The European e-Business Market W@tch

E-Business in Europe – 2005

Industry perspectives on electronic business development

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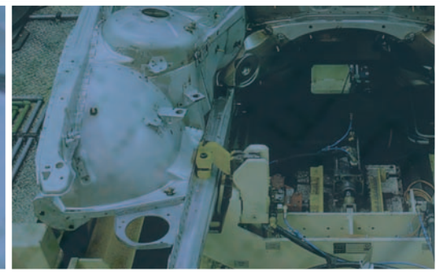
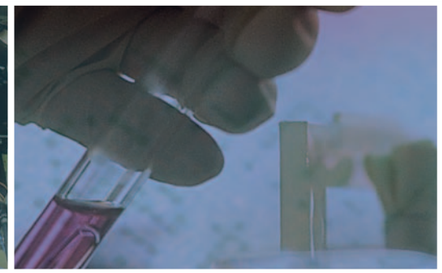
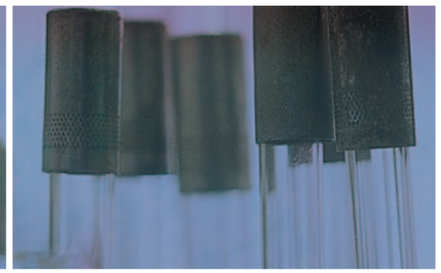


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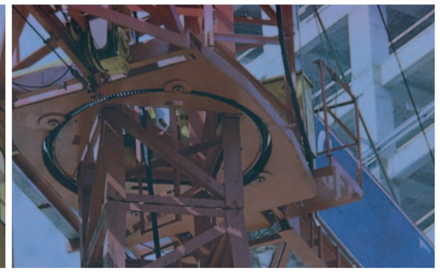

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A European e-Business Observatory since 2002

Information and communication technologies (ICT) are changing the way in which companies trade with their suppliers and customers. The *e-Business W@tch* monitors related developments and analyses their impacts on different sectors of the European economy. Special emphasis is placed on the implications for SMEs.

The initiative was launched by the European Commission, DG Enterprise and Industry, in late 2001. It will be operational until November 2005, with a possible extension until the end of 2006. In 2005, studies by the *e-Business W@tch* cover 10 sectors, with a focus on manufacturing.

A cornerstone of the monitoring activities is a representative survey among decision-makers in European enterprises about their use of e-business. The latest survey was conducted in January and February 2005. To complement the statistical picture, *e-Business W@tch* has also collected case studies on e-business activity in enterprises around the world.

This brochure presents findings and conclusions from these activities. More detailed Sector Studies, and further resources (Pocketbooks, Annual Reports) are available in electronic format at www.ebusiness-watch.org or via the Europa server at

(www.europa.eu.int/comm/enterprise/ict/policy/watch/index.htm).

ICT as a Catalyst for Innovation Processes

Costas Andropoulos

Head of Unit, European Commission, Enterprise & Industry Directorate General

Information and communication technologies (ICT) are important catalysts for far-reaching innovation processes in many sectors. In the recent enterprise survey, conducted by *e-Business W@tch* during the 1st quarter of 2005, 45% of firms (weighted by employment) said that they had introduced new business processes in 2004.

About 75% of this innovation activity was directly related to, or enabled by, ICT. The innovation potential of e-business should, therefore, be considered as uncontested on the aggregate, industry-wide level.

The same results demonstrate that, in manufacturing sectors, e-business has triggered significant innovation mainly inside the companies, notably in supply chain and delivery processes, such as automatic stock replenishing and improved logistics. In service and customer-facing sectors, such as tourism, the innovative element is more evident in external transactions, as the internet has become a key interface for marketing and sales activities.

However, we must realistically assess the opportunities and implications for individual firms. As the maturity of applications and their diffusion in the industry grows, it is increasingly difficult for firms to directly gain competitive advantage from ICT. Electronic business adoption has become more of a necessity for many firms, notably the smaller ones, if they want to stay in business. This can cause substantial cost in the short to medium term. Moreover, introducing new business processes is an organisational challenge for large and smaller enterprises alike, and can meet opposition in management or among employees.

Policy, on the European, national and regional levels, has a role in supporting companies to meet these challenges. Fostering innovation in European enterprises, both in the technical sphere and in the business process, is in fact one of the main policy objectives of DG Enterprise and Industry. In this context, the monitoring activity of *e-Business W@tch* and the resulting studies are an essential source for policy-makers to assess the maturity, and to better understand the implications, of e-business across different sectors.

This brochure provides an unbiased snapshot of key business trends induced by ICT in 10 sectors of the European economy. It summarises the main findings of the *e-Business W@tch* as collected through representative surveys, case studies and in consultation with industry representatives. Readers with an interest in specific aspects or sectors are advised to explore the comprehensive collection of e-business research available at www.ebusiness-watch.org.

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Cost cutting is still prevalent, but the next phase in e-business is already around the corner

Since 2002, *e-Business W@tch* has been monitoring the development and implications of electronic business in about 20 sectors of the EU economy. In this period, and especially in manufacturing industries, the focus for electronic business has been on reducing costs and optimising supply processes. The "cost cutting paradigm" is still prevalent among many firms, mainly as a result of increased competitive pressure on prices in a global economy.

Statement

Hannes Selhofer

e-Business W@tch
Project Manager,
empirica GmbH

However, there will be an end to that story at some point, at least for procurement and supply chain management. Many of the large players have already optimised their supply side processes in highly sophisticated ways or are in the process of doing so. In comparison, the use of ICT for marketing and sales purposes is still remarkably underdeveloped in many industries.

It therefore seems plausible that attention will gradually shift toward customer facing strategies and processes. In service sectors such as tourism, banking, insurance and ICT services, the internet has already had a profound impact on customer relationship, and ultimately on the entire value networks in these industries.

Even if requirements for marketing and sales are quite different in B2B oriented manufacturing sectors, trade between companies will increasingly become web-based. This will be a gradual development, but the evidence is already there. Again, it appears to start with exploiting opportunities for cost cutting.

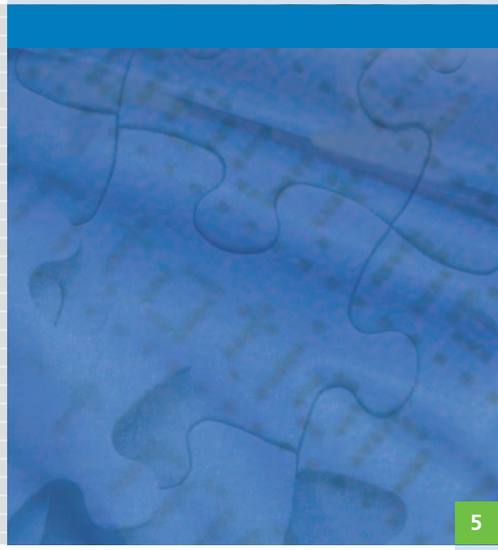
For instance, there is a clear trend to optimise sales-related processes in B2B and B2G transactions. The public sector may be a role model, as many European regions have launched electronic invoicing initiatives to save costs in administration. If successful, this could trigger fast uptake of e-invoicing among firms, as they provide services to the public sector, and pave the way for digitising further parts of sales processes.

Technological developments and the agreement on common standards, for example in web services, facilitate business-to-business connectivity and data exchange. 32% of all firms interviewed by *e-Business W@tch* in 2005 (and more than 50% of large firms) said that they consider the integration of IT components by means of web services as important for them, compared to only about 10-15% (depending on the sector) in 2003.

This has implications for marketing. Companies could be in serious trouble if they miss out this development, that is if they fail "to connect" to their customers (be it the public sector, other businesses, or consumers) by offering their products in the required way. Most business will involve some form of "electronic business" in the near future, if it does not already today.

Electronic Business in 2005 and Beyond: Will the Growing Maturity of Applications Shift the Strategic Focus?

The growing maturity of e-business activity, and its impact on productivity, can be described as a typical innovation path. However, the process does not evolve in parallel for all companies.

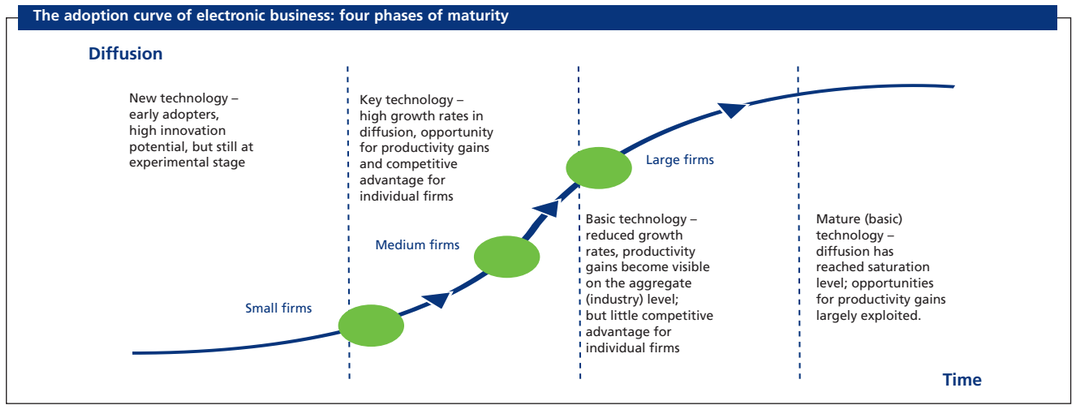


Evidence from surveys and case studies carried out by *e-Business W@tch* shows that small, medium-sized and large companies have reached different levels of maturity on this path. The dynamics of the development also varies by sector and across regions.
In large firms, e-business inceasingly displays the characteristics of a basic technology, while small companies are only approching the level where e-business applications are gradually becoming a key technology. Medium-sized companies are somewhere in between these two stages of development. The impact of e-business on productivity, and opportunities for individual firms for strategic positioning, differ between the various maturity levels (see chart).

