

## **ICT and E-Business in the Insurance and Pension-Funding Sector in the EU**

An e-Business Sector Impact Study by the  
European *e-Business W@tch*

Stefan Lilischkis

Februar 2003



empirica Gesellschaft für Kommunikations-  
und Technologieforschung mbH

Oxfordstr. 2

D-53111 Bonn

Tel. (+49) (228) 98530-0

Fax (+49) (228) 98530-12

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

---

## **empirica GmbH**

empirica ist ein privates, international tätiges Forschungs- und Beratungsunternehmen mit diesen thematischen Schwerpunkten:

- Telearbeit / Zukunft der Arbeit
- Elektronischer Geschäftsverkehr / eBusiness
- Telematik für ältere und behinderte Menschen
- Telemedizin / Gesundheitstelematik
- Informations- und Wissensgesellschaft

empirica verfügt über langjährige Erfahrung mit quantitativen und qualitativen Forschungsmethoden. Unsere Kunden und Auftraggeber sind private Unternehmen und öffentliche Einrichtungen: große und mittelständische Unternehmen aus der Versicherungs-, Pharma- und Automobilbranche sowie Software- und Hardwarehersteller, des weiteren Telekommunikations-Dienstleister und -Netzbetreiber, soziale Dienstleister und medizinischen Einrichtungen, Bundes- und Landesministerien sowie die Europäische Kommission.

Unsere interdisziplinären Projektteams befassen sich u.a. mit Markt- und Begleitforschung, Politik- und Strategieberatung sowie Technikfolgenabschätzung. Wir beraten Kunden bei der Produktentwicklung und –einführung, der Konzeption und Umsetzung von Pilotprojekten und der Durchführung von Wirtschaftlichkeitsanalysen und Benchmarkingstudien.

## **Haftungsausschluss**

Der Autor übernimmt keinerlei Gewähr für die Aktualität, Korrektheit, Vollständigkeit oder Qualität der bereitgestellten Informationen. Haftungsansprüche gegen den Autor, welche sich auf Schäden materieller oder ideeller Art beziehen, die durch die Nutzung oder Nichtnutzung der dargebotenen Informationen bzw. durch die Nutzung fehlerhafter und unvollständiger Informationen verursacht wurden, sind grundsätzlich ausgeschlossen, sofern seitens des Autors kein nachweislich vorsätzliches oder grob fahrlässiges Verschulden vorliegt.

## **Impressum**

empirica Schriftenreihe

Report 01/2003

Februar 2003

empirica Gesellschaft für Kommunikations- und Technologieforschung mbH

Oxfordstr. 2

D-53111 Bonn

Tel. (+49) (228) 98530-0

Fax (+49) (228) 98530-12

E-Mail: [info@empirica.com](mailto:info@empirica.com)

Internet: <http://www.empirica.com>

Redaktion: Werner B. Korte

ISSN 1613-2726

Die Wiedergabe von Informationen aus diesem Bericht ist mit entsprechender Quellenangabe vorbehaltlich anderslautender Bestimmungen gestattet.

© empirica GmbH, Bonn, 2003.

## Inhaltsverzeichnis

<b>Introduction .....</b>	<b>4</b>
<b>Insurance and Pension-funding: Sector Profile &amp; e-Business.....</b>	<b>6</b>
<b>1 Economic profile .....</b>	<b>6</b>
1.1 Definition and focus .....	6
1.2 Economic situation and key figures.....	6
1.3 General trends and business issues.....	8
<b>2 Usage of ICT &amp; e-business .....</b>	<b>10</b>
2.1 The role of ICT and e-business in insurance and pension-funding.....	10
2.1.1 Potential, adoption and regulation issues of e-business in insurance .....	10
2.1.2 Effective knowledge transfer: the example of the Institute for Insurance Sciences..	13
2.2 ICT and e-business readiness and infrastructure.....	16
2.2.1 Importance of e-business today.....	16
2.2.2 Technical Infrastructure and ICT usage.....	17
2.2.3 ICT skills and access .....	20
2.3 ICT and e-Business usage and impact .....	22
2.3.1 Internal processes.....	22
2.3.2 e-Commerce .....	24
2.3.3 Barriers to e-commerce.....	26
2.3.4 Electronic processes with business partners, suppliers and customers.....	30
2.3.5 Impact of e-business.....	34
<b>3 Summary and conclusions .....</b>	<b>40</b>
3.1 Summary of main findings .....	40
3.2 Economic implications .....	45
3.3 Policy implications.....	46
<b>References.....</b>	<b>48</b>
<b>Annex: Methodology of the e-Business Survey 2002 .....</b>	<b>50</b>

