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**COMMUNICATION FROM THE COMMISSION
TO THE COUNCIL AND THE EUROPEAN PARLIAMENT**

**THE IMPACT OF THE E-ECONOMY ON EUROPEAN ENTERPRISES:
ECONOMIC ANALYSIS AND POLICY IMPLICATIONS**

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INTRODUCTION

Information and communication technology (ICT) is having a profound impact on the potential for economic growth; it has become one of the main sources of competitiveness and increases in incomes. As a result, it has moved to the centre of the policy debate. When in March 2000, in Lisbon, the European Union set itself the ambitious target of becoming the world's most "competitive and dynamic knowledge-based economy" within ten years it recognised that the achievement of this goal depended on making the best possible use of ICT. The Lisbon strategy reinforced the response to the knowledge-based society within existing policy processes and launched the eEurope 2002 Action Plan as a roadmap to modernise the European economy.

The Commission is keeping the impact of ICT on the economy, on enterprises and on the main economic policy instruments under constant scrutiny. Employment issues are also comprehensively addressed within the European Employment Strategy. The present Communication reviews the impact of the e-Economy¹ on European enterprises in the light of the recent market developments and of the numerous contributions on this topic. It builds on the considerable work achieved in the areas of telecoms liberalisation and legislative action in favour of a clear and predictable framework for e-business. It also builds on the discussions that have taken place during the e-Economy conference organised by the Commission in March 2001². The correction of excessive stock market valuations and the consolidation phase taking place within the ICT sector have eliminated most of the exaggeration that has clouded the debate in the past. Statistical evidence has allowed the emergence of a broad consensus that ICT is, indeed, increasing the rate of growth of productivity. Finally, the way in which ICT is changing the life of enterprises, workers, public administrations and citizens in general is becoming more widely understood.

This Communication contributes further detailed analysis confirming the appropriateness of the strategy that the European Union has been following in recent years. ICT is producing an acceleration in the pace of technological progress, which will be best exploited in circumstances where enterprises are stimulated to adapt to a new environment and where new enterprises are created, expand and replace older ones. Since the tragic events of 11 September 2001, consumer and business confidence has deteriorated sharply and restoring and supporting consumer confidence and entrepreneurial dynamism is a fundamental pre-condition to securing good economic prospects. Creating an environment more favourable to entrepreneurship and accelerating structural reforms is the right strategy likely to produce more visible and significant returns.

This Communication suggests targeted activities, improving action already under way to foster the take up of ICT, to integrate it with converging production technologies, to increase the availability of the necessary skills, to exploit further the opportunities of the internal market, to encourage innovation and to support research. It also highlights the need to make sure that public administrations not only exploit ICT effectively themselves but also become catalysts for its wider use.

¹ The word "e-Economy" has been used as a shortcut for the modifications in the behaviour of economic agents and citizens resulting from the possibilities offered by the spectacular development and reduction in price of ICT and, in particular, from the development of the Internet.

² The e-Economy in Europe: its potential impact on EU enterprises and policies. March 1–2, 2001 in Brussels. See: <http://europa.eu.int/comm/enterprise/events/e-economy/index.htm>.

I. MACROECONOMIC ISSUES: THE EMERGENCE OF THE E-ECONOMY

1. ECONOMIC GROWTH AND THE ROLE OF ICT

During the second half of the 1990s the US, but also some EU Member States (notably Ireland, the Netherlands, and Finland) and some other OECD countries (e.g. US, Australia and Canada), have recorded a resurgence of economic growth and of productivity, steady or declining inflation and diminishing unemployment (see annex 1).

Increasingly, policy makers have begun to appreciate the central role played by the deployment of ICT in these developments. Indeed, ICT now permeates virtually all facets of economic life and is affecting in a fundamental manner the way in which business is organised and conducted. The acceleration of productivity and economic growth in the 1990s is closely associated with developments in the ICT sector. Prices of semiconductors have been declining at an unrelenting pace throughout the past forty years while their capacity has been increasing at an equally remarkable pace. The quality-adjusted price declines accelerated dramatically during the second half of the 1990s reflecting in part the shift of this industry from a three-year to a two-year product cycle but also increased competition. The decline in the cost of ICT capital has provided powerful incentives for substitution away from other forms of capital and from labour services. Indeed, a process of ICT capital deepening has accelerated in several countries, bringing into use new and more productive capital and raising the economy's capacity to produce. The acceleration of productivity and economic growth is also closely associated with developments in the software and control technologies sector. These are not so much characterised by price declines but much more by improved capacity and user friendliness leading to improved quality of products and services.

These developments have been reflected in the economy through the ICT sector – computers, computer software and telecommunications equipment and services. The wide application of ICT has led to a rapid decline in the prices and costs in the areas of computing and telecommunications with positive repercussions for a variety of other products, including for the production, for example, of aircraft, automobiles and scientific instruments. In turn the sharp decline in 2001 of the level of ICT investment of enterprises, in the US then in Europe, had a negative impact on economic growth prospects.

2. PRODUCTIVITY GROWTH AND EMPLOYMENT GROWTH

The good macroeconomic performance has also benefited the labour market. The resurgence of output growth has raised employment both in Europe and in the US. Thus, despite the on-going capital substitution process, the output-induced increase in the demand for labour has led to net increases in employment. In the period 1995-2000, net job creation in the EU amounted to almost 10 million. The sectors with the strongest employment growth at EU level have been and continue to be those characterised by either high technology or ICT-related jobs and/or by high knowledge intensity as reflected in the high educational levels of the workforce. In 2000 alone, these sectors created 1.6 million net jobs in the EU.

Productivity growth is a crucial determinant in the rise in the standards of living. However, in the short term, increased investment in productivity-raising ICT capital may have adverse consequences for workers who lack the skills needed for the use of these new technologies. In turn, the demand for labour with ICT skills is likely to increase, as the experience of Europe

and the US in the 1990s has shown. Despite significant redundancies, which occurred in 2001 in the ICT sector ³, long-term employment prospects remain strong.

Ultimately, ICT-induced productivity increases are a source of job creation. While jobs may be destroyed in some areas, the overall dynamism resulting from ICT use leads to job creation in other areas to an extent that more than offsets the losses. In general, ICT use does away with repetitive jobs often carried out by workers with low skills. The new jobs are likely to emerge in ICT related areas and in "face-to-face" services – areas which require higher and different skills. Skills mismatches pose serious challenges for the design and conduct of labour market and also for education policies in the Member States – skill shortages may slow down the dissemination of ICT and thus constrain growth.

3. ICT, ENTERPRISE ORGANISATION AND TOTAL FACTOR PRODUCTIVITY

ICT is economically important partly because it facilitates the adoption of innovations and of organisational changes in enterprises and partly because it changes competitive conditions and the structure of markets. ICT contributes to economic growth directly, through the production of ICT goods, and through the diffusion of ICT use in the economy. The macroeconomic evidence on the acceleration of productivity growth in part reflects organisational reforms undertaken by enterprises in response to ICT innovations.

The share of ICT investment in industrialised economies is increasing. In 1999, the share of ICT investment was 4.54 % of GDP in the US, up from 2.60 % in 1992. For the EU as a whole, the corresponding estimated GDP share is 2.42 % in 1999, up from 1.81 % in 1992. Amongst individual EU Member States, the share of ICT investment in 1999 ranges from 1.58 % in Spain to 3.76 % in the UK ⁴. It is clearly worrying that the EU is lagging behind the US in ICT investment.

Evidence from European data (see annex 2) shows that total factor productivity growth in six Member States - in descending order, Denmark, UK, Germany, Italy, Luxembourg, and Spain - slowed down in the period 1996-2001 compared to the period 1991-1995. In contrast, productivity growth increased markedly in Greece, Finland and Ireland and to a lesser extent in Portugal, Belgium, France and Sweden. Productivity growth showed no marked change between the two periods in the Netherlands and Austria. Such differences in productivity growth between EU member states are not only the result of different use of ICT, but in some cases also reflect a catch-up process.

