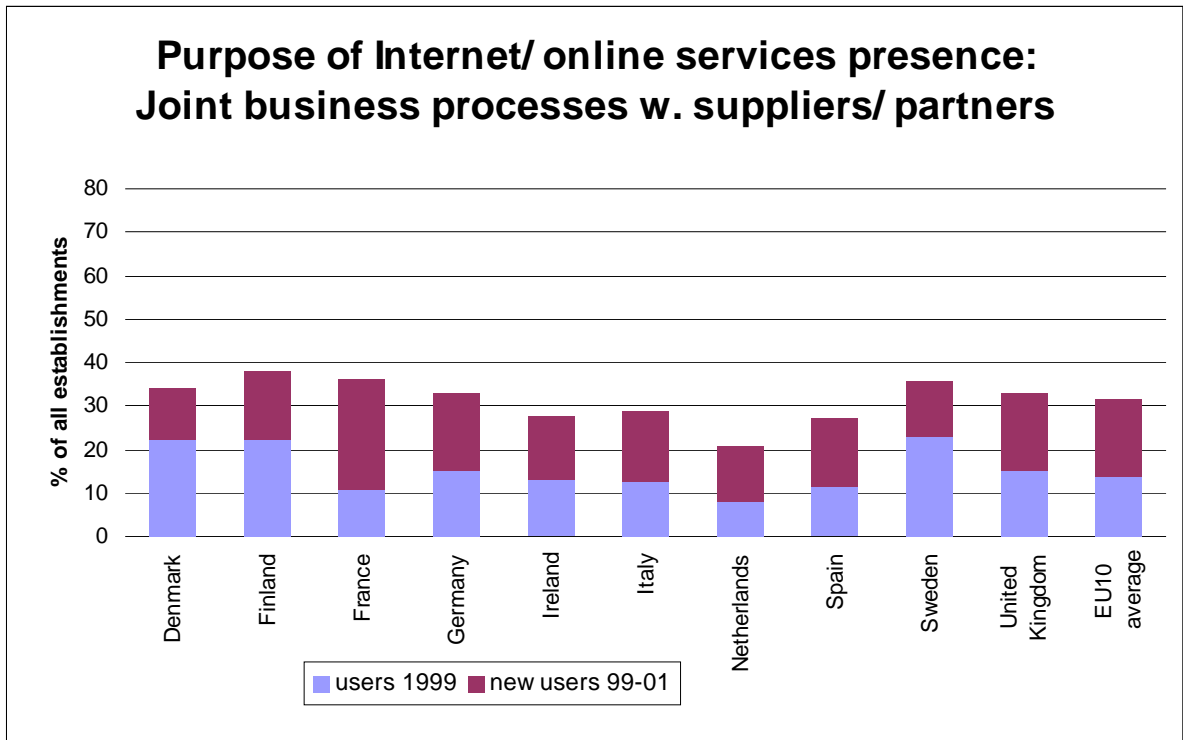
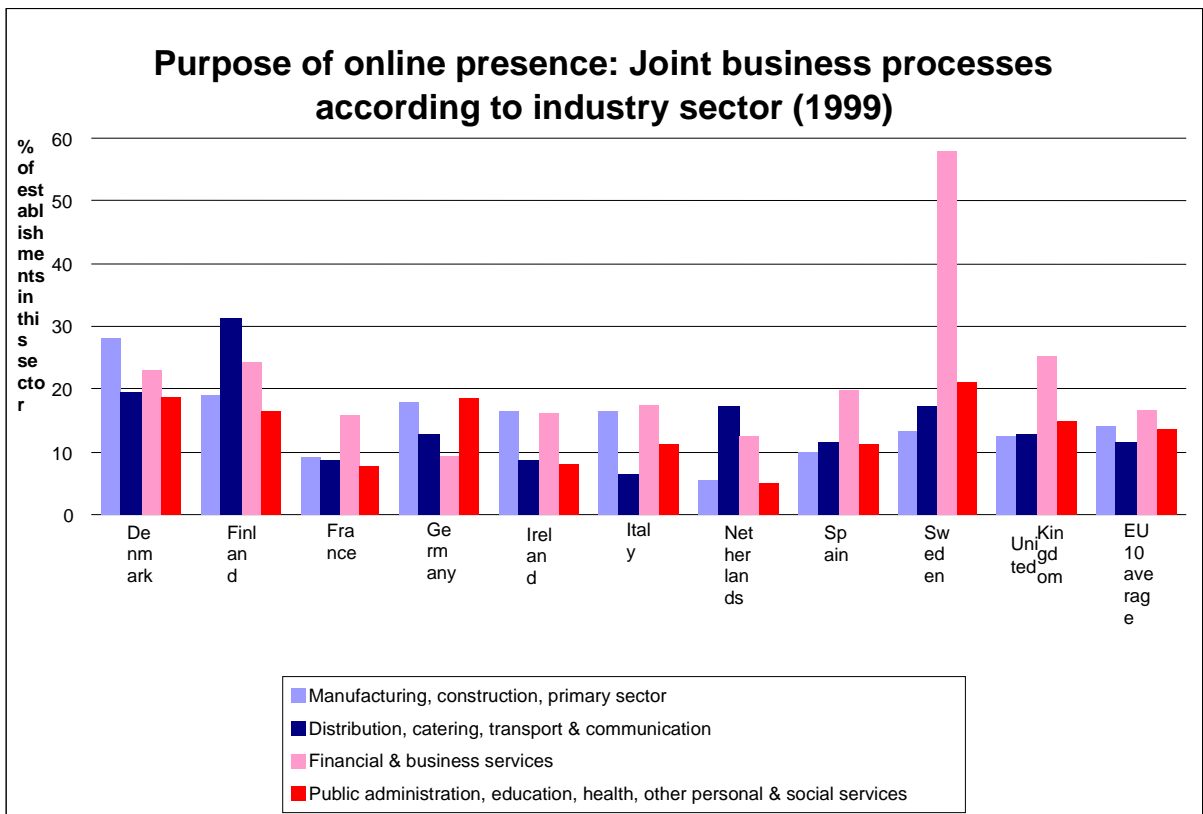