## Introduction

European policy is, in a number of areas, including economic, innovation and SME policies, increasingly focused on promoting the business techniques and new ways of working which will provide the economic and social foundation of the information society in Europe. To help policy makers define their programmes, and to monitor the effectiveness of these policies, some indication of progress and of areas requiring active support is essential. At the same time, many areas of European business lack information about the speed of technological update in European markets, which they expect to have a strong impact on their global competitiveness.

Despite the increasing number of studies and market research projects from numerous international authors and research organisations on electronic business and especially on electronic commerce, there is still a lack of reliable empirical information on the factors affecting and the extent, scope, nature of the speed of e-business development in Europe at the sectoral level in an internationally comparative framework. This report aims to provide such information for the insurance and pension-funding sector.

This report has been published in the framework of the "European e-Business Market Watch" (the "*e-Business W@tch*"). This is a market observatory established by the European Commission, DG Enterprise, in January 2002. During the first 18 months period, the *e-Business W@tch* monitors and assesses the maturity of electronic business in 15 industry sectors across all EU Member States, including seven manufacturing and eight service sectors. The sectors and the publication schedule for these reports are as follows:

	Sector	1 <sup>st</sup> Issue Report	2 <sup>nd</sup> Issue Report
1	Food, beverages, tobacco	August 2002	January 2003
2	Publishing, printing and audio-visual services	October 2002	April 2003
3	Manufacture of chemicals and chemical products	August 2002	January 2003
4	Manufacture of Metal products	October 2002	April 2003
5	Manufacture of machinery and equipment	October 2002	April 2003
6	Manufacture of electrical machinery and electronics	October 2002	April 2003
7	Manufacture of transport equipment	August 2002	January 2003
8	Retail	October 2002	April 2003
9	Tourism	October 2002	April 2003
10	Credit institutions, investment firms, leasing enterprises	August 2002	January 2003
11	Insurance and pension-funding services	August 2002	January 2003
12	Real estate activities	October 2002	April 2003
13	Business Services	October 2002	April 2003
14	Telecommunications and computer related services	August 2002	January 2003
15	Health and social work	August 2002	January 2003

The research presented in these Sector Reports is intended to help to benchmark progress and to assess how electronic business development can be further enhanced at the European level or at Member State level with the objective of strengthening the competitiveness of European businesses. While the main target of the first series of sector reports (published in August 2002) was to provide a thorough portrait of the background and challenges related to e-business in the sectors, this report focuses on presenting the results of a recent survey:

Most of the data presented in this report are based on the European e-Business Survey, a cornerstone of the monitoring activities of the *e-Business W@tch*. The fieldwork of this enterprise survey was carried out by INRA Germany GmbH in co-operation with its international partner organisations in June and July 2002 using computer-aided telephone interview (CATI) technology. The decision-maker in the enterprise targeted by the survey was normally the person responsible for ICT within the company, typically the IT manager. Alternatively, particularly in small enterprises without a separate IT

unit, the managing director or owner was interviewed. In total, more than 9,200 interviews with decision-makers in European enterprises were conducted. The survey included all sectors and all Member States, but only in the four largest states (Germany, France, Italy and UK) were all sectors covered. The survey for the insurance and pension-funding sector was carried out in the following seven countries (number of interviews in brackets): Germany (100), Greece (52), France (50), Italy (41), Luxembourg (30), Sweden (52) and the UK (101).