It is possible that the strategic focus of e-business activity could also change along with the growing maturity of applications. In recent years, the potential of e-business for cost reduction was a key priority, particularly in manufacturing. In a business environment of increasing competitive pressures, the cost-reduction dimension of relative advantage tends to become more important than the revenue advantage. Large firms in particular have vigorously adopted e-business and benefit from operational opportunities (see *e-Business W@tch* Sector Studies).
As the maturity of applications grows, the potential for cost-reduction may soon be exploited by many firms. It can be expected that these will then turn their attention to marketing related goals and that this could constitute "the next wave of e-business".

In services, on the other hand, the picture has been a different one. In retail, market-oriented activities (exploiting new markets by selling online, specialised e-retailers) and process-oriented activities (optimising the supply chain, just-in-time strategies) have both been important drivers. In tourism, marketing and sales- related opportunities (online reservation services, destination marketing, ticketing) are clearly more important than cost reductions.

The adoption curve of electronic business: four phases of maturity



Benchmarking e-Business Intensity in 10 Sectors of the EU Economy

The intensity of electronic business differs widely between sectors, particularly between manufacturing and service sectors. The e-Business Index 2005[3] shows that (among the 10 sectors surveyed) e-business activity is most advanced in IT services, the automotive, aeronautics and pharmaceutical industries.

Manufacturing

The rapid development of e-business in the leading manufacturing sectors is mostly driven by their large international companies. Supply-chain integration and the streamlining of procurement processes are common objectives in these industries. E-business offers attractive solutions for related tasks.

In the machinery and equipment industry, electronic business developments have been quite dynamic since 2003. For example, e-business is increasingly recognized as a useful means of providing customer service. This certainly holds true for the publishing and printing industry, as major segments of this sector operate in B2C markets. In addition, ICT are having a considerable impact on production and internal work processes in this sector.

The food and beverages sector and the textile and clothing industry are late adopters of ICT compared to the other manufacturing sectors studied.

However, they do demonstrate signs of increasing e-business activity, mainly in response to structural changes and new requirements. In the food industry, there is a pronounced digital divide between large and small firms: the larger companies are very advanced users of e-business for logistics and supply chain integration.

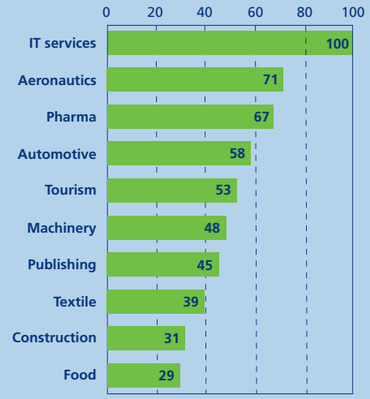
Construction and services

E-business activity in the construction industry appears to be very limited, with unexploited potentials. The structure of the industry, which includes many small craft companies, cannot fully explain the disparity with other sectors.

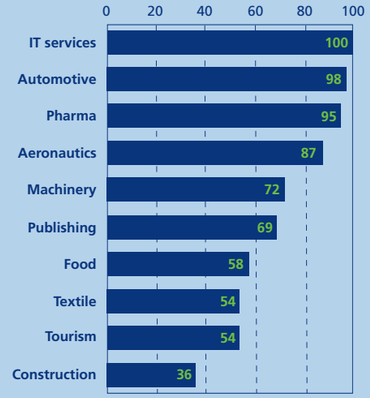
Among services, the IT services sector shares a common feature with tourism: in both industries, online channels have become key tools for marketing, communication and interaction with customers. In tourism, online booking and reservation services have been widely accepted among consumers and business travellers. "E-tourism" has truly taken off. In IT services, ICT play a significant role in the way in which software and other products are produced, promoted and provided.

e-Business Index 2005 for Sectors

Benchmark based on firm-weighted data[1]
(indexed values: highest score = 100)



Benchmark based on employment-weighted data[2]
(indexed values: highest score = 100)



1 Firm-weighted data express e-business adoption as "% of firms in a sector with a certain activity", irrespective of the size of the companies (i.e. small companies and large ones count equally). Results are mainly determined by the situation in small firms, as there are many more small companies than large ones in the population of enterprises.

2 Employment-weighted data express e-business adoption as "activity in firms comprising …% of employment in a sector", thus emphasizing the situation in larger companies.

3 The e-Business Index is a benchmark developed by *e-Business W@tch*. It is based on 16 component indicators related to ICT use for business, extracted from the recent e-Business Survey of February 2005

Benchmarking e-Business Intensity in 7 Countries of the European Union

Firms from the UK and Germany are most advanced in their use of ICT and e-business among the sample of seven EU countries which were part of the e-Business Survey 2005.

The e-Business Index 2005, computed by the *e-Business W@tch* for the Czech Republic, France, Germany, Italy, Poland, Spain and the UK, shows that firms from the UK and Germany are practically head to head.

Among larger companies, firms from France and Spain are close behind. However, the Index suggests that there are still some geographic disparities in ICT adoption among firms, particularly among small and medium sized enterprises, although the "digital divide" in business is in general less pronounced than among households. The e-Business Index aggregates 16 component indicators related to ICT and e-business, extracted from the recent enterprise survey (February 2005).

In a previous survey by *e-Business W@tch* (2003), firms from the Nordic countries were found to be most advanced in their use of ICT. Although they were not covered in the 2005 survey, case studies and evidence from other surveys clearly indicate that firms from the Nordic countries are still leading ICT adopters in the European Union.

Impact of industry structure on e-business activity

However, results should be taken with a pinch of salt, as they partly reflect industry structure. In Italy, for example, sectors dominated by small firms are much more prevalent than in other countries. Since large firms are more advanced in electronic business, aggregate employment-weighted data consequently point at a comparatively lower level of e-business activity in Italy. This reflects, at least to some extent, the structure of the economy rather than the overall e-maturity of firms.

Dynamic development in Spain and Poland

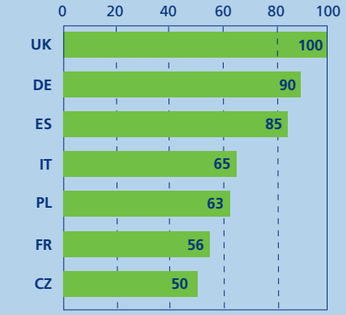
For Polish companies, data indicate that the digital divide may have narrowed compared to the situation in 2003. The level of e-business activity appears to be comparable to the one in the Czech Republic, which emerged as one of the forerunners among the (then) Acceding Countries in the 2003 survey.

There are some striking survey results for companies from Spain when it comes to sophisticated applications and business process integration, particularly in the area of supply chain integration and e-procurement. Spain has the highest percentage of firms using SCM solutions among the seven countries benchmarked.

Benchmarking results for France suggest that the digital divide between small and large firms is even more pronounced than in other countries. The relative performance of French companies is significantly better if the emphasis is on larger firms (see employment-weighted benchmark).

e-Business Index (2005) for Countries

Benchmark based on firm-weighted data[1]
(indexed values: highest score = 100)



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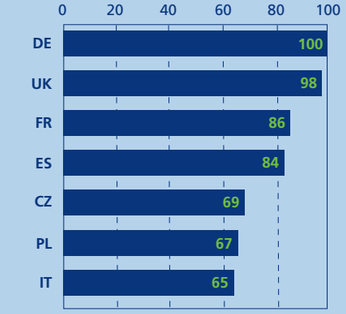

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2 Employment-weighted data express e-business adoption as "activity in firms comprising …% of employment in a country", thus emphasizing the situation in larger companies.

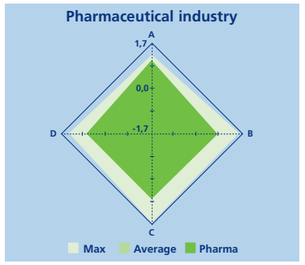
E-Business Sector Profiles in 2005: The e-Business Scoreboard

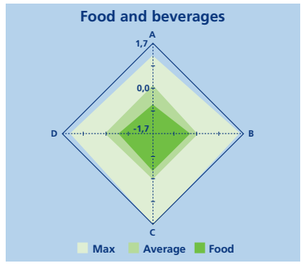
The e-Business Scoreboard was developed by the *e-Business W@tch* in 2004. It is an instrument to compare and visualize the intensity of e-business activity across different sectors, countries or size-bands, in different areas of business activity. The Scoreboard is composed of 16 component indicators which are taken from the e-Business Survey 2005 (see p. 22).

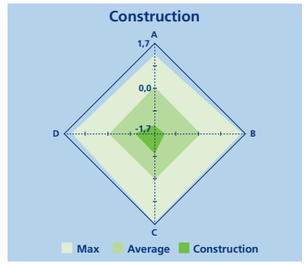
Aggregation:
These indicators are aggregated on two levels. In a first step, indicators are aggregated into four sub-indices that represent major application areas of e-business. The diamond charts on this page show these four dimensions of e-business activity. The four sub-indices can then be aggregated into the overall e-Business Index (see p. 6).