Annual average productivity growth in the EU-15 decreased by 0.1 percentage points between the first and the second half of the 1990s, while in the US, it increased by 0.6 percentage points. Productivity growth in Greece, Finland and Ireland accelerated by more than that in the US. The lack of acceleration in productivity growth in some Member States may reflect the slow rate of ICT diffusion and institutional rigidities. ICT is available for every one. Yet the large differences in ICT investment and in productivity growth between the US and the EU suggests that Europe has not fully exploited this potential.

³ The previous consolidation phase took place in 1989-1992.

⁴ The investment figures for Europe are estimates based on ICT expenditure. See Daveri, F., "Information technology growth in Europe", University of Parma, 2001.

4. WILL PRODUCTIVITY GROWTH BE SUSTAINED OVER THE LONG TERM?

Some researchers have suggested that the productivity surge in the second half of the 1990s in the US is only restricted to the narrow ICT-producing segment of the economy with little changes in the remaining, largest component, or the "old economy". It has also been suggested that part of the productivity surge in the 1990s was cyclical, and therefore would be reversed in an economic downturn. Despite the current economic downturn, more and more evidence is emerging to confirm that ICT has led to fundamental changes in the way our economies operate, and its effects on productivity are felt beyond the ICT-producing sector. Furthermore, in view of the prospect for a further precipitous decline in the price of semiconductors and the qualitative improvements of the new generations of technologies, the ICT sector will continue to make possible the introduction of new, more productive capital in the economy at diminishing cost. If, as suggested by some, this process continues for at least another ten years, the potential for raising the standards of living is substantial.

It is clear that the US has offered a fertile ground to the use of ICT and has realised substantial productivity gains associated with these new technologies. However, the US has also outperformed the EU in other areas, including its superior employment performance. Europe has a significant need to catch up with the US. However, if the e-Economy becomes the trigger leading to further progress in opening up the internal market and boosting structural reforms, the potential benefits could be even larger than in the US. Realising this potential across all the Member States is a crucial challenge ahead. With most of Europe lagging behind the US in terms of productivity growth, failure to draw the lessons about the importance of ICT from both the rapidly advancing European countries, and from the US in particular, will be a costly failure indeed.

II. MICROECONOMIC ASPECTS: IMPACT OF THE E-ECONOMY ON ENTERPRISES AND SECTORS

There is evidence to suggest that the e-Economy is leading to changes in organisational and market structures. These essentially consist of:

- Increased competition, resulting from lower barriers and the creation of new channels for delivery of products and services;
- New business models, with cost savings, better quality and customer-driven innovation;
- New ways of buying and selling, with a further customisation of products and services;
- New skills requirements.

The impact of the e-Economy varies substantially from sector to sector. Information-rich sectors such as digital goods, information services, financial and business services witness the emergence of new business models and increased market competition. In industries where entry barriers are higher, such as construction and heavy engineering, the impact is likely to be more gradual. Digital interactions between administrations and business are important components of the e-Economy. By offering online access to public services, administrations can add concrete, direct incentives for enterprises to *go digital* themselves.

1. THE E-ECONOMY AS A CATALYST FOR CHANGE

1.1 Fast changing enterprise demographics

The faster pace of technological change, for which the widespread use of ICT is a catalyst, is having a great impact on the structure and lifecycle of enterprises. Firstly, ICT reduces the economic impact of distance and the cost of access to information, thus increasing the scope for competition within markets. Secondly, ICT often tends to lower the cost of setting up small enterprises thus, potentially, providing for additional competition. Thirdly, ICT creates the opportunity for new co-operative means of product and service delivery potentially leading to improved quality and cost efficiency. Finally, and perhaps most importantly, ICT gives rise to many new products and services.

The process of creation of new enterprises and of adaptation or of replacement of traditional enterprises is the way the economy adapts to new market conditions. This process, which is the very essence of changes in the rate of economic growth has accelerated considerably since the late 1990s. The responsibility of policy makers is to make sure that it can take place as effectively and smoothly as possible, which also includes ensuring, through the appropriate social "shock absorbers", that it does not disrupt the fabric of society.

1.2 New business dynamics: role of risk capital and market-based financing

ICT provides the trigger for change, but many important other conditions must be met for the process described above to actually take place. For instance, access to adequate means of finance is so important that many analysts tend to identify it as one of the key factors behind the spectacular performance of the US economy over the last decade.

Equity capital has proved more appropriate and more efficient as a way of financing new ventures than traditional bank lending which remains the main source of finance for many SMEs, particularly outside the core e-Economy sector. Very often the new ventures that are made possible by ICT tend to be based on an idea, a concept, a software application as well as the skills and energy of an entrepreneur. Enterprises based on so called "intangible" values have often had difficulty raising finance from traditional sources. However, the relative weakness and fragmentation of the risk capital in Europe constitutes a barrier to the development of the e-Economy. Although the situation is improving, the EU venture capital market remains only a fraction of that of the US, where pension funds play a major role. Early stage investments in 2000 were five times higher in the US than in Europe⁵. The financial environment in Europe is still insufficiently favourable to innovation, both technological and organisational. Such handicaps have to be overcome in Europe so that the structural changes will take place swiftly and on a larger scale. As requested by the Lisbon strategy, the European Investment Bank with its "Innovation 2000" initiative and the Commission under the Action Plan⁶ on financial services and the multi-annual programme for enterprises and entrepreneurship (2001-2005) have taken initiatives to contribute to the supply of risk capital for innovative businesses.

⁵ Source: European Venture Capital Association (EVCA).

⁶ COM(1999) 232 final, 11.5.1999. "Financial Services: implementing the framework for financial market: Action Plan".

1.3 New ICT skills for a fast changing economy

New processes typically require new skills. Skills mismatches have traditionally been an issue that policy-makers have had to address and education systems have always been under pressure to adapt to changing demands. ICT has added a new dimension to this traditional problem. ICT has changed production processes throughout the economy replacing traditional tasks with process control tasks based on ICT. Employers are facing difficulties in recruiting ICT skilled workers and on the other hand ICT is eliminating repetitive tasks, thus reducing the demand for unskilled workers.

Despite the recent downturn of the economy, Europe's long-term demand for skilled ICT people remains strong. Short term events do not undermine the basic growth trend. There has been a sharp reduction in ICT industry growth resulting in significant redundancies. Inevitably that does temporarily narrow the gap between the supply of, and the demand for, skilled ICT personnel. However, estimates indicate that the ICT skills gap would reach the amount of 1.5 million workers by 2003 ⁷.

Enterprises react in various ways. Some are outsourcing some ICT functions, thus further stimulating the market for ICT services and consulting enterprises. It allows them to acquire technology and know-how more quickly, but not necessarily cheaply. The actual behaviour of enterprises suggests that the scope for in-house training is limited. Additionally, it must be noted that much of the demand comes from SMEs, which often face substantial difficulties in attracting qualified ICT and e-business professionals in competition with larger players which absorb most of the available expertise.

The ICT skills gap is a major risk hampering further growth in Europe. It is particularly sensitive in Europe due to declining demographic trends and the decreasing level of interest of young Europeans in scientific studies. Legislative measures taken by some of our trading partners, such as the "US Competitiveness and Workforce Improvement Act" which allows visas for foreign professionals increase the competition for qualified workers in Europe. Many young Europeans are attracted by higher pay and better working conditions in the US. The cultural and regulatory environment in Europe often limits the possibility of attracting and retaining talented foreign professionals. Restrictions on temporary workers, residency requirements, pensions transfer, tax, sub-contracting arrangements and training subsidies are further impediments towards greater attractiveness of Europe for ICT specialists.