Further methodological information is provided in the annex. More information about the *e-Business W@tch* in general is available at [www.ebusiness-watch.org](http://www.ebusiness-watch.org).

**UNIVERSITÄT LEIPZIG**  
Institut für Versicherungswissenschaften

The *e-Business W@tch* gratefully acknowledges contributions from Dr. Thomas Köhne, executive director of the Institut für Versicherungswissenschaften e.V. an der Universität Leipzig (Institute for Insurance Sciences at the University of Leipzig), who has been appointed by the *e-Business W@tch* as a sector expert for the insurance and pension-funding services sector.

# Insurance and Pension-funding: Sector Profile & e-Business

## 1 Economic profile

### 1.1 Definition and focus

The insurance sector covers long and short-term risk spreading activities. The relevant NACE Rev. 1 chapter 66 comprises three basic activities: "Life insurance" includes common life insurance and life reinsurance with or without a savings component. "Pension-funding" includes the provision of retirement incomes, but not non-contributory schemes where the funding is largely derived from public sources, nor compulsory social security schemes. "Non-life insurance" comprises insurance and reinsurance of non-life insurance business, e.g. accident, fire, health, property, motor, marine, aviation, transport, pecuniary loss and liability insurance. Reinsurance activities are included in one of the three sections, according to the kind of risk reinsured.

*Table 1-1: Definition of the insurance sector in NACE Rev. 1*

NACE Rev. 1	Activity
66	insurance and pension-funding, except compulsory and social security
66.01	life insurance
66.02	pension-funding
66.03	non-life insurance

If not stated otherwise, the analysis in this report applies to pension funds as well. In the figure and table headings, "insurance enterprises" also includes pension funds. A speciality of this sub-section of the insurance business, however, is that pension funds are usually related to the employees of particular companies and that they are therefore not particularly suited to be marketed through the Internet but rather through companies' intranets.

### 1.2 Economic situation and key figures

Key figures of the EU insurance and pension-funding sector have already been provided in the first sector report in June 2002. The following is a summary of the most important data published in the first report, supplemented by new data that became available in the meantime, most notably in a new Eurostat report "European Business. Facts and figures. Data 1990 – 2000" which has been published.

#### Enterprises and employment

According to the European Insurance Committee, about 4,800 insurance companies were active in the EU in 2000, a 3.8% decrease from close to 5,000 in 1992. During this period of time, the number of companies decreased in Belgium, Spain, France, Greece, Italy and Sweden. It increased in Denmark, Ireland, Luxembourg, the Netherlands and Portugal and remained almost the same in Austria, Germany, Finland and the UK. Employment in EU insurance firms was estimated at around 900,000 in 2000, which was slightly less than 1992. There is a trend towards large insurance or financial groups which operate on a European level and dominate the market. However, these are leaving space for specialist insurers on a national or even regional level.

#### Insurance premiums

The most important insurance nations in terms of premium volume are the UK (around 30% of the EU market), Germany (18%), France (18%) and Italy (10%). The importance of the UK can be shown by

the fact that two of the ten largest life insurance companies are located in the UK – see figure 1-1. Germany is very strong in reinsurance, with three companies in the world's ten largest reinsurers.

**Table 1-2: The world's largest life and reinsurance companies in 2000**

Largest life insurance companies			Largest reinsurance companies		
Firm	Country	Revenues (million euro)	Firm	Country	Gross premiums written (million euro)
AXA	F	100,636	Munich Re	D	18,731
ING Group	NL	77,224	Swiss Re	CH	17,546
Nippon Life	JP	73,187	GE Global Insurance Holdings	US	11,008
CGNU	JP	66,706	Berkshire Hathaway	US	10,055
Generali	UK	57,849	Hannover Re	D	8,505
Dai-ichi Mutual	I	50,368	Lloyd's of London	UK	6,940
Prudential	JP	46,778	Zürich Financial	CH	5,539
TIAA-CREF	US	41,287	Gerling Global Reinsurance Group	D	5,312
Sumitomo	JP	40,714	SCOR	F	3,535
MetLife	US	34,652	London Reinsurance Group	CA	2,351

Source: Eurostat, Insurance Information Institute ([www.internationalinsurance.org](http://www.internationalinsurance.org)).