Figure 15 Purpose of on-line presence: joint business processes according to industry sector



#### On-Line Procurement

63.5% of companies perceive no need for on-line procurement, which is bad news for ecommerce in the business to business category.

Table 12 Barriers to on-line procurement %

Barriers to online procurement (in %)									
	Lack of supply	No Need	Costs	Lack of Know-how	Dangers (Data Security)	Dangers (Fraud)	Product Characteristics	External Conditions	Others
Denmark	18,4	67,1	3,0	10,9	0,0	0,0	0,2	0,0	1,0
Finland	14,7	48,5	1,6	0,4	2,8	2,8	9,2	0,2	2,9
France	9,3	52,4	7,6	13,3	5,2	6,4	10,6	3,4	1,8
Germany	19,0	57,8	6,0	6,7	1,3	1,5	14,3	2,5	0,6
<b>Ireland</b>	<b>12,0</b>	<b>63,5</b>	<b>3,3</b>	<b>4,3</b>	<b>6,9</b>	<b>0,2</b>	<b>5,6</b>	<b>0,1</b>	<b>12,1</b>
Italy	10,4	67,7	2,1	4,5	1,7	1,1	9,0	0,4	0,0
Netherlands	5,6	24,9	2,8	5,6	4,5	1,1	26,0	4,5	18,6
Spain	9,0	43,1	1,0	9,5	2,6	0,9	24,1	3,7	10,4
Sweden	6,0	47,4	1,1	7,6	2,3	1,3	14,5	3,3	0,8
U.K.	10,8	60,8	5,3	9,0	6,9	3,1	8,3	1,0	3,2
<i>Total sample</i>	<i>11,5</i>	<i>54,4</i>	<i>3,7</i>	<i>7,7</i>	<i>3,4</i>	<i>2,1</i>	<i>12,4</i>	<i>2,0</i>	<i>4,6</i>
<i>EU10 average</i>	<i>12,1</i>	<i>55,8</i>	<i>4,6</i>	<i>8,1</i>	<i>3,4</i>	<i>2,5</i>	<i>12,8</i>	<i>2,2</i>	<i>3,2</i>

Base: Establishments neither using nor planning to introduce online procurement (n=2282) © Empirica 1999

Current usage of on-line services for procurement occurs in just under 40% of companies. Company size is an influencing factor and is reflected in the use of on-line procurement by companies with 200 up to 500+ employees. The financial and business services sector, not surprisingly, makes the most use of on-line procurement but there is little difference between it and distribution, and manufacturing. In addition, use is not restricted by location.