2. NEW BUSINESS MODELS FOR THE E-ECONOMY

2.1 Diverging sectoral impacts

A key differentiation between sectors is the potential for cost savings and productivity growth. For decades, ICT has been used to boost productivity, improve quality, and to cut costs. However, even in the most efficient sectors, Internet-based applications bring a new dimension (see annex 3).

Cost savings are a compelling motivation to engage in e-business. The move from first generation applications, such as electronic data interchange (EDI), to second generation Internet-based e-business applications is generally acknowledged to result in further cost savings. In addition, e-business applications are capable of assisting with an enhanced product

⁷ Source: International Data Corporation (IDC), June 2001.

and service offering, such as step by step order tracking for customers and online after sales service. This enables enterprises to respond more promptly and flexibly to market signals and offer enhanced customer service in some sectors.

The e-Economy creates a significant opportunity to use different collaborative models to enhance product and service offerings and, therefore, enhance corporate profitability. For example, *just in time* has been enriched by new forms of co-operation between manufacturers and their networks of partners across supply chains. In contrast with EDI, new forms of *collaborative commerce* allow not only more open relationships, but also a far wider range of interaction. Typical models include real-time collaborative design, joint product development, collaborative marketing and exchange of personnel. In some cases, enterprises share access to their production and supply processes to partners – moving to *full contact* e-business.

2.2 Sectoral drivers and inhibitors

As a general rule, the more information-dependent sectors are, such as for example financial services and ICT products and services, the higher the cost reductions and/or the productivity gains realised and the deeper the extent of organisational transformation. For sectors which have already implemented efficient production processes and operate in a highly competitive environment (e.g. automotive), e-business represents an incremental change and additional efficiency gains, rather than a revolution (see annex 4 and 5).

Conversely, the more diversified the market structure of a sector, the greater the potential benefits from e-business. The textile industry, for example, with its highly fragmented structure, strong cross-border component, and rapid product rotation has been described as an ideal industry to benefit from e-business. Similarly the tourism industry has been at the forefront of Internet use. This has been characterised by existing players re-engineering their business processes and concentrating on added value services, and on the emergence of new Internet-specific players. Another yardstick for the extent of transformation brought about by e-business is the degree of specialisation of an enterprise. Highly specialised SMEs have tended in some cases to exploit the opportunities afforded by e-business to offer their products and services to new markets.

2.3 Spreading business innovation: from "dotcoms" to "traditional industries"

A characteristic of the e-Economy is the emergence of new business models. A substantial number of these have failed, along with many dotcoms. Others, however, notably in the business-to-business (B2B) area, have proved to be viable. Entering the e-Economy at a more mature stage may constitute an opportunity rather than a disadvantage for EU enterprises. Having learnt from the mistakes of pioneers, they can now use tried and tested technologies, as well as viable business models. However, for many enterprises "going digital" and fully engaging into e-business is a complex process, which almost has taken more time and effort than originally expected.

It is now generally accepted that traditional industries, rather than dotcoms, are likely to remain the driving force for the e-Economy in Europe. It is B2B rather than dotcom-driven consumer applications, which constitute the core of the market, being forecast to generate more than 90 % of all e-business revenues. It is also the area where Europe tends to be most competitive. A specific driving factor for the e-Economy in Europe is the continued demand for e-business technologies by user industries, in contrast with the US, where industries have invested heavily in recent years and are now reining back investment.

3. NEW DISTRIBUTION CHANNELS AND NEW MARKET DYNAMICS

3.1 Blurred boundaries, new distribution channels, new market organisation

In the e-Economy, products are increasingly becoming "extended products", including an important service element. Traditional industries are increasingly engaging in the offer of value-added services. Retailers have started to offer insurance and other financial services, while IT manufacturers have continued their migration from "box makers" to service suppliers by adding e-business services to their portfolio. In some sectors, such as logistics, the migration from traditional activities – carrying goods – to information management – offering a "one-stop-shop" for all e-business needs – results in a radical transformation of the core business. In many areas, more added value is derived from the service segment than from the goods supplied.

Many businesses are moving towards a mixed model of on-line and physical presence (the so-called "bricks and clicks" model). Internet-oriented enterprises are starting to acquire the characteristics of traditional enterprises, such as warehouses and chains of shops. Conversely, traditional retailers are starting to shift part of their activities on-line, adding new distribution channels and new sourcing strategies. This process of hybridisation fuelled by the consolidation of dotcoms has resulted in different market dynamics. In most areas, the reorganisation of distribution channels simply results in increased price transparency and heightened competition. In others, e-business is de facto challenging the status quo and in some cases highlighting the consequences of quasi-monopolies created by law or regulation. This is the case in sectors with prescribed distribution channels, as in pharmaceuticals or in regulated professions, such as the legal and medical professions etc. In this sense, e-business contributes to erosion of market niches, bringing competition into new areas.

The e-Economy is increasingly becoming dependent on an information infrastructure, which underpins any business process and transaction. It is characterised by unprecedented dependence on other infrastructures like energy, telecommunications, finance, transport etc. Enterprises also increasingly need to define and manage the risks associated with extended and dynamic enterprise configuration. Corporate profitability will increasingly depend on mobile and distributed resources, based on temporary strategic partnerships as well as on networks of clients, suppliers and intermediaries. This implies that organisational, legal and technical processes need to be considered holistically.

The Commission has sought to contribute to the ability of enterprises to assess opportunities and risks holistically. For example, the Communication on network security⁸ foresees concrete measures for awareness raising and best practice dissemination in that area. However, substantial work remains to be done. The challenge is to ensure economic security, which will unavoidably rely on a predictable and dependable functioning of the information infrastructure, while enabling enterprises to conduct business in an open environment.

⁸ COM(2001) 298 final, 6.6.2001. "Network and information security: proposal for a European policy approach". The Communication foresees measures to improve co-ordination among Member States (e.g. collection and diffusion of information on emerging security threats); to ensure more efficient standardisation and certification; to provide better legal protection against cybercrime; to enlist active support from governments in using secure solutions for public services; and to strengthen international co-operation.

3.2 E-marketplaces: a potential catalyst for the internal market

E-marketplaces are a specific aspect of "collaborative e-business". Several hundred public and private e-marketplaces were launched over the past two years in the US and in Europe. Some of these were sector-specific addressing the needs of an industry, others were horizontal. Some were formed by consortia of either buyers or sellers; others were set up by third party operators or technology providers. The way e-marketplaces work has been well documented. These establish communities of buyers and sellers and mechanisms that allow enterprises to participate cost effectively in global markets. In addition to technical interoperability, e-marketplaces require compatibility between business practices, e.g. common catalogues, payment methods and security. Here, XML-based standards that are being developed by industry consortia could potentially play a very important role.

E-marketplaces offer opportunities to source a wide range of products from fragmented sources. In that respect they may offer opportunities for SMEs to broaden their customer base. However, in reality, the vast majority of independent e-marketplaces have failed to establish a viable revenue base. As they condition opportunities for economic development, notably for SMEs, e-marketplaces potentially raises important public policy questions about openness, rules of participation, ownership and control. E-marketplaces also pose concrete problems in the area of trust and confidence, such as the need for quality standards to assess trustworthiness of trading partners, and commonly agreed product specification. As such they call for consensus building and the development of industry-led business standards.

3.3 B2C: a new relationship between enterprises and consumers

The potential of business-to-consumer (B2C) remains to be tapped. Its penetration in retail sales remains at about 1 % in the EU. The lack of a real take-off can be attributed partly to an inability of enterprises to develop compelling offers and successful business models and the failure to address the security, confidentiality and product/service delivery concerns of customers. One early conclusion is that pure play B2C models seem unlikely to flourish. The most promising experiences are *bricks and clicks* models, which synthesise the best of the on- and off-line worlds.