Total direct premiums in the EU grew by 50% from 1992 to 1999, calculated with inflation-adjusted data. Growth was particularly high in Luxembourg, Portugal, Ireland and Italy. While life insurance accounted for half of the EU market in 1992 (49%), it increased to almost two thirds (63%) in 1999.

### Pension funds' importance increases

Pension funds are an increasingly important way to save money towards retirement. From 1998 to 1999, the number of autonomous pension funds increased in half of the countries for which Eurostat data is available. Pension funds are of particularly high importance in the Netherlands, where 1.019 pension funds operate and 62.5% of the active population are active members in pension funds. Spain also has a high share of pension fund members.

**Table 1-3: Autonomous pension funds' characteristics in EU countries in 1999**

	Number of pension funds	Number of members (units)	Active members as a share of active population (%)
B	310	361,654	5.7
DK	56	23,679	0.4
D	298	n.a.	n.a.
E	557	4,319,416	20.6
I	483	1,239,307	4.9
L	1	n.a.	n.a.
NL	1,019	12,929,000	62.5
A	18	231,453	4.9
P	238	397,090	5.9
FIN	124	134,492	3.2
S	45	741,729	8.3

Notes: E and P excluding personnel costs. Denmark, company pension funds only.

Source: Eurostat

## 1.3 General trends and business issues

### Insurance enterprises under huge pressure from external shocks

The terrorist assault on the World Trade Centre in New York, as well as ongoing terrorist attacks since then, have put the insurance industry – the reinsurers in particular – under huge pressure. Due to the enormous sums the insurance companies will have to pay for claims, they are no longer able and willing to account for the risk of incalculable terrorist damages. Several Member States, namely Germany, Spain, France and the UK, introduced solutions based on a partnership between state and private insurance. However, these solutions are so far purely national.

Furthermore, the dramatic situation in the investment markets has forced the insurance companies to use up reserves and to adopt new business models. Customers are also affected, because life insurance returns decrease. In recent months, the difficulties experienced by life insurers in meeting return objectives has been a frequent subject in the media.

With financial reserves declining or even vanishing, the insurance business is currently experiencing a wave of rationalisation. Personnel costs are to be reduced, automation of processes and standardisation of products are sought.

### Far-reaching structural change in the insurance sector

The insurance sector is currently undergoing a far-reaching structural change, characterised by numerous features. Firstly, the insurance market is developing towards a highly competitive customer market with supply greatly surpassing demand. Consequently, customer orientation has become a prime objective of almost all insurers. Facing individualised customer requirements, insurance activities are becoming increasingly differentiated, with modular products, marketing to target groups, improving service, developing brands, and offering product packages in certain fields such as travelling. Diversification of customer access is being sought; multi-channel distribution including the Internet has become a standard, particularly in large insurance firms. In order to cope with all these challenges, insurance enterprises are developing their capabilities and infrastructure related to demand analysis, product design, assembling of meaningful product bundles, competence in marketing communication and ICT sophistication.

Market and environment have increasingly become dynamic and international. Insurance enterprises used to have an administration mentality, to be inward-oriented, hierarchical and organised into distinct business lines. Today, the change of structures and processes is almost continuous. A trend towards globalised insurance activities has led to mergers, acquisitions and co-operatives in the sector.

Insurers are becoming increasingly engaged in financial markets, some by founding special units, subsidiaries and joint ventures in order to react quickly and flexibly to the needs of reinsurance and risk cover.