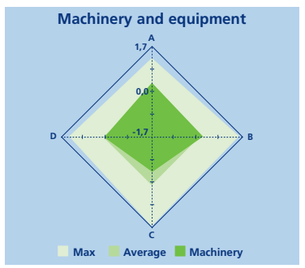
The four dimensions are:
(A) ICT infrastructure; (B) Internal business process automation; (C) Procurement and supply chain integration; (D) Marketing and sales processes.

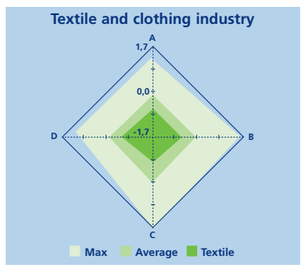
Normalisation:
For the Scoreboard, values of component indicators were normalised, based on mean values and standard deviations. The scale shows the multiple of a standard deviation for a specific sector. 0 equals the mean value for all 10 sectors. The size of the green square indicates the (relative) e-business intensity of a sector.

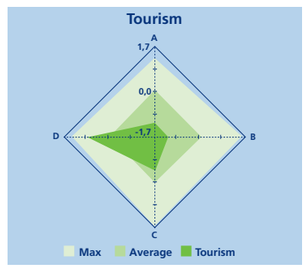


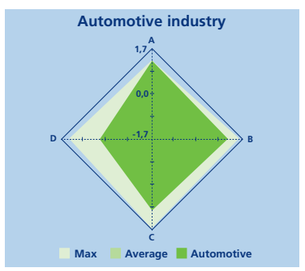


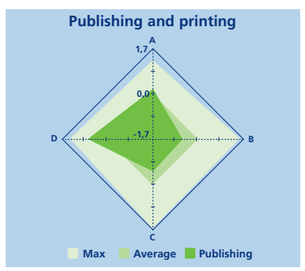


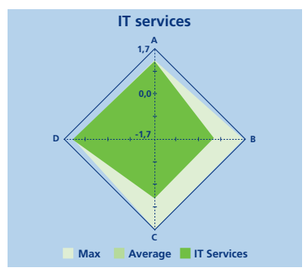






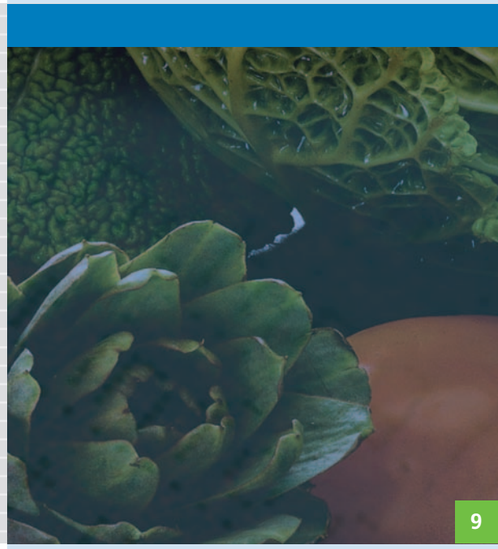






E-Business Profile: The Food & Beverages Industry

The study on this sector was prepared by Databank Consulting (databank@databank.it). The full report is available at www.ebusiness-watch.org. ('resources')



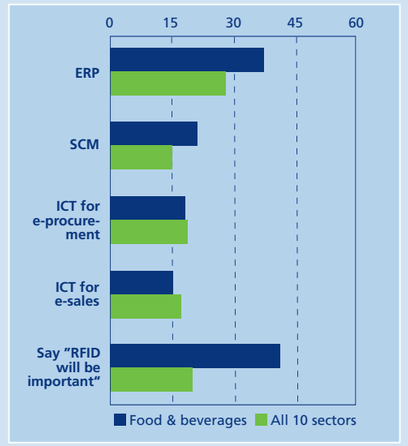
Companies from the food and beverages (F&B) industry are confronted with several business challenges where ICT could play an important role in the future. This includes control over raw material supply, quality assurance, and an increasing demand for new and diversified products.

Production in the F&B industry is characterized by small batch processes that are hard to consolidate and integrate. Despite high investments in plant automation, many operations are still labour intensive or only partially automated. This situation is reflected in a comparatively low diffusion of ICT among firms from the sector (see examples in table).

However, e-business applications could rise in importance. Increasing requirements on food safety, such as clear labelling (origin and contents of food products) can be supported by ICT. This requires the integration of the companies' information systems, for example their ERP (Enterprise Resource Planning) systems, with new track and trace technologies, such as Electronic Product Coding Standards and RFID tagging (in fact, many firms believe that RFID will be important for them, see chart).

Clearly, the "total quality" approach can conflict with short-term commercial interests. However, in the long run, it could turn into a way of enhancing productivity, reducing costs and creating competitive advantage.

A lot of attention in the F&B industry is currently paid to product innovation. This is seen as critical for companies to stay competitive both on the domestic and the international market. Innovation processes, however, are expensive to implement and require a deep understanding of the competitive context, consumers' requirements and a firm's internal abilities. ICT are an important instrument to support innovation processes, for instance by simplifying background research and communication processes.



	ERP	SCM	ITC for e-procurement	"RFID will be important"
Food	**37**	**21**	**18**	**41**
micro (1-9)	3	2	3	14
small (10-49)	7	9	9	26
medium (50-249)	33	17	18	32
large (250 +)	69	36	28	66
Textile	34	13	14	29
Publishing	21	9	16	17
Machinery	58	14	18	22
Automotive	71	48	39	40

Data for sectors weighted by employment ("firms representing x% of sector employment"). Data for size-bands in % of firms from the size-band. Source: e-Business Survey 2005

Fact-Box

The food and beverages industry in the EU

The sector includes business activities specified by NACE (Rev. 1.1) DA 15: Manufacture of food products and beverages.[1]

Total employment (EU-25)	4.4 million
No. of enterprises (EU-25)	282,000
% of employees working in SMEs[2]	61%

(Source: Eurostat New Cronos / DIW Berlin. Data: 2001)

F&B is a very important sector in the European economy, with a production value representing about 13% of total manufacturing. The various sub-sectors involve a large variety of production processes and packaging techniques. R&D applications play an important role in this context for improving products and processes. The industry structure is characterised by the dominance of micro and small companies.

1. NACE Rev. 1 is a 4-digit activity classification which was drawn up in 1990. It is a revision of the "General Industrial Classification of Economic Activities within the European Communities", known by the acronym NACE and originally published by Eurostat in 1970.

2. Firms with up to 249 employees.

E-Business Profile: The Textile and Clothing Industry

The study on this sector was prepared by Databank Consulting (databank@databank.it). The full report is available at www.ebusiness-watch.org. ('resources')

Among large companies from the textile and clothing (T&C) industry, e-business activity has increased. However, the economic crisis in the sector hampers innovation among small firms.

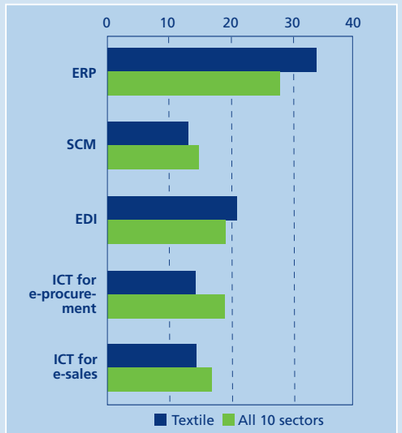
The textile and clothing (T&C) industry is dominated by small and medium enterprises. Small company size is reported as a main reason by many firms saying that e-business does not play a significant role in their operations. Survey results, in fact, show a clear digital divide within the industry between medium and large companies and small enterprises.

Adding to the difficult economi conditions, the limited degree of computerisation and the diversity of technological equipment in place are constraints for the adoption of e-business among smaller companies.

However, and this is new evidence compared to the earlier survey of 2003, there are signs that the use of advanced ICT systems in large textilecompanies is quite in line with adoption rates among large companies from the most advanced manufacturing sectors. Examples are Enterprise Resource Planning (ERP) and Supply Chain Management (SCM) systems (see tables). It appears that a significant share of large textile firms have taken the lead towards supply chain integration and online trading with business partners.

EDI-based standards and EDI-XML are beginning to be more widely used. Many large companies that have redesigned their internal processes are trying to work in a more structured way with trading partners. They focus on integrating their processes in order to save costs, and to decrease response time to consumer demand.

In marketing and sales strategies, though, e-business has not yet taken a significant role. For example, B2C e-commerce in the textile and clothing industry has been slower than in other, more standardised, consumer good sectors (books, music and software).



	ERP	SCM	EDI	Sell online
Textile	**34**	**13**	**21**	**14**
micro (1-9)	3	5	1	9
small (10-49)	17	9	6	14
medium (50-249)	34	9	19	8
large (250 +)	59	26	44	21
Food	37	21	37	12
Publishing	21	9	13	37
Automotive	71	48	61	6
Construction	13	7	4	4

Data for sectors weighted by employment (*firms representing x% of sector employment*). Data for size-bands in % of firms from the size-band.
Source: e-Business Survey 2005

1. NACE Rev. 1 is a 4-digit activity classification which was drawn up in 1990. It is a revision of the "General Industrial Classification of Economic Activities within the European Communities", known by the acronym NACE and originally published by Eurostat in 1970.
2. Firms with up to 249 employees.