Differences in the regulation of on- and off-line commercial practices clearly hinder those enterprises trying to seamlessly integrate their on- and off-line worlds. EU policy is helping to address these obstacles. The internal market, as the biggest pool of consumers in the world, is also potentially a big enough market able to sustain a very diverse e-Economy. The advent of euro notes and coins could provide a major psychological boost to cross-border shopping. To make this potential a reality, policy-makers need to address the obstacles to consumer confidence in shopping cross-border and to business in making offers cross-border.

3.4 Delivering the e-Economy: a key role for logistics in sustainability.

Most of the new business models typical of the e-Economy are dependent on efficient logistics. Logistics play a key role in increasing the efficiency of supply chains, and in implementing e-marketplaces and new forms of collaborative commerce. The logistics sector is therefore a powerful force – not only as a facilitator for other businesses, but as a pioneer of the e-Economy itself. The choice of transport mode now permits what some would term e-materialisation where goods formerly moved physically are shipped, at least in part, electronically to places of distribution closer to the customer. While the core business remains the efficient delivery of goods, in particular across borders, global logistics enterprises have enhanced their information management capability. Services offered include not only added

functionalities, such as parcel tracking, tax collection, automated calculation of "landed costs", but also the provision of a *one-stop shop* for e-business needs.

In terms of sustainability⁹, the challenge for logistics is to substantially reduce environmental and energy impact of the enhancement of e-business revenues. In line with the Conclusions of Gothenburg European Council, it is intended that the link between economic growth and transport growth can be broken without restricting mobility, by making transport more effective and efficient. While e-business is seen to increase the individual consignments to be delivered and has the potential to increase the number of vehicles involved in delivery, efficient logistics can reduce the harmful impact especially on congestion and in pollution by reducing *wasted* kilometres travelled and the proportion of low load factor and empty running. Already, highly efficient grouping and shipment brokerage systems are increasing load factors on road and rail in Europe. In particular, mobile data services offer logistics enterprises more efficient way of matching demand with available capacity. Thus, delivery consolidation for SMEs is likely to be one of the first applications driving e-business through mobile networks.

3.5 The mobile dimension: a strategic opportunity for Europe

Mobile communications are a potential new dimension to the e-Economy. This potentially represents a strategic opportunity for Europe. Mobile communications have been an outstanding success in the EU. Penetration rates for GSM (about 70 % today, 85 % expected in 2003) put Europe well ahead of the US. The challenge is to turn EU leadership in mobile communications into competitive advantage for mobile business.

Next generation applications, based on intermediary technologies or full third generation (3G) standards, are expected to have an important impact in the consumer environment, and in the enterprise environment. A broad range of enterprises (e.g. retail, banks, and business services) is working actively to develop commercially viable consumer and business applications. The economics of 3G will not solely be based on voice telephony, but also additional related services (such as e-mail or location) and content. This may open possibilities for a broad range of enterprises (retail, banks, business services) to be involved not only as users, but also as participants in the design and implementation of innovative, added value services.

However, to date 3G environment has posed considerable – and mostly unanswered – challenges. This includes the part to be played by various stakeholders, especially the content industry and new intermediaries, in the creation of value and in the control of revenue streams. Mobility is adding a new dimension to "classic" e-business issues, such as privacy and security. Innovative developments such as location-based marketing or mobile access to critical business functions for the mobile workforces pose new legal and management challenges. Service providers are also faced with financial burdens arising from licence acquisition costs and the costs of establishing an appropriate 3G infrastructure. Similarly, the role of intermediary technologies is still unclear. Finally, international competition is growing. Japan made some advances in the next generation of mobile data services, though even in Japan there have been some technical difficulties in delivering services to end users. The success of *I-Mode*, closely watched by European operators, may give useful pointers for business success. It may also prove substantial competition in the global e-Economy.

⁹ The White Paper on the "European Transport Policy for 2010: time to decide" seeks to redress the negative consequences arising from the increased demand for mobility, through a range of measures including transport infrastructure charging; a shift away from road modes to revitalised other modes and targeted investment.

III. IMPLICATIONS FOR ENTERPRISE AND RELATED POLICIES, A CENTRAL ROLE FOR ENTREPRENEURSHIP

The e-Economy has become a wide-ranging phenomenon, cutting across geographical boundaries and industry sectors. It also cuts across a whole range of European policies. The analysis of the effects of the e-Economy at the macro and micro levels provide additional justification for the policy orientation that the EU has given itself at Lisbon, and that the Commission is implementing through various initiatives.

Entrepreneurship is the central pillar of the Lisbon strategy. It is also an essential prerequisite for the e-Economy. Entrepreneurship is one of the most important drivers of dynamic economies and enterprises. Fostering entrepreneurship calls for a holistic approach, consisting of a series of complementary measures to ensure a more favourable business environment, to encourage more risk taking, to create a market for new skills and for new attitudes. It calls for the removal of barriers to the creation and growth of new enterprises and to the transformation of existing ones, as well as for providing incentives to reward mobility and facilitate access to capital. The Lisbon strategy called also for strengthening the European efforts on RTD and innovation in order to achieve by 2010 the goal of turning Europe into a knowledge-based economy, exploiting the potential of the information society. The Commission's proposal for the Framework Programme (2002-2006) is fully committed to this objective in the overall context of the progressive build-up of a European Research Area.

In order to ensure that sufficient focus is given to the needs of enterprises in the e-Economy, the issues described below will need to be further addressed at Community level.

1. FOSTER FULL PARTICIPATION BY SMEs IN THE E-ECONOMY

The e-Economy in Europe depends, to a significant extent, on the full participation of SMEs. The eEurope Go Digital initiative¹⁰ provides a first policy response to this challenge. It aims to ensure that European enterprises, and in particular SMEs, fully embrace e-business and become active participants in the e-Economy. This includes, in particular, the benchmarking of national strategies in favour of e-business for SMEs, raising awareness and promoting best practices, and providing support for SMEs. As a rolling action plan, Go Digital will continue to identify and address the obstacles encountered by SMEs.

In particular, SMEs are keenly interested in interoperability of solutions, open standards and robust technical applications. They are crucially dependent, to an even greater extent than larger enterprises, on the dependability and reliability of networks and information. They are also particularly vulnerable to security threats, which might disrupt business and hurt their economic viability. SMEs need a clear and predictable legal framework, as well as easy access to legal advice on applicable law and existing codes of conduct. Unlike larger enterprises, who are able to call upon in house legal resources or purchase such resources externally, SMEs often lack the necessary expertise and financial resources – making it essential to develop easily available on-line legal information and affordable advice tailored to their needs. Finally, in their relations with public administrations, they are likely to be the first beneficiaries of e-government initiatives. These can also add a tangible incentive for SMEs to *go digital*. Indeed, electronic filing of taxes, implemented in a number of Member

¹⁰ COM(2001) 136 final, 13.3.2001, "Helping SMEs to Go Digital".

States, has been identified as one of the main drivers for SMEs to participate in the e-Economy.

There is therefore a need to:

- Foster open standards and certification procedures. This is why the Commission will continue active support to the *eEurope* standards action plan;
- Reinforce the security of networks and of information. This will entail specific actions to raise awareness and spread best practices, not only in the area of available technology solutions, but also in that of security processes and of risk management;
- Encourage public administrations to be at the leading edge of on-line service delivery, and to provide appropriate incentives for SMEs to access such services, particularly in key areas such as e-procurement, e-tax and social security compliance, online business registration, on line compliance with employment legislation, licensing regulations, and patent registration etc;
- Contribute to reinforcing legal certainty for SMEs engaging in cross border e-business, not only through the implementation of a clear and predictable legal framework, but also through the user-friendly availability of easily accessible, affordable and practical legal advice on applicable law and available codes of conduct. To that effect, the legal portal for SME project will be reinforced and further developed;
- Optimise the use of existing resources, such as structural funds and RTD budgets, to foster the above goals, notably to launch pilots and dissemination activities.

