



“Europe is already investing more than 1 Billion Euro per year in ICT research. This must increase further, but so must our efforts to improve economic competitiveness by innovative use of this technology in all sectors of the economy.”

Viviane Reding Commissioner for
Information Society and Media

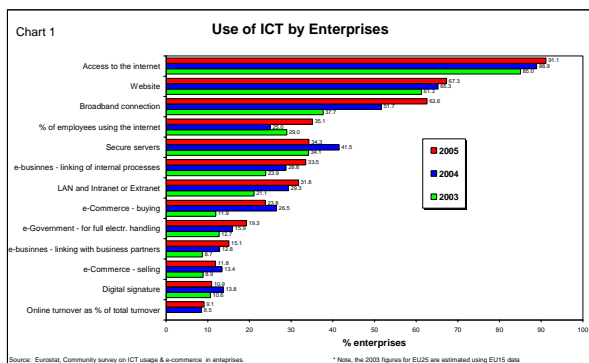


i2010

Innovation & Investment in R&D

Adoption of Information & Communication Technologies (ICT) by Business

Rate of adoption in EU still lags the USA: Between 2000 and 2004, investment in ICT equipment and software accounted for 2.4% of the GDP in the EU-15 and for 4.2% in the US. Micro-economic evidence¹ on connectivity and use of ICT by businesses shows that although most EU firms are connected (91.1% in 2005), only a minority use more advanced eBusiness solutions, e.g. to establish automatic links between customers or suppliers. Use of these advanced applications is growing (15.1% of businesses in 2005 as against 12.8% in 2004) but remains small. (Chart 1)

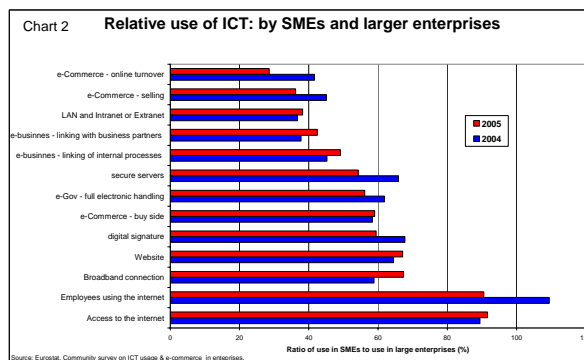


There is also a **substantial gap in the use of ICT between large companies and SMEs**, which is even larger for more complex applications (see chart 2). They have similar levels of connectivity and there is little difference in the proportions of employees using the Internet. However the gaps grow as the applications become more complex and the proportion of SMEs buying and selling

online is only around a third of that of large companies.

New software and service architectures are emerging that allow not only the integration of business processes within companies but also the networking of companies and totally new collaborative environments. Key technologies enabling these advances are computer Grids and service-oriented architectures. Both are areas where Europe has demonstrated excellence and leadership in the related research.

ICT can have a disruptive impact on companies and markets, thus driving innovation. Disruptive change is already evident in manufacturing (e.g. through *personalisation / customisation*, i.e. inserting a service into a product), in retailing (through eBusiness, diffusion of RFID / electronic labelling, automation of points of sale and supply chains, and mobile commerce), and more recently in service industries (through radical improvements in the automatic creation and personalisation of eServices, their support for physical services, and consequent improvements in productivity).



¹ Source: University of Groningen, Total Economy Growth Accounting Database

Further disruptions to companies and markets caused by advances in ICT in the coming years will most likely be threefold:

- The emergence of an **“Internet of Things”** where everyday objects can make simple communications on-line, enabling for example detailed and timely knowledge of product location and life cycles to be compiled, as well as individual and dynamic prices for goods.
- The creation of **“innovation ecosystems”**; for example taking the form of SME networks which cooperate globally; dynamically exchanging resources, applications, services and knowledge. Based on computerised representations of the world’s economies and related business opportunities, such ecosystems will support radically new forms of commerce that respond very rapidly to market changes.
- New forms of **flexible and mobile teamwork**; dynamic and agile communities of people working in new collaborative environments supported by the Internet.

To meet these challenges, enterprises have to reach key targets: increased flexibility, economies of scale and scope, cost reduction, shorter timelines, access to technologies, improved quality, and improved operational efficiency. A major effort will be required to achieve enterprise interoperability especially where the market fails to find solution.

Technological developments can translate into greater efficiency gains if investment in ICT is accompanied by reorganisation of business processes. However, **skills shortages are an important constraint**. Between 2000 and 2004, ICT skills in the labour force did not significantly increase: the share of ICT specialists remaining constant around 3% and people with more general IT-skills remaining at around 18% (figures for 2004)². Yet competition, technological and organisational changes are also changing the occupational profile of the ICT sector itself, and the mix of skills it now requires. For example, digitisation and related changes in electronic communications have reduced the need for traditional skills in maintenance and repair, and at the same time boosted demand for computer and electronic engineering professionals.

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² Commission estimate from the labour force survey using OECD skill definitions