Fact-Box

The textile and clothing industry in the EU

The sector includes business activities specified by NACE (Rev. 1.1) DB 17 and 18, i.e. the manufacture of textiles (17) and of wearing apparel (18)[1]

Total employment (EU-25):	2.6 million
No. of enterprises (EU-25):	224,000
% of employees working in SMEs[2]:	73%

(Source: Eurostat New Cronos / DIW Berlin. Data: 2001)

NACE 17 comprises mainly the textile sector. For the purpose of *e-Business W@tch* sector studies, the term "clothing" was defined to cover the manufacture of wearing apparel, dressing, leather clothes and accessories (NACE 18). The analysis does not cover the footwear sector. Activities range from the production of raw materials to the manufacture of a wide variety of semi-finished and finished products.

E-Business Profile: The Publishing and Printing Industry

The study on this sector was prepared by empirica GmbH (info@empirica.com). The full report is available at www.ebusiness-watch.org. ('resources')

The European publishing and printing industry is in a state of flux. ICT, and in particular the internet, have had a profound impact on business activities of firms from all sub-sectors of this industry.

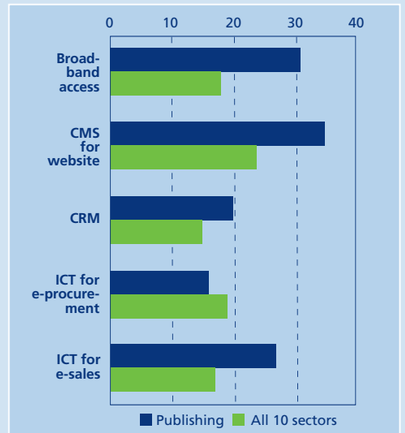
This has had an effect on practically all areas of business activity, most importantly internal work and production processes, the products themselves, the distribution of products, marketing strategies and interfaces between companies and their customers in general.

In printing, ICT have far-reaching implications for the organisation, operation, and management of printing activities. As a general trend, printing is changing role from mere manufacturing to full-scale service provision. Print management tends to backward-integrate into publishing. Digital technology is a key driver of innovation in this industry, as practically all solutions are becoming digitally integrated.

For publishing, the implications of ICT and e-business vary depending on markets and products (such as local and national newspaper, magazines, book, directories). Traditional print publishers, and newspaper publishers in particular, are confronted with increasing competition from the internet, both regarding advertising budgets and the "time budgets" of readers.

In response to these challenges, a majority of newspaper and magazine publishers maintain sophisticated websites which can have different strategic functions. Only in some cases, however, has the online service become profitable in itself. On the other hand, the online channel has developed into an indispensable tool for marketing and customer service.

Online advertising and classified markets have also clearly gained momentum. The question remains, however, to what extent publishers can secure their role in these emerging markets and thus compensate for a possible decline in their traditional print-based business.



	Broadband internet access	CMS	CRM	Sell online
Publishing	**31**	**35**	**20**	**37**
micro (1-9)	11	14	3	16
small (10-49)	19	29	9	28
medium (50-249)	33	45	30	37
large (250 +)	58	49	37	60
Textile	14	20	16	14
Pharma	33	32	36	18
Tourism	14	28	7	36
IT services	39	49	39	25

Data for sectors weighted by employment (*firms representing x% of sector employment*). Data for size-bands in % of firms from the size-band.
Source: e-Business Survey 2005

1. NACE Rev. 1 is a 4-digit activity classification which was drawn up in 1990. It is a revision of the „General Industrial Classification of Economic Activities within the European Communities", known by the acronym NACE and originally published by Eurostat in 1970.
2. Firms with up to 249 employees.

Fact-Box

The publishing and printing industry in the EU

The sector as defined by *e-Business W@tch* includes business activities specified by NACE (Rev.1.1) DE 22.1 (publishing) and 22.2 (printing).[1]

Total employment (EU-23):	1.9 million (without PL, SI)
No. of enterprises (EU-25):	198,000
% of employees working in SMEs[2]:	71%

(Source: Eurostat New Cronos / DIW Berlin. Data: 2001)

"Publishing" includes publishing of books, newspapers, journals and periodicals, sound recordings, and other publishing (e.g. directories, calendars). "Printing" also includes bookbinding, and pre-press activities.

E-Business Profile: The Pharmaceutical Industry

The study on this sector was prepared by Berlecon Research GmbH (info@berlecon.de). The full report is available at www.ebusiness-watch.org ('resources')

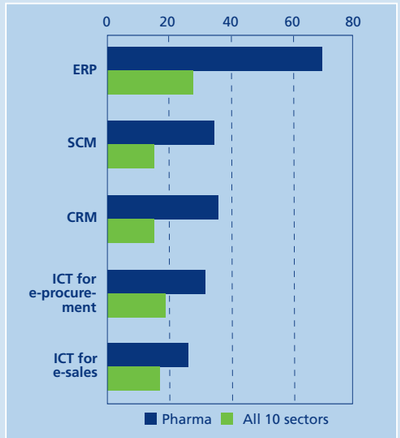
The pharmaceutical industry is well suited to the use of ICT and e-business applications. This is true for both internal processes and for the support of B2B relationships.

In fact, the pharmaceutical industry is an intensive user of electronic business: ICT and internet-based solutions play a key role in supporting marketing and sales processes in the pharmaceutical industry. CRM (customer relation management) systems and mobile solutions have a high potential for facilitating the management and work of the pharmaceutical sales force.

Combating counterfeiting activities currently appears to be a main driver for the deployment of RFID/Auto-ID solutions in this sector. The role of the pharmaceutical industry as a forerunner in this field is further accelerated by the large range of suitable applications, the favourable ratio of tag prices to product values and by the enforced pedigree requirements of some regulation authorities.

However, a widespread deployment of this technology within this sector brings with it many challenges. If worldwide cross-industry solutions are to be the goal, the establishment of accepted standards is crucial. In addition the establishment of RFID/Auto-ID networks requires the solution of business issues – such as who gets access to which information – and the consideration of privacy issues. Therefore, in the short term, the deployment of small specialised projects may be more likely than a full roll-out of a unique RFID/Auto-ID concept along the entire supply chains of several industries and regions.

In B2B trading, the structure of internet trading platforms is well suited to reflect the current reality of e-business in the pharmaceutical industry. The platforms used today, however, differ widely in their structure and functions and do not always have much in common with the original concept of e-marketplaces.



	ERP	SCM	CRM	Buy >5% of supplies online
Pharma	**71**	**35**	**36**	**29**
micro (1-9)	8	7	7	19
small (10-49)	20	13	11	17
medium (50-249)	54	23	30	19
large (250 +)	82	41	41	31
Textile	34	13	16	15
Machinery	58	14	28	22
Automotive	71	48	24	34
Construction	13	7	8	18

Data for sectors weighted by employment (*firms representing x% of sector employment*). Data for size-bands in % of firms from the size-band.
Source: e-Business Survey 2005

1. NACE Rev. 1 is a 4-digit activity classification which was drawn up in 1990. It is a revision of the "General Industrial Classification of Economic Activities within the European Communities", known by the acronym NACE and originally published by Eurostat in 1970.
2. Firms with up to 249 employees.

Fact-Box

The pharmaceutical industry in the EU

The sector includes business activities specified by NACE (Rev. 1.1) DG 24.4: Manufacture of pharma-ceuticals, medicinal chemicals and botanical products.[1]

Total employment (EU-25):	554,000
No. of enterprises (EU-25):	3,940
% of employees working in SMEs[2]:	21%

(Source: Eurostat New Cronos / DIW Berlin. Data: 2001)

The pharmaceutical industry is part of the chemical industry (NACE 24). However, it differs from most of the other sub-sectors of the chemical industry in two ways. Firstly, its outputs are mostly produced for end use and not as inputs for other parts of the chemical industry. Secondly, the pharmaceutical sector is characterized by a high R&D intensity.

E-Business Profile: The Machinery and Equipment Industry

The study on this sector was prepared by DIW Berlin (contact: pkoellinger@diw.de). The full report is available at www.ebusiness-watch.org. ('resources')

Companies in the machinery and equipment (M&E) sector are moving from the endowment with basic ICT equipment to embedding e-business in their business strategies.

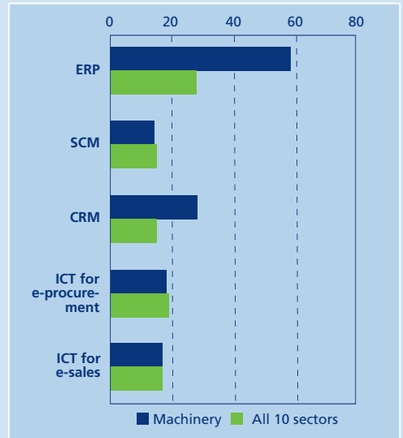
The M&E industry has not been an early adopter of e-business. Starting from a comparatively low level, however, companies have now begun to develop their own strategies. Applications are planned with a conscious understanding of the scope and targeted benefits, thus moving away from a mere imitation strategy which was common in early stages of e-business. The transition from e-business as a technical ICT tool to e-business as a strategic concept is a major distinguishing factor in this recent phase.

Currently, this trend can be shown at the level of individual cases of companies which can be considered as forerunners. Despite the economies of scale in realising e-business applications, cases also indicate that there is also scope for innovative e-business in SMEs. However, their implementation paths and strategic models differ from those of large enterprises.