Figure 16 Usage of on-line services for procurement

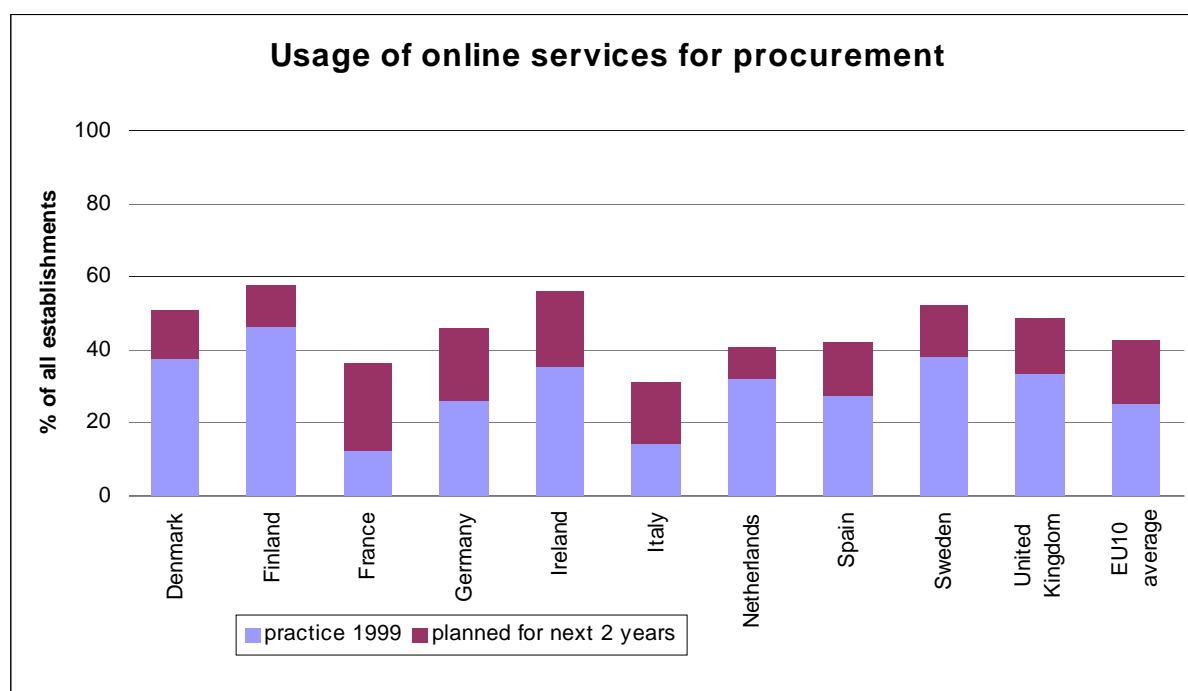
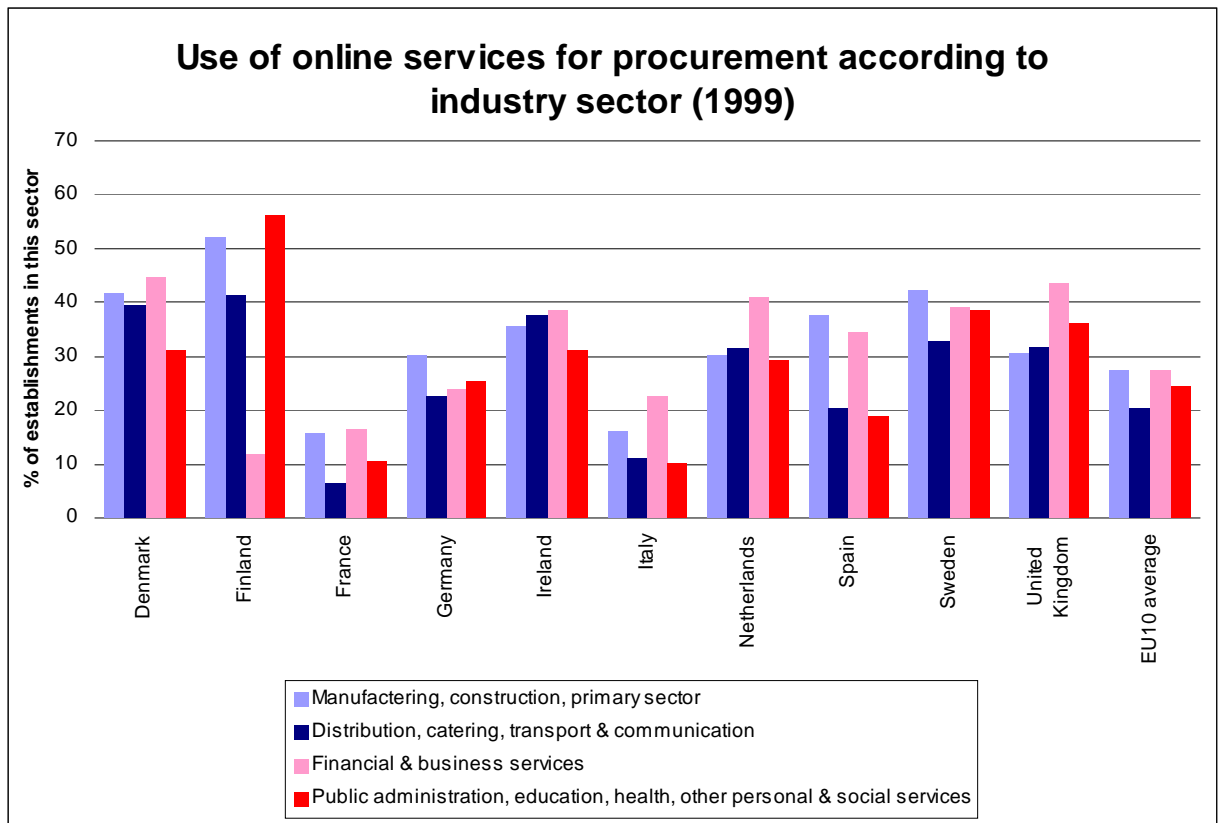