### Insurance market characteristics in the sample countries

The sample for the first survey of the e-business watch in the insurance and pension-funding sector included seven countries: the “big four” as included in every sector – France, Germany, Italy and the UK – plus Greece, Luxembourg and Sweden. A brief overview of basic characteristics of the insurance and pension-funding sector in the countries of the survey is meant to facilitate the assessment of the findings.<sup>1</sup>

**Germany:** In terms of direct premium income, Germany has the second largest insurance market in the EU (18.2% of the total EU market) and the largest non-life insurance market. German firms are particularly important in reinsurance (see table 1-2 above). The number of insurance companies

---

<sup>1</sup> See the first *e-Business W@tch* report, chapter 1.1, for a country breakdown of number of enterprises, number of employees, turnover and employment by size class, insurance premiums and premium growth.

remained almost the same from 1992 (775) to 2000 (773). In Germany, the classic field sales force is still the dominant distribution channel.

**Greece:** Greece has the smallest insurance market in the EU, with a market share of only 0.4% of premiums. The number of insurance companies decreased by one third from 1992 (161) to 2000 (108); employment decreased slightly by -0.6%.

**France:** France has the third largest insurance market in the EU, with a share of 17.7% of the EU market in terms of direct premium income ranked almost on the same level as Germany. The life insurance market is second largest. France is the home country of the world's largest life insurance enterprise, AXA. From 1992 to 2000, the number of enterprises decreased from 614 to 520, and the employment level decreased by -0.5%. Banks are a very important distribution channel in France.

**Italy:** From 1992 to 1999, the increase of premiums was one of the highest in the EU. The number of insurance enterprises decreased slightly, from 268 to 254 between 1992 and 2000, and employment decrease was the highest of all Member States (-1.6%) in the same period of time.

**Luxembourg:** It is well known that Luxembourg plays an important role in financial services, despite being a small country. It has the highest share of insurance premiums per capita in the EU, very likely caused by large capital inflows from other countries. In the EU, Luxembourg experienced the highest growth of premiums (+484%, inflation-adjusted) and the highest employment growth (+7.5%) between 1992 and 1999. The number of enterprises increased from 72 in 1992 to 94 in 2000. However, these increases took place from quite a low basis. Luxembourg is quite insignificant in terms of premiums income (0.8% of the EU market).

**Sweden** takes a medium position: Premium per capita is EU average, and in terms of direct premiums, Sweden has the eighth largest market in the EU. Premium income growth from 1992 to 1999 was slightly above average. The number of businesses decreased from 1992 (525) to 2000 (482), while the number of employees also decreased slightly by -0.4%.

**United Kingdom:** The UK is the largest insurance market in the EU, with 30% of the premium market by far surpassing the other countries. This position is due to the large life insurance market, which generated more premiums than the whole insurance market in second-placed Germany in 2000. The number of insurance enterprises increased very slightly in recent years (823 in 1992 and 830 in 2000), as did the number of employees (0.3%). Direct distribution and brokers are quite important in the UK.

## **2 Usage of ICT & e-business**

### **2.1 The role of ICT and e-business in insurance and pension-funding**

#### **2.1.1 Potential, adoption and regulation issues of e-business in insurance**

The first report on the insurance and pension-funding sector (June 2002) contains an in-depth discussion of the potential and the adoption as well as of regulation issues of e-business in the sector. The following is an updated summary of the relevant chapters in this first report.

#### **Intensity of e-business application in EU insurance firms**

Insurers have invested enormous sums in the extension of their Internet activities. The “pioneers” in the Member States have realised useful, interactive and modern Internet presentations. However, these are largely information-oriented and more factual than exciting. This is mainly due to the peculiarities of the insurance product, but also due to the insurance sector's lack of marketing history. In contrast to other sectors, insurers' online presentations are often judged to be conservative and boring. E-business practice in European as well as American insurers is – except for genuine online insurers – relatively low in comparison with other sectors. However, the insurance sectors' pioneers in e-commerce functions are holding their own well with other sectors.

In Europe and in the USA, the expectations of e-commerce success (B2C), as well as the success of internal e-business new processes, have not yet been fulfilled. Some insurers enabled the customers to conclude contracts for numerous insurance products online, and they developed large-scale e-commerce applications, but demand remained low. As far as the implementation of Internet-based business processes is concerned, most insurers are still at the very beginning, whilst others are in midstream. Only online insurers and online portals are advanced. Insurers draw different conclusions from this lack of short-term success: some continue investing significant amounts, while most apply the brakes for the time being.