An important application area for e-business in the M&E industry is after sales service. Machines are increasingly being sold in combination with services covering implementation, maintenance, repairs, or the operation of the machine. These services offer many opportunities for the use of electronic service delivery tools.

Critical points for reaching higher levels of e-business usage are the conception of comprehensive standardisation schemes, the interconnection between new and existing systems, and the involvement of stakeholders in implementation.

From the perspective of the new EU member states, the ongoing modernisation of productive capacities, together with collaborations with companies in the former EU-15, create favourable conditions for a rapid adoption of e-business. Scarcity of financial means may delay this trend, however.



	ERP	SCM	Buy on e-marketplaces	CRM
Machinery	**58**	**14**	**6**	**28**
micro (0-9)	11	0	3	4
small (10-49)	22	10	5	13
medium (50-249)	55	12	7	28
large (250 +)	85	20	6	40
Textile	34	13	4	16
Automotive	71	48	15	24
Aeronautics	52	35	23	3
IT services	39	17	8	39

Data for sectors weighted by employment (*firms representing x% of sector employment*). Data for size-bands in % of firms from the size-band.
Source: e-Business Survey 2005

1. NACE Rev. 1 is a 4-digit activity classification which was drawn up in 1990. It is a revision of the "General Industrial Classification of Economic Activities within the European Communities", known by the acronym NACE and originally published by Eurostat in 1970.
2. Firms with up to 249 employees.

Fact-Box

The machinery and equipment manufacturing industry in the EU

The sector as defined by *e-Business W@tch* for its studies includes business activities specified by NACE (Rev. 1.1) DK 29.1 – 29.5: the manufacture of machinery for the production and use of mechanical power, agricultural and forestry machinery, machine-tools and other general purpose machinery.[1]

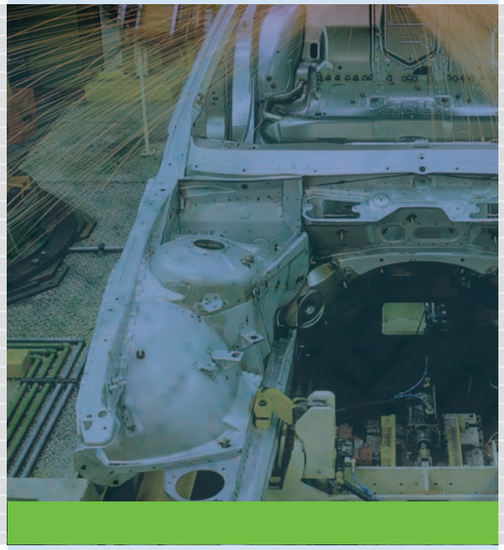
Total employment (EU-25):	3.2 million
No. of enterprises (EU-25):	154,000
% of employees working in SMEs[2]:	56%

(Source: Eurostat New Cronos / DIW Berlin. Data: 2001/02)

Studies by *e-Business W@tch* do not include the weapons and ammunitions (29.6) and the domestic appliances sub-sectors (29.7), as these industries mainly produce for government agencies (29.6) or end consumers (29.7) and differ considerably from the other sub-sectors.

E-Business Profile: The Automotive Industry

The study on this sector was prepared by DIW Berlin (contact: dnepelski@diw.de). The full report is available at www.ebusiness-watch.org. ('resources')



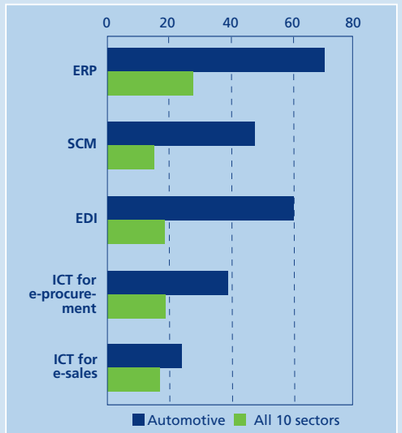
Large enterprises in the automotive industry are advanced users of e-business technologies, mainly for automating B2B processes. Frequently used systems include ERP, SCM, and collaborative design systems.

Despite the fact that numerous e-business applications are frequently used in the automotive industry, research by *e-Business W@tch* confirms that ICT-enabled innovations still remain a source of competitive advantage. Interestingly, the relationship between innovative activities and firm performance is independent of company size. Thus, ICT-based innovations are equally attractive for both large and small enterprises.

Yet, the economic success of companies does not strictly depend on the endowment with ICT infrastructure, i.e. there is no simple relationship between ICT usage and firm performance. What seems to be of greater importance is whether companies use the available technologies effectively and implement efficient routines, and whether they are able to deliver innovative products ICT is an important enabler of organisational efficiency and innovation, but not the only way to reach these targets.

The process of inter-firm integration proceeds rapidly in the automotive industry. Online procurement has become a part of everyday business and belongs to the most frequently adopted e-business applications. Online marketplaces could slowly regain acceptance in the industry after some failures in the past. Online sales still remain a niche application.

Legacy systems play a critical role for the deployment of e-business. The automotive industry predominantly uses EDI-based standards and proprietary standards to exchange data between companies. However, EDI applications that barely allow the exchange of data between different systems could hinder the diffusion of more flexible and open standards.



	ERP	SCM	EDI	Buy >5% of supplies online
Automotive	**71**	**48**	**61**	**34**
micro (1-9)	6	5	3	14
small (10-49)	12	6	5	18
medium (50-249)	49	19	23	24
large (250 +)	74	52	64	30
Textile	34	13	21	15
Pharma	71	35	42	29
Machinery	58	14	23	22
Aeronautics	52	35	16	38

Data for sectors weighted by employment (*firms representing x% of sector employment*). Data for size-bands in % of firms from the size-band.
Source: e-Business Survey 2005

Fact-Box

The automotive industry in the EU

The sector includes business activities specified by NACE (Rev. 1.1) DM 34: Manufacture of motor vehicles, trailers and semi-trailers.[1]

Total employment (EU-25):	2.2 million
No. of enterprises (EU-25):	17,170
% of employees working in SMEs[2]:	17%

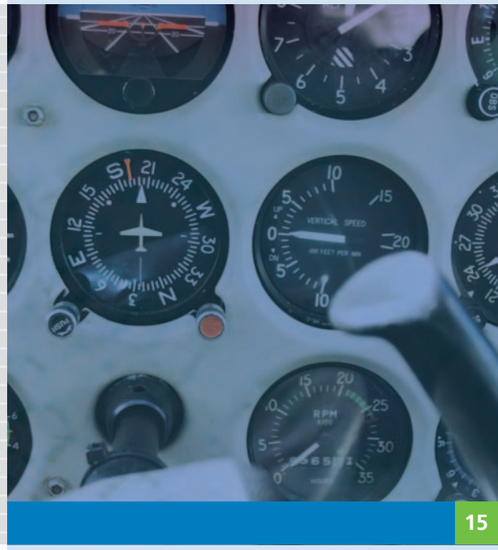
(Source: Eurostat New Cronos / DIW Berlin. Data: 2001)

The industry consists of a cluster of closely interrelated firms that belong to one value chain, and whose final products are motor vehicles. In 2002, the industry contributed a value of 586 billion to pr oduction in the EU countries. NACE 34.1 – final goods producers, i.e. Original Equipment Manufacturers (OEMs) –accounted for more than 70% of the industry's total production value.

1. NACE Rev. 1 is a 4-digit activity classification which was drawn up in 1990. It is a revision of the "General Industrial Classification of Economic Activities within the European Communities", known by the acronym NACE and originally published by Eurostat in 1970.
2. Firms with up to 249 employees.

E-Business Profile: The Aeronautics Industry

The study on this sector was prepared by DIW Berlin (contact: dnepelski@diw.de). The full report is available at www.ebusiness-watch.org. ('resources')



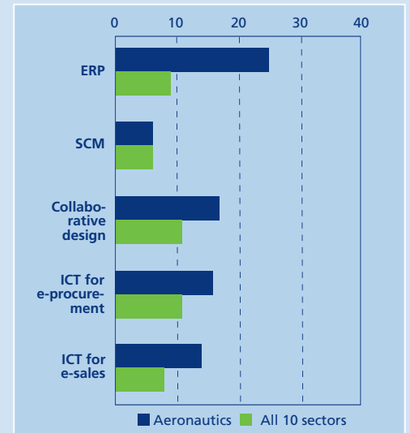
Empirical evidence emphasises the strategic importance of ICT in the aeronautics sector: ICT is a potential source of competitive advantage, as an enabler and driver of innovation.

ICT-enabled process innovations are positively associated with increasing turnover among firms in the industry. Yet innovative firms are not more profitable than other firms, suggesting either that profits triggered by innovations take more time to materialise in this sector than in other sectors, or that firms in the aeronautics industry have some particular problems appropriating private gains from innovative activities.

Electronic procurement is a key application in this industry. Although the high complexity and specialisation of end products in this sector put some restrictions on online trading, 65% of companies procure inputs (e.g. raw materials) online, and one in four companies even more than 10% of all supplies. There are no significant differences in adoption rates between companies from different size-bands. The development of e-procurement in the aeronautics industry proceeded in two ways. On the one hand, industry-wide online marketplaces were established (e.g. Exostar). On the other, some large firms decided to introduce their own internet platforms for suppliers (e.g. Sup@irWorld by Airbus).

ICT are also important in this industry to support inter-firm collaboration. This can be illustrated by the intensive use of applications supporting inter-organisation processes such as product design (see table) and demand forecasting.