Figure 17 Use of on-line services for procurement according to industry sector



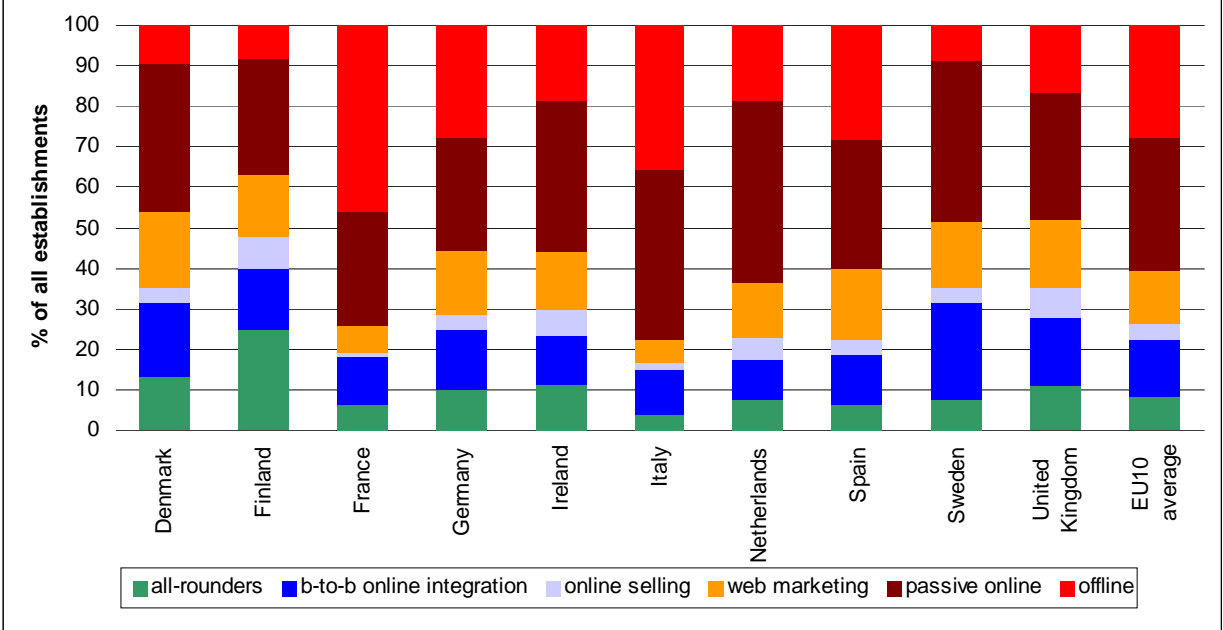
#### Usage of electronic commerce in Ireland

The most popular type of ecommerce users in Ireland in 1999, are 'passive online', followed by off-line, web marketing, b-to-b online intergration, all-rounders and finally online selling. The picture from Ireland is broadly representative of the rest of Europe. On line selling is highest amongst the UK, Finland and Ireland with it representing approximately 10% of the type of ecommerce users in companies.