2. ENSURE APPROPRIATE SKILLS FOR THE E-ECONOMY

Skills underpin entrepreneurship. Both issues are very tightly interrelated. The problem of the skills gap - both in terms of entrepreneurial skills and technical ICT skills - has been addressed through a number of important initiatives, notably in the European Employment Strategy¹¹ as well as in the *eLearning* Action Plan¹² (2001-2004) and the Career Space initiative¹³. In addition, the High Level Task Force on Skills and Mobility endorsed by the Stockholm European Council, and drawing on expertise from business, education and social partners, has focused on the issue of skills shortages and occupational mobility within the European labour market, and is expected to recommend a series of policy initiatives to form the basis of the Commission's Action Plan on Skills and Mobility in 2002.

However, specific attention needs to be given to the enterprise dimension of ICT skills. The question is how, specifically, the ICT and e-business skills gap affects enterprises, notably SMEs – both ICT and end user industries. There is a need to close the supply and demand gap rapidly, and provide concrete solutions to help EU enterprises adapt to the e-Economy, even

¹¹ The European Employment Strategy includes relevant guidelines to Member States on training for the unemployed, lifelong learning, e-learning, skill bottlenecks, education and training for entrepreneurship, and digital literacy as part of workers' wider adaptability. Parallel initiatives include in particular the Commission's Communication on "Strategies for Jobs in the Information Society", COM(2000) 48 final, 4.2.2000, and its follow-up report SEC(2001) 222, 7.2.2001. "Benchmarking Report following-up the "Strategies for jobs in the Information Society".

¹² COM(2001) 172 final, 28.3.2001. "The *eLearning* Action Plan – Designing Tomorrow's Education".

¹³ Career Space is a major industry-led initiative. See: <http://www.career-space.com>.

before the Lifelong Learning Communication ¹⁴ and other horizontal initiatives start to bear fruit. Enterprise-focused policy actions should concentrate on concrete and pragmatic solutions. In this respect a number of tools should be explored, including tax incentives for mobility and maximising the range of skill development tools used by enterprises (e.g. knowledge networks, and corporate universities or skills programmes set up by industry and business schools) etc.

Taking into account these challenges, and in conformity with the European Employment Strategy, there is a need to:

- Reinforce the dialogue with all stakeholders and foster public-private partnerships to accelerate the development of focused skills programmes and e-learning solutions;
- Strengthen on-going initiatives at all levels to help enterprises, especially SMEs, to acquire ICT and e-business skills, support industry-led initiatives and foster co-operation with applicant countries;
- Monitor the demand for ICT and e-business skills in Europe, benchmark national policies, and make policy recommendations to foster the supply of skilled workforce;
- Strengthen co-operation and co-ordination at the European level to maximise the impact of existing instruments;
- Launch focused projects in 2002, in close co-operation with Member States and the private sector, which aim to address the specific needs of enterprises, including SMEs. These projects would support and complement the activities of the ICT skills monitoring group ¹⁵.

3. MAXIMISE THE OPPORTUNITIES OFFERED BY THE INTERNAL MARKET

The e-Economy has the potential to provide a further boost to the internal market. Increased transparency of prices, strengthened by the euro, and wider choice and ease of ordering across borders are strong catalysts for the internal market. However, the development of e-business highlights the limitations of existing legislation, both at Community level and at national level. Variations in national approaches to facilitating the internal market are becoming more visible, as are potential distortions between alternative distribution channels and the risks of distortion of competition between EU and non-EU enterprises.

Regulation should facilitate, not hinder, the development of the e-Economy. Differences in the regulation of on and offline commercial practices clearly hinder the enterprises trying to seamlessly integrate their online and offline offers. In the area of electronic services, the legal foundation has been laid by e-Commerce Directive ¹⁶. There is a need to systematically assess the extent to which existing legislation remains adequate to address the needs of the e-Economy. Further work still needs to be done, notably in the area of product legislation and consumer protection, as well as in the area of off-line services ¹⁷. Policy-makers need to

¹⁴ COM(2001) 678 final, 21.11.2001. "A European Area of Lifelong Learning".

¹⁵ See: <http://europa.eu.int/comm/enterprise/ict/policy/ict-skills.htm>.

¹⁶ Directive 2000/31/EC, OJ L 178, 17.7.2000, p. 1.

¹⁷ For this reason, the Commission has launched "An Internal Market Strategy for Services" - COM(2000) 888 final, 29.12.2000 and a Green Paper on EU consumer protection that addresses many of these issues, COM(2001) 531 final, 2.10.2001. It has also come forward with a proposal for a Regulation concerning sales promotions in the Internal Market, COM(2001) 546 final, 2.10.2001.

address the obstacles to consumer confidence in cross-border shopping and to business in making cross-border offers.

EU policy has a continuing role to play in addressing the obstacles confronting enterprises which try to develop e-business. It is also important, in the interests of transparency and accessibility, that product legislation and product standards are available on-line to facilitate compliance. Moreover, the global nature of e-business is challenging the appropriateness of the existing conformity assessment procedures, notably where third country manufacturers seek to certify their products in the EU. There is also a need to further review product legislation to ensure that it is neutral as between on-line and off-line distribution. E-business is increasing the number of cross-border transactions and this may lead to conflict between different national rules on the distribution of products (e.g. distance selling of pharmaceutical products). In parallel, e-business poses new challenges in terms of market surveillance and enforcement of product legislation, both in the B2B (e.g. illegal chemicals) and B2C (e.g. medicines not approved in the EU). There is a need to ensure that market surveillance authorities will be able to effectively ensure that products sold online in their territory by non-EU enterprises comply with the relevant EU product legislation.

Not all problems can be resolved by legislation. Self-regulation can play an important role in establishing trust and confidence between partners in electronic transactions. Public policy should be aimed at raising credibility for self-regulation and to ensuring that codes of conduct are respected, through the availability, should they be required, of legal remedies.

In order to address these issues, there is a need to:

- Continue to review existing product legislation, in particular certification requirements and procedures to ensure that they are neutral as between different means of product and service delivery;
- Analyse the impact of e-business on different distribution channels, and in particular potential conflict between legislation in different Member States (e.g. with respect to marketing and advertising);
- Strengthen market surveillance, in particular with respect to illegal imports and unfair commercial practices from third countries, and to improve co-ordination and co-operation between Member States in this field;
- Simplify and harmonise the regulatory framework to enable rapid development of pan-European businesses; promote fair trade in both the B2B and B2C environments, in particular through the reinforcement of self-regulation mechanisms;
- Continue to analyse the transport and logistics implications of the e-Economy.

4. PROMOTE OPENNESS AND COMPETITION

The development of the e-Economy and in particular innovative new business and market models is likely to increase competition. It potentially increases market transparency, contributes to the further integration of separate geographical markets, and facilitates expansion into new global markets. However it also raises potential challenges. Data is often hard to find and products and services are often technically complex and fast changing - raising questions about the definition of the relevant market.

Existing competition rules provide powerful and flexible instruments to prohibit anti-competitive activities, as prohibition of anti-competitive activities is laid out in general terms. A number of issues for concern have emerged in relation to infrastructure (communications infrastructure, domain names, and encryption) as well as services (B2B exchanges, consumer portals, online music, interactive television services). Fears have been expressed in particular about market dominance, control of information, joint purchasing and selling, discrimination, and collusion. Competition authorities in the EU, the US and the Member States have recently examined a number of individual cases, notably in the automotive and financial services sectors. So far, the majority of these have not raised undue concerns about the risks of anti-competitive behaviour, and been given the green light by competition authorities. While no reform of competition rules seems necessary, the Commission will keep abreast of developments in order to ensure a coherent application of existing competition rules in both on-line and off-line environments. The goal is to minimise restrictions on competition, and prevent market dominance.