The e-Business Survey 2005 finds that SMEs from this sector, when considering ICT investments, pay considerable attention to standards and systems interoperability. Thus, improvement in e-standards could further drive electronic business activity in the sector, and help to reduce implementation costs for SMEs.



	ERP	SCM	Collaborative design	Buy >5% of supplies online
Aeronautics	**25**	**6**	**17**	**36**
micro (0-9)	11	0	11	36
small (10-49)	26	6	15	34
medium (50-249)	75	10	34	31
Pharma	19	12	10	19
Machinery	17	3	15	18
Automotive	18	11	16	17
Construction	7	5	6	17

All data in % of firms
Source: e-Business Survey

Fact-Box

The aeronautics industry in the EU

The sector includes business activities specified by NACE (Rev. 1.1) DM 35.3: Manufacture of aircraft and spacecraft.[1]

Total employment (EU-25):	373,000
No. of enterprises (EU-25):	2,250
% of employees working in SMEs[2]:	10%

(Source: Eurostat New Cronos / DIW Berlin. Data: 2001)

e-Business W@tch focuses its analysis on the aeronautics sub-sector, as the sub-sectors spacecraft and the military transport equipment produce primarily for government agencies and differ substantially from the other sub-sector. The aeronautics industry can be divided into three sub-sectors again: systems and frames, engines and equipment.

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2. Firms with up to 249 employees.

E-Business Profile: The Construction Industry

The study on this sector was prepared by RAMBØLL Management (info@r-m.com). The full report is available at www.ebusiness-watch.org. ('resources')

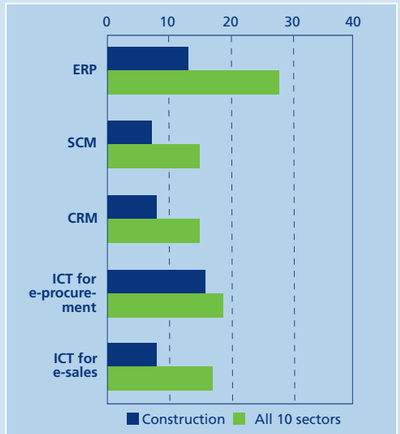
The construction industry has yet to show the same level of productivity improvements as other industries (including production). This has also to do with a comparatively slow ICT uptake.

Attitudes towards ICT in the construction industry have traditionally been of a conservative nature. Reluctance to invest in ICT is still strong, and most companies are reactive rather than proactive in adopting e-business as a tool to increase competitiveness.

Large enterprises from the industry and new sector entrants have implemented ICT-based production processes, but there is still untapped potential for using ICT to increase productivity. Examples are Production Planning Systems (PPS), Enterprise Resource Planning (ERP) with financial modules, Material Resource Planning (MRP), inventory management, Customer Relationship Management (CRM), Supply Chain Management (SCM) and mobile solutions.

Internal integration is an important driver for ICT development in the construction sector. The internal (and external) business processes of many companies are poorly integrated, as most companies in the sector organise work around unique construction projects. This leads to fragmented business processes supported by "home-made" ICT systems that are not integrated across the basic ICT landscape of a company. SMEs in the sector are especially behind on system integration, compared to other sectors.

The currently low ICT diffusion in the sector does not warrant any marked increase in ICT impact in the near future. However, there are possible tendencies towards increased ICT impact in the long-run. ICT might lead to a decreased negotiation power of suppliers, due to enhanced market transparency through e-procurement. Internal rivalry in the market could increase, once enhanced ICT solutions lead to productivity gains.



	ERP	SCM	CRM	ICT for e-procurement
Construction	**13**	**7**	**8**	**16**
micro (1-9)	7	4	1	8
small (10-49)	6	7	7	10
medium (50-249)	27	10	14	21
large (250 +)	42	18	26	39
Machinery	58	14	28	18
Automotive	71	48	24	39
Tourism	12	10	7	14
IT services	39	17	39	29

Data for sectors weighted by employment (*firms representing x% of sector employment*). Data for size-bands in % of firms from the size-band.
Source: e-Business Survey 2005

Fact-Box

The construction industry in the EU

The sector includes business activities specified by NACE (Rev. 1.1) F 45: Construction[1]

Total employment (EU-25):	11.8 million
No. of enterprises (EU-25):	2.3 million
% of employees working in SMEs[2]:	71%

(Source: Eurostat New Cronos / DIW Berlin. Data: 2001)

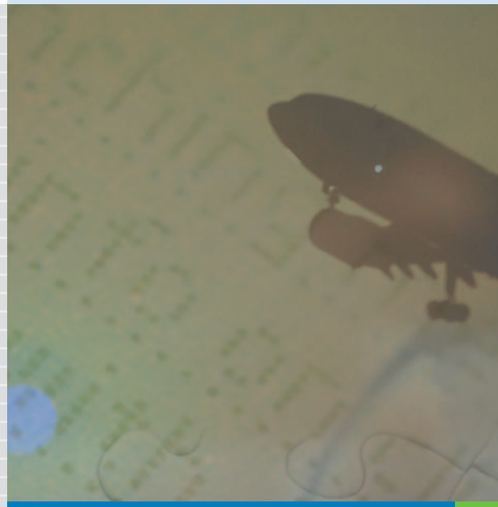
The building and construction industry includes a wide range of enterprises involved in site preparation, civil engineering, concrete work, building installation and completion, maintenance and repair. Construction firms can be categorised into two main groups: "project-based companies" and "production companies". Business processes and e-business opportunities differ between these groups.

1. NACE Rev. 1 is a 4-digit activity classification which was drawn up in 1990. It is a revision of the "General Industrial Classification of Economic Activities within the European Communities", known by the acronym NACE and originally published by Eurostat in 1970.

2. Firms with up to 249 employees.

E-Business Profile: The Tourism Industry

The study on this sector was prepared by ETC – eTourism Center at Salzburg Research (contact: mlassnig@salzburgresearch.at). The full report is available at www.ebusiness-watch.org. ('resources')

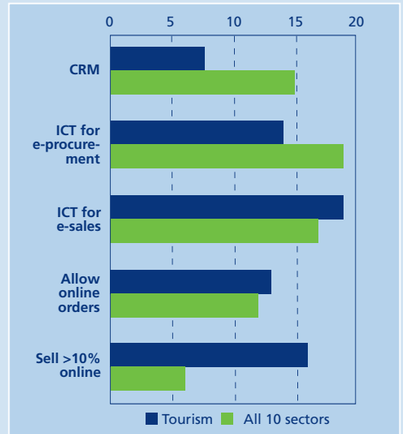


ICT are an important facilitator of competitive advantage in the tourism industry. There is enormous customer-driven demand for e-business products and services, and the trend is that demand will continue to rise.

The focus of e-business engagement in tourism is on customer-facing activities, encompassing all areas of marketing and sales. Online booking and reservation services have become widely accepted among consumers and business travellers. The adoption rate of selling online in tourism is approximately twice as high as on average among the 10 sectors surveyed by *e-Business W@tch* in 2005.

Electronic business has fundamentally changed the daily operations of Destination Management Organisations (DMOs). "Destinations" can be considered as a kind of virtual enterprises, which are predestined for the use of collaborative e-business applications. ICT can greatly facilitate internal coordination, marketing and service sales within the destination. DMOs increasingly operate destination portals on the internet, which enable them to establish direct contacts between tourists and service providers, thereby superseding traditional intermediaries such as travel agencies. In fact, DMOs may evolve into e-intermediaries themselves.

As the European tourism market has emerged into a buyers' market, a more customer-centric approach by tourism companies would be highly beneficial. CRM is emerging as a promising application, although not yet widely diffused (see chart). Currently, mainly large companies such as airlines and hotel chains are using sophisticated CRM systems. An emerging e-application in tourism are mobile services, which serve tourists conveniently while travelling and during their stay at the destination. While most established e-commerce applications deal with customer needs in the pre-trip phase, there remains a lack of applications serving the tourist on-the-spot.



	ICT for e-marketing	Allow online orders	Enable online payment	Sell >10% online
Tourism	**19**	**13**	**9**	**16**
micro (1-9)	12	9	5	13
small (10-49)	21	18	6	12
medium (50-249)	24	12	5	17
large (250 +)	29	18	16	22
Food	15	11	3	3
Textile	14	10	3	1
Construction	8	5	1	1
IT services	40	26	9	9

Data for sectors weighted by employment (*firms representing x% of sector employment*). Data for size-bands in % of firms from the size-band.
Source: e-Business Survey 2005

Fact-Box

The tourism industry in the EU

The studies by *e-Business W@tch* on tourism include the accommodation sector, gastronomy (NACE Rev, 1.1 H 55), travel agencies and tour operators (I 63.3).[1]

Total employment (EU-25):	8 million
No. of enterprises (EU-25):	1.5 million
% of employees working in SMEs[2]:	79%

(Source: Eurostat New Cronos / DIW Berlin. Data: 2001)

Tourism is most commonly understood as the provision of services for people travelling to and staying outside their usual environment for less than one consecutive year for leisure or for business purposes. This "industry" is not specified as a division in its own right in the NACE classification. Therefore, any operational definition has to draw from different divisions and groups of business activities.

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2. Firms with up to 249 employees.

E-Business Profile: The IT Services Industry

The study on this sector was prepared by Berlecon Research GmbH (info@berlecon.de). The full report is available at www.ebusiness-watch.org ('resources')

Information and communication technology and e-business services are not only the output of the IT services sector. They influence crucially the way in which this output is produced, promoted and provided.