#### **Potential for e-business application**

Since the insurance business is largely based on information, the new information and communication technologies and e-business practices can impact greatly on the insurance industry. The Internet increases transparency on the insurance market, giving customers more market power. It allows virtualisation of organisational networks, increasing the opportunity for systematic co-operative service offers. It also reduces the amount of capital needed to enter the insurance market, so that new firms find lower barriers to compete in the market. As figure 2-1 shows, ICTs offer opportunities to rearrange all stages of the insurance value chain: product development, marketing, sales, administration, asset management and claims management.

#### **Costs can be significantly reduced**

The automation of business processes in the insurance sector can reduce costs significantly: When dealing directly with the customer, the insurance firm can save costs for running agencies and for paying commissions to agents. Processing claims via the Internet can save paperwork and, above all, much time. The automation of processes may result in reduced staff numbers. Processes can partly be outsourced, even internationally to low-wage countries. Cost reduction can affect the whole value chain. According to a study of US insurance firms, e-business applications in personal insurance allow reduction of 30% of the costs in distribution, 30% in administration, 10% in damage regulation and 5% in damage payments. The respective figures for business insurance are 10% (distribution), 35% (administration), 15% (damage regulation), and 2.5% (damage payments). Consequently, insurance firms not applying e-business comprehensively will face increasing cost pressure. Business models have to be reviewed and reconstructed.

### **Insurance products vary in their suitability for Internet distribution**

The suitability of insurance products for Internet distribution varies, depending mainly on how much individual advice the customer demands. The more complex the product and the bigger its financial scale, the larger the client's need for advice. With these two criteria, insurance products can be categorised according to Internet distribution suitability.

Standardised products which can be described and tarified easily are more suited for Internet distribution than complex and expensive products. Products particularly suited for Internet distribution are private motor, household, private liability and term life insurance. In this classification, the share of products suitable for Internet distribution in the insurance policy market was between 15 and 20% of premiums in Germany and France in 2000.

### **Customers can benefit from lower prices and improved service**

The opportunities offered by ICT application in insurance companies can also be beneficial to customers. Firstly, if automation and rationalisation lead to significant cost cuts in the insurance firms, prices may become lower. Secondly, e-business can improve customer service in many ways: information is available all day long on the Internet, the pool of information may be deeper, information can be gathered anonymously, response times may be shorter, and claims management can become more faster and more transparent. Thirdly, the Internet offers the customer the opportunity to direct communication between him/herself and the insurer. The customer decides when to visit an insurer's website and when to terminate the interaction. Insurance markets are "customer markets", that is, demand is lower than the amount companies can supply. Customer orientation is therefore very important, and the firms which are able to cut prices due to ICT application and which implement customer-friendly ICT service applications have an advantage over those firms not doing so.

### **Adoption of e-business**

On the technical side, the assurance, in contrast to many other industries, is determined by powerful legacy systems which need to be replaced or made compatible with new applications. The importance of the Internet as a distribution channel is questioned mainly because insurance policies are so-called "low-interest products", i.e. individuals do not normally think about finding out about insurance and concluding insurance contracts, let alone actively searching for insurance information on the Internet. Further barriers include: product complexity requiring individual consultation, security reservations and different priorities set by the insurers, internal conflicts in the insurance companies over rationalisation consequences of e-business, fear of technical faults, customers' preference for personal consulting, regulatory issues and the fact that the young generation most frequently using the WWW is not a target group of insurers.