Standardisation also provides another powerful tool to promote openness. European standardisation, a voluntary industry-led consensus-building process, has contributed to create a level playing field for products. However, the e-Economy raises new challenges for standardisation. The development of digital technologies and the advent of the Internet are further blurring the borders between telecommunication, broadcasting and IT. New integrated services, products and applications are emerging. In addition, the e-Economy is by nature global and market-driven. Considerable amount of co-operation between stakeholders will be required to solve technical and organisational interoperability problems.

The Commission has a keen interest in ensuring that the European standardisation system provides an open, neutral and transparent platform for participation in the e-Economy. The main issue for standardisation is to offer to all relevant European stakeholders (service providers and consumers) common platforms in order to both increase the economic efficiency of enterprises and to support the wider public interest in achieving the objectives of competition policy. European standardisation should therefore reflect on its organisational structures, including the role of the national standards bodies, in order to respond to the challenges raised by the e-Economy. The Commission finalised recently a report indicating in particular, how standards and other forms of voluntary agreements can be better used to ensure the openness of e-marketplaces and to build-up the necessary level of trust and confidence¹⁸.

In this context, there is a need to:

- Continue to assess potential competition issues, on a case by case basis;
- Promote the development of codes of conduct in the B2B and B2C area, notably to guarantee access and openness in e-marketplaces;
- Support standardisation activities, both formal and informal, notably in support of the eEurope 2002 Action Plan;
- Discuss with Member States and other stakeholders on the role of "new standardisation deliverables", based on more flexible rules and faster adoption, in support of EU policies.

¹⁸ COM(2001) 527 final, 26.9.2001. "Report on the actions taken following the Resolutions on European standardisation adopted by the Council and the Parliament in 1999". The Council pointed to these challenges in its Resolution on the role of standardisation in Europe of 28 October 1999, OJ C 141 of 19.5.2000.

5. PROMOTE E-ECONOMY RESEARCH

To remain competitive European enterprises must evolve towards ICT-intensive production systems. However, ICT is a highly labour intensive service still representing relatively high costs for many enterprises. In addition the accessibility, functionality and openness of ICT-based systems still fall short of user expectations in too many cases. Taken together, these facts risk slowing down the further integration of ICT within enterprises. Research activities are needed to fill these gaps, mainly by developing user friendly, affordable and interoperable technical solutions that are crucial for supporting the development of the e-Economy among enterprises.

Moreover, the modernisation of European enterprises in the e-Economy requires complementary research efforts not only in the area of technology, but also with regard to related socio-economic issues and to the effects on human resources. European research efforts are aimed, *inter alia*, at promoting skills, mobility and sectoral training plans, and at encouraging new interdisciplinary working practices.

There is therefore a need to:

- Support ambitious multidisciplinary research activities for more flexible, knowledge-based and sustainable enterprises in the e-Economy;
- Stimulate management of change in the organisation of enterprises within the e-Economy, through research and demonstration activities (e.g. on efficient and reliable B2B and B2C operational tools optimising the overall value chain);
- Launch take-up initiatives addressing issues such as:
 - technologies and applications with a global dimension for the competitiveness of enterprises (e.g. mobile business and e-work environments);
 - solutions to strengthen the functioning of the internal market (e.g. interoperable EU-wide financial and e-logistics systems, e-government, security solutions);
 - indicators, metrics, modelling and scenarios for the e-Economy for mid- to long-term assessment of the impact of technology and enterprise policies.

6. INCREASE EFFICIENCY IN GOVERNMENT-BUSINESS RELATIONSHIPS

Exchanges between business and public administrations are a potentially powerful driver for the e-Economy i.e. an area where public authorities can influence behaviour through providing positive examples of on-line applications. In particular, public authorities should offer on-line services aimed at lowering administrative costs for citizens and enterprises. To do this it is necessary to try to ensure that e-government solutions are not developed at a different pace and using different technical strategies than those adopted by commercial enterprises. This applies, for example, to payment mechanisms and authentication procedures. In parallel with the removal of discrimination against electronic signatures and electronic contracts in the business environment, discrimination against electronic filing of official documents should be progressively abolished. In this respect, the use of open standards and off the shelf applications is the key to ensure interoperability.

Similar openness should be achieved across borders, especially where there is an impact on internal market objectives i.e. e-government applications should as far as possible be open not only to enterprises within an individual Member State, but to all European enterprises.

In this respect, there is a need to:

- Foster the online availability and exchange of information. This should happen at all levels, between manufacturers and public authorities, between different administrations and with certification and standardisation bodies. The Commission will encourage Member States to offer the possibility of e-registration of products;
- Promote interoperability, both in terms of infrastructure like electronic signatures, cross certification and smart cards, as well as in terms of service standards. The aim is to ensure broad interoperability both across borders and between administrations and business;
- Benchmark online services of public administrations in Member States. To this effect, a study will be launched to assess existing solutions and to highlight best practice.

CONCLUSION

In March 2001, the e-Economy conference organised by the Commission brought major European business leaders together with President Prodi and six European Commissioners to discuss the transformation of the European economy arising from the wide ranging enhancement of the use of ICT. It is now generally accepted that the increased use of ICT leads to productivity gains and hence improves the competitiveness of enterprises and the economy as a whole, leading to higher economic growth than otherwise achievable.

The recent economic downturn and the collapse of many dotcoms have demonstrated that the "new" economy is as exposed to the ups and downs of the economic cycle as the so-called "old" economy, and that sound management is indispensable for the survival of any enterprise. This, however, does not distract from recognising the potential of ICT to increase the productivity of enterprises, to improve their organisational efficiency, and to optimise the design of the value-chain. Indeed, the Commission firmly believes that the successful integration of ICT in the core business processes of enterprises is fundamental for ensuring continuous and sustainable competitiveness both at macroeconomic and firm level.

This is why it is important to spread the knowledge of the possibilities offered by ICT among European enterprises. In this context, the "Helping SMEs Go Digital" initiative launched in 2001 is an important policy step to help Europe's 19 million SMEs to harness the potential benefit of ICT and e-business.