By 2001, the situation will only have changed marginally with all-rounders trebling, and offline reducing significantly.

**Figure 18 Type of E-commerce users 1999**

## Type of E-commerce users 1999



### 3.3 Summary of electronic commerce penetration and trends: Ireland

#### How do we use the Internet in Ireland?

1. Irish people use the Internet or other on-line service primarily for searching for information, on-line game playing and registering a Website
2. The idea of on-line shopping appeals to people as it provides more variety, requires less effort, is faster and more economical but are reluctant to make on-line payments or get information from banks
3. Approximately 24.9% of Irish people view a 'lack of equipment' as the most important barrier to on-line shopping
4. Other barriers include product characteristics, data security and danger of fraud

#### Business to business and business to consumer

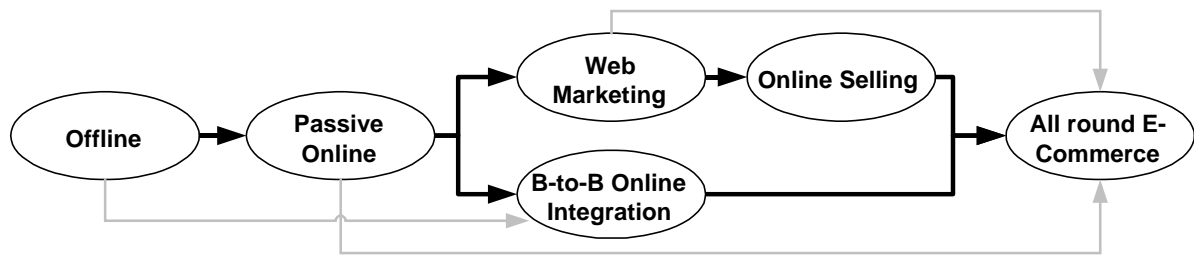
1. An estimated 20% of Irish companies exchange data via the Internet between suppliers/customers mainly from the distribution, catering, transport, and communication sector. This is roughly the same across Europe. In Coillte Teo, data regarding on-line auctions is exchanged over an on-line service and tenders are made on-line.

#### Business to business

2. In the main, the manufacturing and financial services sectors use the Internet for joint business processes with suppliers/partners the most. Use across all industry sectors equals 15%, the EU average. In Sweden, joint business processes over the Internet or other on-line services represent a massive 60% in the financial and business sectors. This percentage sets Sweden quite apart from all other EU 10 countries in ECaTT.
3. Procurement on-line is used by 40% of companies in Ireland mainly the larger ones (200 plus category).

#### Usage of electronic commerce in Ireland

Type	Ireland	Name	Criteria
(1)	37.6%	"passive on-line"	Usage of e-mail and/or Internet or an other online service
(2)	18.4%	"off-line"	No usage of e-mail, no usage of Internet and other online services
(3)	14.1%	"web marketing"	Offer of information on the Internet or an other online service
(4)	12.1%	"B-to-B on-line-integration"	Data exchange with suppliers and/or other business partners in the value chain over the Internet or an other online service
(5)	11%	"all-round electronic-commerce users "	(4) as well as (6)
(6)	6.7%	"online selling"	Interactive Website with online sales



In conclusion, the type of ecommerce users in 2001 will remain largely unchanged in Ireland from 1999.

## ICT

### PC/Email/Internet

1. 40% of the population have home PC access with actual usage at 25.75%
2. 19.9% of population use email rising to just over 50% by 2001
3. 76% of Irish companies use email. In Finland, 87.6% of companies use email
4. The majority of Irish staff have access to external email
5. Internet access is greatest in companies with 200-499 employees whereas in Europe access is greatest in the 500 plus category. Given the competitive landscape in Ireland this finding is not surprising.
6. Access to the Internet occurs mainly in the suburbs, followed closely in urban areas and rural access approximately 60%
7. 91% awareness of the Internet with usage at 35.6%
8. 39% of Irish companies have a Website
9. We are the most prolific users of Group Ware tools in Europe
10. A greater proportion of medium and larger sized companies have a presence on the Internet than companies with less than 50 employees
11. Majority of on-line sales stem from rural companies
12. We use the Internet more than our German, French and Italian counterparts but less frequently than our British, Nordic and Dutch ones.
13. Irish people under 20 years of age use the Internet the most
14. Marked decline in use of the Internet amongst the 40-59+ age bracket