A broad variety of insurance business models using the Internet as a distribution channel has already emerged. Virtually all insurers have a website: many practise multi-channel distribution, some sell insurance policies exclusively or mainly online. Further business models are product portals and thematic portals, brokers, independent comparison providers, online risk markets and reverse auctions. In particular, direct insurers such as the UK-based Esure ([www.esure.com](http://www.esure.com)) and Direct Line ([www.directline.com](http://www.directline.com)) operating completely or mainly through the Internet, are challenging the market. Their cost advantages are a threat to established insurers. However, online insurers have not yet acquired significant market shares. They will only survive if they manage to create a well-known brand or offer their services in co-operation with a popular Internet firm.

### **Specialised service providers become established**

Many new online service providers are currently emerging in the insurance industry. Functions such as underwriting, policy administration, claims management, investment or risk management are outsourced to an increasing number of specialised external providers. Potentially, national borders may become less important, so that labour-intensive tasks can be performed more cheaply in low-wage countries. Increasing cost pressure will force traditional companies to review their business model.

## Electronic Customer Relationship Management as a core issue

The goal of electronic Customer Relationship Management (eCRM) is to increase the value of the company by increasing the value of customer relations. In the insurance sector, eCRM is of particular importance because the industry is characterised by large companies with abundant customer data. Insurance policies tend to require personal information, and the insurance business is largely decentralised in companies, agencies and external salespersons. Thus the use of ICTs for customer data warehouse and data mining applications as well as for marketing, sales and service currently is an important issue in the assurance. For example, clusters of customers with particular characteristics can be constructed, allowing marketing to focus on the most profitable and promising ones.

## European regulation issues

**Directive on electronic commerce:** The e-commerce legal framework Directive issued in 2000 includes a derogation on insurance business. The “place of establishment approach” does not apply to insurance. In practice, this means that Member States have a wider legal scope to prevent foreign insurance firms from offering their products. Insurers who want to offer policies in other EU countries need to adjust their offers to the other Member States’ national law.

**Communication on e-commerce and financial services:** The Commission formulated a “Communication from the Commission to the Council and the European Parliament on e-commerce and financial services” in 2001. The 2005 deadline for an internal market in financial services is named as “central to the Community’s employment and growth agenda” in this paper. However, hurdles are to be overcome, above all a number of significant divergences in national rules, fragmenting the financial services internal market. The Commission has targeted three policy areas: the creation of a coherent legislative framework, improved consumer confidence and improved supervision.

**Directive on electronic signatures:** In December 1999, the European Parliament and the Council adopted a Directive on a Community framework for electronic signatures. The Member States had to implement this Directive before 19 July 2001. Electronic signatures enable customers and insurance firms to conclude contracts through the Internet, although, to date, they are rarely used.

**FIN-NET:** Efforts to establish a cross-border out-of-court complaints network for financial services in banking, insurance and securities, the so-called FIN-NET, play an important role in the Commission’s strategy. The network is meant to be a “flanking measure to build consumer confidence”. FIN-NET’s task is to help consumers to “seek out-of-court redress on a cross-border basis without the need to take often costly and lengthy court proceedings”. It is the first fully functioning cross-border alternative dispute resolution network in the EU. FIN-NET does not reinvent the wheel but consists of pre-existing national consumer protection associations. After a one-year pilot phase in 2001, FIN-NET is fully operational and comprises 41 members. The Commission’s focus is now on developing the network to improve geographical and sectoral coverage. To make the network better known among EU citizens, the Commission published a FIN-NET guide in September 2002.

**Directive on distance marketing:** In 1998, the European Parliament and the Council had proposed a Directive on distance marketing of consumer financial services with the objective “to approximate the laws, regulations and administrative provisions of the Member States concerning the distance marketing of consumer financial services”. The European Insurance Committee expressed concerns about this Directive, because there have been numerous changes in the legislative environment and community priorities, into which the proposed Directive on distance marketing will have to be integrated.

**Insurance Mediation Directive:** In September 2002, the EU’s Council of Ministers approved the Insurance Mediation Directive, a priority measure under the EU’s Financial Services Action Plan. It is meant to improve product choice and reinforce customer protection while making it easier for insurance intermediaries to market their services across borders. The Directive requires all intermediaries to be registered in their home country and to fulfil strict requirements for this. Once they are registered, the companies can market their products and services in every EU member state. The Directive will come into force in late 2004.