This specific way of using ICT distinguishes IT services from the other industries analysed in the *e-Business W@tch*. As a consequence, adoption and use of nearly all major e-business applications are above the average of the 10 sectors studied. In particular, the IT services sector sets standards for the use of basic ICT infrastructure and customer-facing e-business applications.

The sector also indicates the potential of ICT and e-business for SMEs, which account for about 99% of IT services firms. This is a distinctive characteristic compared to other e-business-intensive industries such as the automotive and pharmaceutical industry.

Important current issues in this industry which are related to ICT include the establishment of offshore IT services, the increased relevance of open source software and the supply of software as services. *e-Business W@tch* finds that a large share of companies in this sector actually outsource IT services. However, this activity takes place mainly within national markets. A major motivation of users interviewed is to manage peak demands by outsourcing non-core tasks.

Open source operating systems, databases and Internet browsers are widely used in companies of this sector, no matter what the company size. In comparison, the use of OSS components by companies in other sectors seems to be relatively low.

In conclusion, e-business developments exert a strong impact on the competitive situation in the IT services sector, mainly by facilitating the market entry of new players and increasing rivalry in this sector. The opportunity to supply outputs over the internet, for example, facilitates the establishment of new businesses independent of size and origin.

Fact-Box

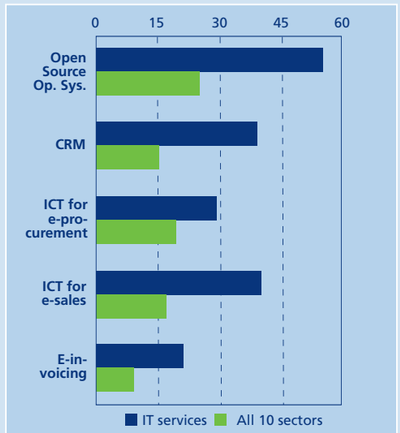
The IT services industry in the EU

The sector includes business activities specified by NACE (Rev. 1.1) K 72: computer and related activities. *e-Business W@tch* uses the short term "IT services".[1]

Total employment (EU-25):	2.4 million
No. of enterprises (EU-25):	445,000
% of employees working in SMEs[2]:	72%

(Source: Eurostat New Cronos / DIW Berlin. Data: 2001)

IT services are part of the entire ICT sector, which has been analysed in many research and policy studies, including past reports by *e-Business W@tch* (see 2002-2004). IT services can be summarised by the slogan of several IT service providers to "plan, build and run" IT systems, which includes hardware and software consultancy, software development and integration, and IT outsourcing services.



	CRM	ICT for e-procurement	ICT for e-sales	E-invoicing
IT services	39	29	40	21
micro (1-9)	23	18	22	13
small (10-49)	36	24	34	13
medium (50-249)	51	33	44	26
large (250 +)	50	38	56	29
Publishing	20	16	27	17
Machinery	28	18	17	11
Automotive	24	39	24	20
Tourism	7	14	19	9

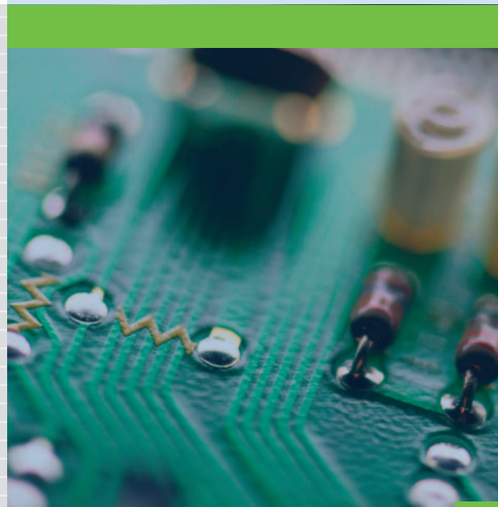
Data for sectors weighted by employment (*firms representing x% of sector employment*). Data for size-bands in % of firms from the size-band.
Source: e-Business Survey 2005

1. NACE Rev. 1 is a 4-digit activity classification which was drawn up in 1990. It is a revision of the "General Industrial Classification of Economic Activities within the European Communities", known by the acronym NACE and originally published by Eurostat in 1970.

2. Firms with up to 249 employees.

E-Business Interoperability and Standards: Making Connectivity Work

This special study was prepared by Lios Geal Consultants Ltd (contact: henryryan@eircom.net). The full report is available at ww.ebusiness-watch.org ('resources')



Interoperability of ICT systems is a precondition for advanced forms of electronic business, and requires, amongst other things, the agreement on adequate electronic standards.

The term "interoperability" refers to the ability of systems to work seamlessly together, in order to make diverse information resources systematically and consistently accessible even when required in different contexts and formats. A Special Study by *e-Business W@tch* in 2005 investigated the use of e-standards in the 10 sectors surveyed in 2005, and the importance which companies from these sectors see in interoperability issues. The relevance of industry standards increases by company size, at least from the perspective of firms themselves. More than 60% of large firms, and nearly half of all medium-sized firms, say that they take into account industry standards for making decisions on what technology to use for new products, services or business processes. However, less than 25% of micro and small enterprises do. Sectoral differences are less pronounced, with the exceptions of the IT services industry on the one hand (higher importance), and the construction industry on the other hand (low significance, see chart). Similarly, more large enterprises (about 30%) say that interoperability is critical for doing business electronically, either with companies from their own sector, or with companies from other sectors. Among small companies, the awareness for interoperability issues is very limited, with less than 10% regarding it as critical for their business.

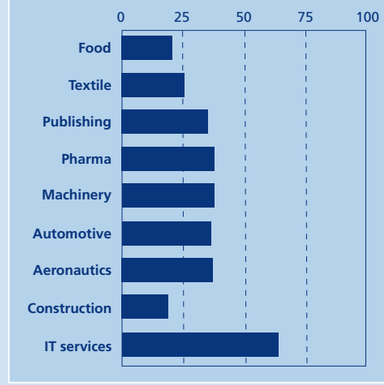
EDI-based and XML-based electronic standards are mostly used in the 10 sectors studied (see table). Proprietary standards are still rather widely diffused as well. EDI is particularly common among larger firms from the automotive and the pharmaceutical industry, while XML based standards are preferred for e-business among IT services and publishing companies. Applications based on XML standards, for example web services, could shape electronic business transactions between enterprises in the future, taking B2B integration to a much higher level.

Use of standards

	EDI-based	XML-based	STEP	Proprietary	Other
Micro (1-9)	2	5	2	8	6
Small (10-49)	4	6	2	15	8
Medium (50-249)	14	13	4	22	13
Large (250+)	43	28	7	33	15

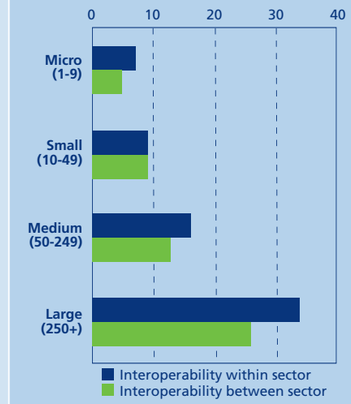
EU-7, 9 sectors. In % of firms.

"Industry standards matter in decisions on which technology to use"



EU-7, 9 sectors. In % of firms.

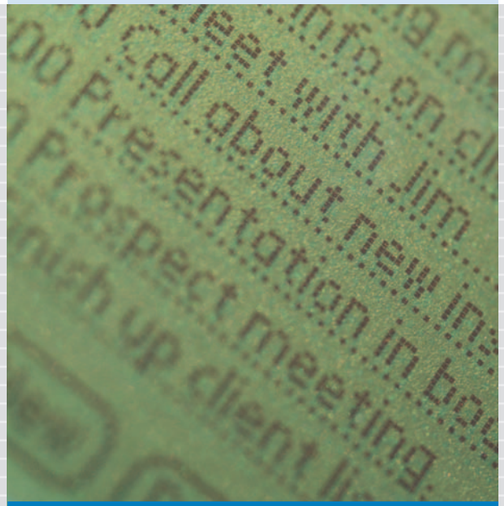
"Interoperability is critical for doing business electronically"



EU-7, 9 sectors. In % of firms.

ICT Security: Incidences Experienced and Measures Taken by Firms

The study on this sector was prepared by empirica GmbH (info@empirica.com). The full report is available at www.ebusiness-watch.org. ('resources')



A Special Study by *e-Business W@tch* in 2005 investigated the incidence of damage from ICT security breaches and the extent of controls and other measures introduced by European enterprise to counter these threats.

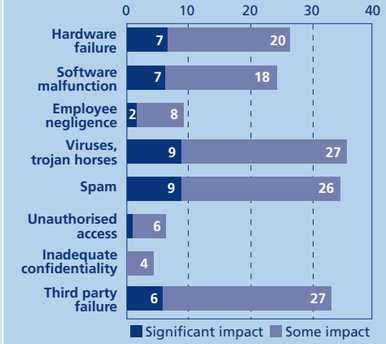
Although, in absolute figures, damaging security incidents of several kinds occur in larger enterprises more frequently than in smaller companies, some damaging incidents were found to be proportionately more prevalent in the smallest organisations. Though the differences are not large, there is evidence of economies of scale in terms of maintaining hardware and software, having the staff to take preventative action and investing adequately in licensing software and purchasing hardware of adequate quality.