## 4 CONCLUSIONS

### 4.1 *Telework*

- Ireland's low ranking in Europe of teleworkers as a percentage of the workforce may reflect the late emergence of national policy in this area. It is only in recent years that both government policy and ICT improvements have facilitated the wider uptake of teleworking. In addition, the ECaTT findings reveal that Irish teleworking initiatives started in the last two years and the indications are that this trend is likely to continue.
- The fact that there are greater numbers of 'occasional' teleworkers in Ireland could suggest that teleworking as a business solution and quality of working life option is not accepted by organisations. This also suggests that although there appears to be wide interest in teleworking, information dissemination should be more targeted towards managers who are responsible for decisions on flexible forms of working arrangements.
- Under the NATC's Awareness strategy for action it does not appear that 'Support for managers' has had a major impact, especially as in Ireland both a lack of knowledge about teleworking at managerial level and managing and supervising teleworkers are reported as important barriers to implementation.
- Government policy in relation to bridging the ICT skills gap is quite dynamic and is among the more forward looking policies to be found in the EU. However, given the short time which has elapsed it is too early to report on its success.
- Telework should be more actively considered as a solution to urban development problems. In particular, even supplementary teleworking can have an impact on reducing commuting and traffic problems, and the provision of locally based telework centres could also play a role.
- Government sponsored pilot schemes could play a significant role in spreading the message of teleworking. The initiatives by Enterprise Ireland are a start but public administration could also become involved. Best practice examples are much needed in this area.
- Lack of access to broadband for home office telecommunications (SOHOs - small office home office) acts as a barrier both to the range of work, which is, carried on via teleworking and to teleworking itself. Many modern teleworking applications require greater bandwidth than is currently widely available.
- The surveys indicated that there is a high demand for teleworking, which is not being satisfied. This capacity for growth could be met from the ranks of employees.

### 4.2 *Electronic Commerce*

- The supportive Government policy in relation to ICT has certainly influenced the spread of email/internet and other on-line services.
- The early deregulation of the telecommunications sector has certainly attributed to improvements telecommunications infrastructure and reduction of costs over the longer term. However, Ireland still lags behind the more advanced countries in the EU in this regard.
- The public administration sector leads the field in relation to Internet and online services compared to the private sector (60%)
- Intranet usage is more pervasive in the public sector, which is in line with government policy.

- Ireland generally ranks in mid-table on most indices of e-commerce usage when compared to the rest of Europe. Even projections of future usage do not correct this position. There is a need to continue and intensify the already supportive policies, which have been put in place.

## 5 RECOMMENDATIONS

### 5.1 *Teleworking*

#### **Research**

Although teleworking is now firmly on the agenda in Ireland and various awareness-raising and stimulatory initiatives are underway, there is a need for more research on the potential benefits/downsides at various levels and in various sectors. Some of the more important topics needing to be addressed include:

- Potential impact on traffic, commuting and pollution
- Potential to contribute new solutions to meet labour and skill shortages
- Potential to offer new family-friendly solutions
- Potential to support more balanced development of the economy and employment throughout the country
- Potential impact on real estate prices (both business and residential).

Studies in these areas should be initiated immediately. Based on these, crosscutting policies should be developed that address the various policy lines of relevance. Appropriate stimulatory activities should then be initiated

#### **Encouraging and supporting employers**

Managerial knowledge, attitudes, and skills present important barriers to telework now in Ireland. Support services should focus especially on this area. Topics needing to be covered include:

- Management issues relating to the introduction and successful implementation of teleworking. These will include Human Resource issues monitoring, controlling, leadership, and communication issues.
- Practical aspects of implementing teleworking arrangements, including questions of individual requirements and task division.
- Assessment of tasks and jobs suitable for teleworking
- Making a business case - assessment of costs and benefits of teleworking
- Deciding upon the form of teleworking
- Assessment of training needs of potential teleworkers
- Assessment of training needs of managers of teleworkers
- Assessment of human resource management issues
- Implementation of teleworking project
- Planning of teleworking project

#### **Health & safety issues**

- Employment, health and safety and financial legislation needs to extend present terms and conditions, rights and benefits on a pro-rata basis to cover all forms of contingent labour. For example, the protection for teleworkers because of hidden exploitation is necessary as well as education of teleworkers in the area of their legal rights and obligations. This could be dealt with using a public information leaflet or as part of a national call centre support service. Issues, which need to be resolved, include payments, the tax treatment of ICT

infrastructure, working hours, and compliance with health and safety legislation.