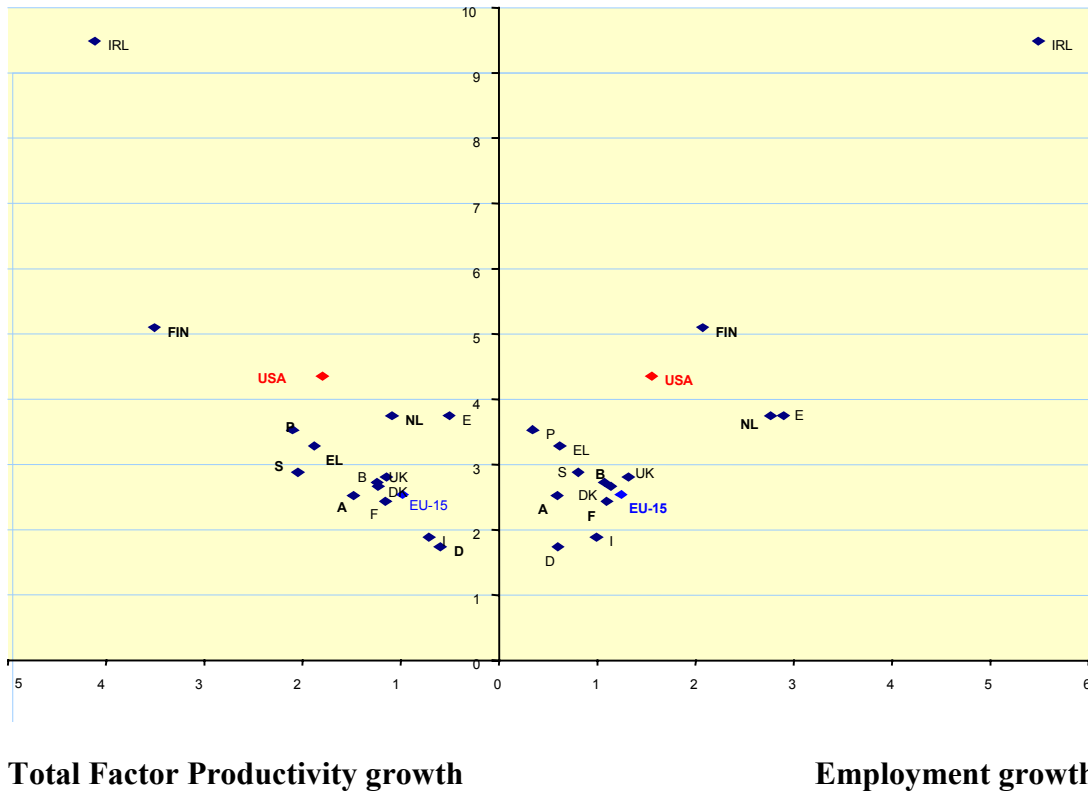
This Communication highlights the next steps that will have to be taken to ensure that the benefits arising to European enterprises from the e-Economy are maximised. These steps encompass the fostering of a culture of entrepreneurship and innovation; enhancing ICT skills levels necessary to participate effectively in the e-Economy; raising the ability of European enterprises to compete in a modern global economy; and further improving the functioning of the internal market.

These challenges must be addressed through a clear and shared vision as well as a long-term strategy for enterprise policy. The practical implementation of policy measures will require good and timely co-ordination. This will require a strong commitment from the relevant stakeholders to take up the challenge of the Lisbon European Council, i.e. to make Europe the most competitive and dynamic knowledge-based economy within ten years. This will also require the systematic integration of the "e-dimension" into all EU policies relevant for European enterprises, including SMEs.

To this end, in 2002 the Commission will intensify the debate and deepen its co-operation with all relevant stakeholders, including Member States, industry, consumers and social partners, to develop an agenda for maximising the benefits of the e-Economy for European enterprises.

Annex 1: GDP, productivity and employment growth

GDP growth



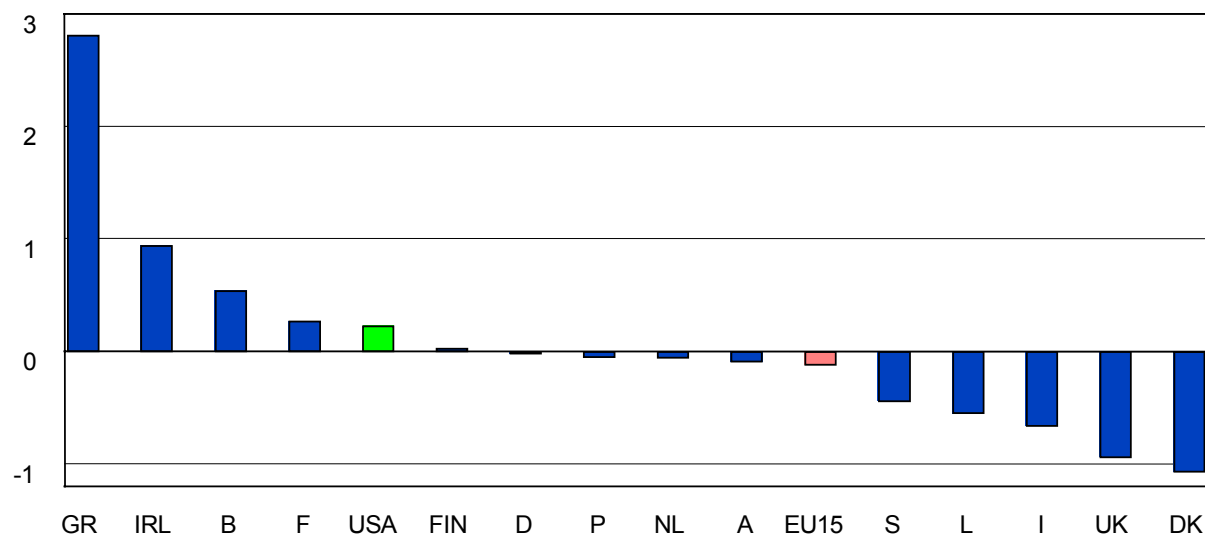
Percentage changes, annual average

This chart presents data on GDP growth, employment growth and productivity growth¹⁹ for the period 1996-2000 for the EU member states and the US.

It can be seen that all countries have recorded GDP growth rates above those of employment, thus experiencing rising labour productivity during this period. In particular, however, a group of nations – Ireland, Finland, the Netherlands, Spain and the US – stand out as having recorded the best combination of output and employment growth during this period. Another group consisting of Germany and Italy has recorded the worst combination. The remaining Member States and the EU-15 average cluster between these groups.

¹⁹ Measured by total factor productivity (TFP) growth. TFP represents that part of output growth not explained by the growth in the capital and labour input, and is believed to represent the contribution of technology, including recently the contribution of information technology, to economic growth.

Annex 2:
Difference in total factor productivity growth



Difference between 1995-2001 and 1990-1995 in period averages in percentage points.

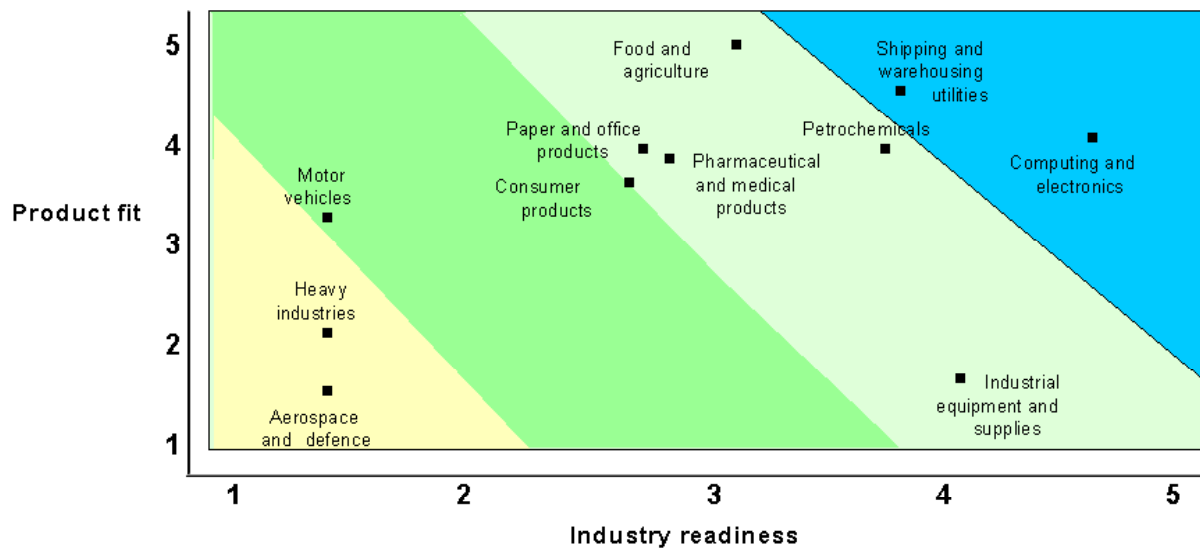
Source: European Commission – Ameco Database