From a sector perspective, enterprises in the IT services sector report the greatest number of incidents causing significant damage, nearly three times as many as in the construction or food & beverages sectors. The rate of incidence in tourism is nearly as high as in IT services, other sectors are in mid field. However, it is likely that low levels of incidence are to a large extent the result of less prevalent use of IT hardware and lower dependence on IT in all sectors except IT services.

The fact that there is no consistent relationship between overall levels of incidence and average size of enterprise in a sector means that sector-specific communication and ICT deployment structures are likely to be a more important covariant of the level of security failure.

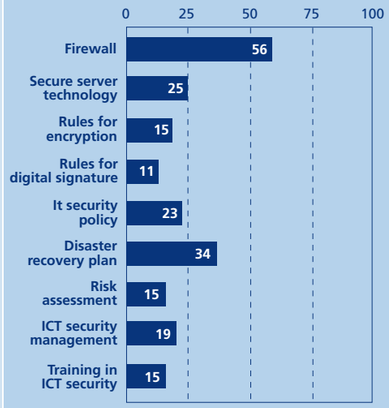
Measures to improve ICT security in European enterprise are most widespread in the largest enterprises. The picture by sector shows the clear dominance of enterprises in the IT services sector in the introduction of security controls in the areas of "secure components" and "management and policy". Clearly, as shown above, the threats faced by this sector are greater than elsewhere, given the nature of their business processes and products.

ICT security incidents that had a damaging impact on the business (% of firms having experienced such an incident in the past 12 months)



EU-7, 10 sectors. N = 5218. In % of firms.

Measures taken by firms to improve ICT security (% of firms that use this measure)



EU-7, 10 sectors. N = 5218. In % of firms.

Measuring ICT Adoption and Use in Business: The Search for Adequate Metrics

The study was prepared by empirica GmbH (info@empirica.com). The full report is available at www.ebusiness-watch.org. ('resources')

The development of the information society has far-reaching implications for the social and economic fabric of the "global community". Since ICT are a key enabler and driver of this development, ICT indicators are an important instrument for policy.

Firstly, quantitative data are needed to "map" the status quo, possibly by comparing the situation with other regions or countries. Secondly, data are required to understand and assess the current dynamics, to specify targets and monitor progress achieved over time.

The necessity for a common European (and possibly international) approach in monitoring ICT use is broadly recognised. A Special Report by *e-Business W@tch* in 2005 investigated the state-of-play in indicator development.

The report points out that significant efforts have been made since 1999 to make surveys in different parts of the world more comparable by agreeing on common standards and definitions. However, it also concludes that there are so many decisive parameters involved in collecting ICT statistics that no two surveys, which were carried out in different contexts and were not explicitly aligned to each other, will be fully comparable.

The report pays special attention to compound indicators (CIs) and discusses their strengths and possible risks. CIs have experienced a surge in popularity, mainly because of their promise to capture and reduce complexity of multi-dimensional concepts, such as education, welfare, or, in the framework of the *e-Business W@tch*, electronic business.

Notwithstanding that there are conflicting views on their merits, particularly if they are highly aggregated, the report encourages policy to make use of CIs. A main argument is that CIs are a powerful instrument to trigger public debate about policy objectives, particularly if they involve a clear benchmarking element. Policy should capitalise on this potential of CIs to counteract widespread disenchantment with politics among the population, and thus to refresh democracy.

Handbook on Composite Indicators

The JRC (Joint Research Centre) of the European Commission has issued a "Handbook on Constructing Composite Indicators" in 2005. The Handbook is intended to assist both the users and builders of composite indicators.

Users are acquainted with the nature and purpose of composite indicators, the advantages and disadvantages of their application, and means for assessing their soundness. For constructors of composite indicators, the methodological steps are explained in detail and a toolbox is provided to present different alternatives. Methods for testing the robustness of CIs and assuring their overall quality and clear presentation are also included.

The following steps in the construction of a CI are proposed:

1. **Theoretical framework:** the basis for the selection and combination of variables.
2. **Decision tree:** construction of the CI will follow different paths depending on the type and availability of comparative data.
3. **Selecting variables:** selection criteria include the analytical soundness and measurability of variables, and their relationship to each other.
4. **Imputation of missing values:** various techniques can be used to deal with missing values e.g. mean substitution, multiple imputation, nearest neighbour.
5. **Normalisation:** variables should be normalised to render them comparable using techniques such as standardisation or categorical scale.
6. **Weighting:** variables should be weighted according to the underlying theoretical framework, for instance through expert opinion, factor analysis or endogenous weighting.

Source:
http://farmweb.jrc.cec.eu.int/ci/Handbook.htm

E-Business Survey 2005: Methodological Notes

e-Business W@tch collects data on the use of ICT and e-business in European enterprises by means of representative surveys. The e-Business Survey 2005, which was the third survey after those of 2002 and 2003, had a scope of 5,218 telephone interviews with decision-makers in enterprises from 7 EU countries (CZ, DE, ES, FR, IT, PL, UK). Interviews were carried out in January and February 2005, using computer-aided telephone interview (CATI) technology.

Population and sampling

In contrast to the surveys of 2002 and 2003, the 2005 survey considered only companies that used computers. Thus, the highest level of the population was the set of all computer-using enterprises which were active within the national territory of one of the 7 countries covered, and which had their primary business activity in one of the 10 sectors specified on the basis of NACE Rev. 1.1 categories.

No cut-off was made in terms of minimum size of firms. The sample drawn was a random sample of companies from the respective sector population in each of the 7 countries, with the objective of fulfilling minimum strata with respect to company size band (micro, small, medium, large) per country-sector cell.

For data presentation, two weighting schemes have been applied: weighting by employment and weighting by the number of enterprises. The respective weightings are used depending on the context and objective of the analysis.

Statistical accuracy – confidence intervals

For totals of all 10 sectors covered, an accuracy of +/- 2 percentage points can be expected for most values that are expressed as "% of firms", and of +/- 3 percentage points for values that are weighted by employment. The confidence interval for sector totals (EU-7) is about +/- 5 percentage points (in both weighting schemes). Employment-weighted results for the pharmaceutical, the automotive and the aeronautics industry have higher confidence intervals, because these sectors are more sensitive to weights due to their structure (i.e. the dominance of large firms in a comparatively small population). In the aeronautics industry, employment-weighted figures are only indicative.

More information

More detailed information about the e-Business Survey 2005 is available at the *e-Business W@tch* website (www.ebusiness-watch.org) in the 'about' section (see: 'methodology').

Table: Number of interviews conducted by sector and country (e-Business Survey 2005)

Sector	CZ	DE	ES	FR	IT	PL	UK	TOTAL
Food and beverages	85	80	82	80	86	83	75	571
Textiles and clothing	85	76	81	80	81	83	75	561
Publishing and printing	84	80	82	80	79	83	75	563
Pharmaceutical industry	54	83	81	76	81	82	75	532
Machinery and equipment	85	80	81	77	84	83	75	565
Automotive industry	85	80	81	80	81	83	75	565
Aerospace industry	20	38	15	39	23	3	25	163
Construction	84	81	83	80	80	83	75	566
Tourism	84	80	82	80	82	83	76	567
Computer related services	84	80	82	78	82	84	75	565
TOTAL	750	758	750	750	759	750	701	5218

Networking, Debate and Exchange: The Advisory Board of 2005

To validate research findings, *e-Business W@tch* seeks regular exchange and debate with international experts on ICT, e-business and on specific sectors. The Advisory Board of 2005 consists of industry representatives, researchers, statisticians and business consultants. Board members offer comments on reports, provide input to the research, and thus help *e-Business W@tch* to identify the relevant trends and to set research priorities. Their services are gratefully recognised.

Advisory Board Member	Affiliation	Appointed for sector/ expertise in	Country
Mr Jean Arcamone	FIM (Fédération des Industries Mécaniques)	Machinery	France
Mr Jürgen Behlke	VDMA (Association of the GermanMachine Tool Industries)	Machinery	Germany
Ms Francoise Bousquet	ZFIB Conseil	Standards	France
Mr Dimitrios Buhalis	University of Surrey	Tourism	UK
Mr Stefano Cattaneo	Bel Group	Food	Italy
Mr Tony Clayton	UK Office for National Statistics	ICT statistics	UK
Mr Thomas Fischer	Institut für Textil- und Verfahrenstechnik Denkendorf	Textile	EU / DE
Ms Silke Gabriel	Claas GmbH	Machinery	Germany
Mr Jesús Galván	Schiller International University (Madrid)	Publishing	Spain
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Mr Markus Gratzer	Österreich Werbung	Tourism	Austria
Mr Dirk Krischenowski	Chiron	Pharmaceutical	Germany
Mr Photis Nanopoulos	Advisor to the Ministry of National Economy and Economics, Greece	ICT statistics	Greece
Mr Stig Nordqvist	Swedish Newspaper Publishers' Association; IFRA	Publishing	Sweden
Mr John Pedersen	Sarborg ITEK	Construction	Denmark
Mr Ulrich Paetzold	FIEC - European Construction Industry Federation	Construction	EU
Mr Axel Pols	BITKOM	IT services	Germany
Mr Freek Posthumus	NORMAPME	Construction	EU
Mr George Sciadas	Statistics Canada	ICT statistics	Canada
Mr Gerrit Tamm	University of St. Gallen	IT services	Switzerland
Mr Salvo Testa	Bocconi University, Milan	Textile	Italy
Mr Ilias Vlachos	Athens University	Food	Greece