- There is a need to ensure that health and safety standards are maintained and supported in home-based teleworking arrangements as is the case for more traditional working arrangements.

#### **Industrial relations issues**

- A mandatory letter of understanding to be issued at the start of all teleworking arrangements between teleworker and employer.
- Teleworkers should have the right to return to their old workplace centred job, as well as the right to full benefits and extra pay to cover additional costs of homework.
- Ensuring that teleworkers have access to free or low cost child care so that they are not encumbered with childcare in the home, would act as a major promoter of teleworking, especially amongst women.
- Where unionisation exists home-workers should be afforded every opportunity for membership.
- All off-site staff to be kept informed on all company communications.
- Unions to have the right to contact all home or teleworkers on union business through the employer computer networks.

## **5.2 Electronic Commerce**

### **Business-to-business - Research**

True e-commerce (business-to-business on-line integration, online selling) has yet to be taken up by more than about 10% of Irish businesses. On-line selling is still very restricted and this could have significant implications for the competitiveness of Irish companies both in the Irish market and in the export market.

There is a need for a detailed study of those sectors of the economy where business-to-business on-line integration and on-line selling are most critical. Such a study should look in an in-depth way at the needs and opportunities of these sectors and at the threats to their competitiveness posed by late adoption of e-commerce. Appropriate support and stimulatory initiatives should be set up based on such a study.

### **Business-to-consumer**

The main barrier in Ireland seems to be the mistrust on the part of consumers about financial transactions on-line. There is a great need for more explanation to the public about security, privacy, consumer rights etc. in e-commerce, as well as secure services that are guaranteed (e.g. through government license or something similar).

### **Business to administration/public to administration**

These areas seem to be given a lot of attention in the current information society implementation plan. These recommendations have been framed with a view to encouraging the growth of telework in Ireland. They have been targeted at Government, employers, and ICT providers.

1. Establishment of new business models to include the full range of electronic commerce options:
  - Business to business
  - Business to consumer
  - Business to administration
  - Administration to consumer
2. Up-skilling of the workforce generally in ICT but also for persons with disability and older members of the workforce.
3. Comprehensive awareness raising campaign to include all individuals in companies.
4. Infrastructural costs, especially telecommunications costs, need to be reduced if e-commerce is to flourish.
5. To offer incentives to provide ICT equipment to individuals so that it can be eliminated as barrier to on-line shopping.

### **5.3 Annex 1 - Code of Practice, National Advisory Council on Teleworking**

#### ***Contents***

1. Definition of teleworking
2. Introducing teleworking in a company
3. Suitable jobs and teleworker selection
4. Home office
5. Communications policies
6. Training
7. Security
8. Employee terms and conditions
9. Monitoring and review
10. Sample teleworking agreement
11. Teleworking for self employed teleworkers
12. Overview of legislation
13. Employee rights and employer obligations
14. Employment agencies
15. Self-employed teleworkers

#### 5.4 Annex 2 - Ecommerce Corporate Infrastructure Programme

##### LIST OF ECOMMERCE CORPORATE INFRASTRUCTURE PROJECTS SELECTED FOR FUNDING

1. Internet based shipping suite
2. Internet based bill presentment
3. Electronic debit card payment system
4. Credit union services via internet and internet-enabled mobile phones
5. Internet based technical support
6. E-sec corporate secretarial software infrastructure
7. Centre of excellence for e-commerce
8. Standardised e-commerce transaction server
9. Portal Website on network management
10. Internet based infrastructure for Irish independent vegetable growers industry
11. E-commerce enabled customer relationship management for insurance industry
12. Integrated supply chain management process conversion to e-commerce
13. Trading community hardware and infobank development
14. Trading community managed service
15. Web-based customer support system
16. E-commerce craft studio and database of Irish crafts/design companies
17. Events information management system
18. On-line sale of children's educational toys
19. E-commerce incubator network of multimedia customer interaction centres for SMEs
20. Internet marketplace for Java beans software components
21. Web-based contact management
22. Web-based order processing system to integrate with computerise manufacturing system
23. E-commerce based supply chain focussing on fulfilment
24. E-kiosk deployment in small towns and peripheral locations
25. On-line electronic publishing