Annex 3:
B2B estimated cost savings by sector

Sector	Estimated savings
Aerospace machining	11 %
Chemicals	10 %
Coal	2 %
Communications	5-15 %
Computing	11-20 %
Electronic components	29-39 %
Food ingredients	3-5 %
Forest products	15-25 %
Freight transport	15-20 %
Health care	5 %
Life Science	12-19 %
Machining (metals)	22 %
Media and advertising	10-15 %
Oil and gas	5-15 %
Paper	10 %
Steel	11 %

Source: Goldman Sachs (2000)

Annex 4:
E-marketplaces "take up index" by sector



Source: Forrester Research (2001)

Annex 5:
Three case studies

CASE STUDY 1: THE AUTOMOTIVE INDUSTRY

Building on extensive use of EDI, the automotive industry has pioneered innovative uses of Internet technologies. In the supply chain, a plurality of Internet based platforms were launched, some enterprise specific (e.g. BMW), some shared by a number of manufacturers (Covisint) and some operated by IT enterprises (e.g. IBM). The rationale is to redefine supply chain integration, through more open communication between manufacturers and suppliers, and enhanced functionality (negotiating tools, collaborative design software). Such efforts at supply chain re-engineering are part of a broader transformation, which includes the *e-enabling* of internal processes within enterprises and ultimately embracing customers.

In terms of cost reduction, the industry estimates that economies will come from:

- A reduction of supply prices due to increased competition among suppliers (estimates from 3 to 14 %, according to Ford),
- A reduction in business transaction costs (to fall by 90 %, according to Daimler Chrysler),
- Speedier communication, faster delivery, and reduction of inventory costs. In this area, the Internet is deemed to provide substantial cost advantages compared with previous "just in time" systems. Overall, the goal is to reach total supply chain costs savings of 3 500 Euros per vehicle (Ford 2001).

In addition to cost reduction, *e-enabling* the enterprise provides crucial business advantages: shorter time to market, better response to market changes, lower inventory and *built to order* products. Simultaneously, deeper collaboration allows for optimised (real-time collaborative) product development, better procurement (including on-line requisitioning and tendering), and more effective supply chain management operations (real time visibility across the whole supply chain, optimised inventory management and improved logistics management); e-marketplaces have been a highly visible development. Covisint was launched in October 2000. It links manufacturers (the four founders i.e. Ford, General Motors, Daimler Chrysler and Renault-Nissan, joined later by five other manufacturers) and component enterprises. This proved to be far from easy to deliver in practice and faced numerous challenges, including legal uncertainties, technological difficulties, and commercial issues, such as culture change and parallel market making activities by its backers. Covisint has emerged from its teething troubles but it illustrates the considerable difficulties of establishing new marketplaces.

B2C has not yet had the revolutionary effect predicted on the automotive industry. Direct sales to consumers remain limited: although the Internet is used in 45 % of car purchases in the US, its main role is for information gathering. However, a variety of innovative business models are developing. These include third party services (*referral* services that do not sell but direct customers to dealers, e.g. Autobytel); direct brokers (selling directly to consumers, e.g. Virgincars); information services (deriving revenue from advertising and partnerships with dealers, e.g. Yahoo-cars); manufacturer-dealer joint ventures web sites (e.g. FordDirect); manufacturers sites (providing information, referring to dealers by also offering special deals, e.g. Citroen); dealership group sites (e.g. French dealers association Ecarcom). Through increasing price transparency, and increasing choice across borders: the Internet is also putting increasing pressure on the existing distribution arrangements.

CASE STUDY 2: THE RETAIL AND DISTRIBUTION INDUSTRY

The European retail market was worth nearly € 1 800 Billion in 2000. It is very diverse, encompassing large players with global operations (Carrefour, Metro, Ahold, Tesco etc), and a large number of SMEs and family operations, particularly in southern Europe. Overall, this sector is undergoing a rapid restructuring process, indirectly speeded up by ICT and Internet. It is marked by three dominating trends:

- Concentration (with closer links between manufacturers, wholesalers and retailers);
- Diversification (e.g. *downstream* into financial services, travel, as well as *upstream* into co-manufacturing and logistics management);
- Globalisation (with EU retailers like Ahold expanding outside the EU, and US retailers like Wal-Mart and Costco developing in Europe).

This sector has been seen as the prime candidate for the e-business revolution. Initial expectations of B2C development (e.g. 2000 estimates by Merrill Lynch that B2C would reach between 5 and 7 % of the total EU retail market) have been revised downwards. The true revolution is happening *upstream* in the supply and sourcing areas, where large groups have embraced e-business to cut costs, reduce inventory, respond to market demand and provide better service. Internet-only retailers have seen their numbers decrease with the demise of the dot coms - many of whom being acquired by larger groups. The Internet is now part of a diversified channel strategy by retailers.

On the supply side, large EU retailers have developed new purchasing and collaboration platforms. While some groups (Carrefour, Sears) have gone the way of multi-enterprise e-marketplaces (e.g. GlobalNetXchange), others are favouring enterprise specific buying platforms (e.g. Tesco Information Exchange). The largest of these platforms aim to provide a neutral open environment, with low entry costs for suppliers as opposed to previous EDI systems used by the industry. The initial aim was to fully automate combined supply chain purchases from 85 000 suppliers worldwide, for goods worth an estimated € 85 000 million.

Cost savings are important in this traditionally low margin industry. Carrefour estimates that savings averaged 10 % by purchasing through a digital exchange (although it is not clear whether such savings are not, in reality, pressure on the supplier margins). Similarly, Sainsbury estimates that its € 300 000 investment in its e-purchasing platforms will bring savings of € 3.3 million in over 18 months, while reducing inventory and allowing better response to market changes.

Integration of purchasing platforms with store management applications and with *customer relationship management applications* (CRM) is seen as the main challenge by retailers. This is particularly true for smaller retailers who lack the financial and technical resources, not only to install such systems, but also to use them effectively. The multiplicity of vendors (notably in the CRM area), and the practical difficulties of integration between supply-side and customer applications has meant so far that the benefits of such integration have been difficult to realise

On the customer side, in an increasingly competitive environment, attention to customer's needs' has become critical. In this area, established *bricks and mortar* retailers have a crucial advantage over Internet-specific enterprises, both to capture and to retain new customers. The most successful retailers (e.g. Tesco, Sainsbury) have focused on a multi-channel approach, integrating in-store and on-line customer management.

CASE STUDY 3: THE MULTIMEDIA INDUSTRY

As a result of convergence of networks, platforms and content, the multimedia sector has grown rapidly in recent years. The ability to digitise and exploit content across many different platforms has provided the business driver for large multimedia alliances, such as AOL-Time Warner and Vivendi-Universal. It has also fuelled the emergence of large number of smaller enterprises, notably in Europe.

Key impacts of the e-Economy include:

- Development of new business models

A variety of new business models are emerging, based on the "repurposing" of content across different media, and on new distribution channels. While the publishing and music industry have been at the cutting edge of new developments, the cinema industry is now testing the Internet as a new distribution channel.

Key business issues include the risk of *cannibalisation* of existing distribution channels (e.g. impact of Internet distribution of films on the *pay-per-view* market, of on-line newspapers and magazines on newspaper sales) and the emergence of new distribution channels enabled by the Internet (e.g. Napster).

In general, Internet-only operations have met with limited success, either through insufficient funding by parent enterprises (e.g. closing down of a number of "Webzines" launched with great publicity in the late 1990s) or successful lawsuits by incumbent players.

Conversely, multi-channel distribution (i.e. *repurposing* and *cross promoting* content across different channels) is becoming the rule.

– Emergence of new policy challenges:

These include competition issues (e.g. lawsuits by commercial publishers and multimedia operators, such as Pearson, against state-funded European public broadcasters in the multimedia field) and major copyright and digital management rights issues.