## 2.1.2 Effective knowledge transfer: the example of the Institute for Insurance Sciences

### Knowledge transfer as a precondition for e-business excellence

Among the most important generators of new knowledge in the “information society” are the universities. Knowledge transfer – meaning transfer of new knowledge from universities to private firms as well as the other way round – takes place in numerous ways: graduates apply their knowledge in the enterprises where they become employed or they found a new firm. Business people give lectures at universities. Academics from universities and private firms form joint research groups. Inventions are patented and licensed to private companies. Establishing and fostering powerful relationships between public research and private business may be of crucial importance if European businesses are to capture leading positions in ICT and e-business applications. Governmental funding and support may also be important. Some authors even formulated a “triple helix” model of communication between public research, private business and governments as a driving force of strategic technological development.<sup>2</sup>

Industry-university relations can also be important for the development of e-business in the insurance sector. However, the search for an expert for the *e-Business W@tch* who is knowledgeable in insurance science as well as in e-business turned out to be rather difficult. It appears that there may be a need to promote initiatives at the interface of insurance science and e-business.

### The IfVW approach

One example of an academic institution at the interface of science and e-business is the Institute for Insurance Science (Institut für Versicherungswissenschaften, IfVW; [www.ifvw.de](http://www.ifvw.de)) at the University of Leipzig in Germany. According to Dr. Thomas Köhne, the IfVW’s managing director, the statutory goal of the IfVW is to foster research and teaching in insurance science and to deepen relations between science and business. The IfVW rests on the following pillars:

- **Study and education:** The IfVW supports education and research concerning the professorship for insurance business administration, represented by Prof. Dr. Fred Wagner, established by the Department of Economics of the University of Leipzig in 1996, and the honorary professorship for insurance informatics at the Department of Mathematics and Informatics, represented by Prof. Dr. Gottfried Koch and also established in 1996. Both professors are the founders of the IfVW.
- **Research:** The IfVW conducts basic as well as application-oriented research. The fields of research are the “new economy” and e-business, core competence management and strategic networks, financial leadership and value-oriented management, insurance marketing as well as strategic marketing in insurance enterprises. Insurance informatics are perceived as a cross-sectional function.
- **Publication:** Two publication series are issued by the IfVW: the “Leipziger Schriften zur Versicherungswissenschaft” (Leipzig Papers on Insurance Science), serving to publish selected diploma papers and dissertations as well as research reports, and the “Leipziger Versicherungsseminare” (Leipzig Insurance Seminars) which include lectures by board members of insurance firms presented to students in advanced seminars every semester.
- **Networking:** The IfVW network comprises five partners. Academic partners are the University of Leipzig as well as the Chinese-German University College at the Tongji University in Shanghai and the Southern Illinois University in Edwardsville (USA) as international partnership organisations. Further knots in the network are a number of spin-offs and numerous national and international scientists from various disciplines.

With these activities the IfVW tackles numerous challenges to enhance e-readiness and usage in insurance enterprises: it improves managerial understanding of e-business by transferring knowledge and promoting good practice, and it offers initial and ongoing formal education of e-business.

---

<sup>2</sup> See for example Leyesdorff/Etzkowitz (1998).

## Background and organisation

Building upon a flourishing network between the university, scientists and the business community that was established in 1996, the IfVW was formally founded in 2000. The objectives were to strengthen interdisciplinary work, forming a gravitation point for insurance research, application-orientation and co-operation with private business. Examples were the market orientation of US institutes, particularly the MIT, as well as the close relationships between university and business at the University of St. Gallen in Switzerland.

The IfVW has three members of the board, a librarian, a secretary as well as three research assistants. As a partner in insurance informatics, Prof. V. Gruhn who holds the chair for e-business and applied telematics was affiliated recently. A further 15 employees, most of them scientists, work in the two spin-offs from the IfVW. Communication between the people involved takes place mainly by e-mail, in usergroups and in regular meetings.

## Knowledge transfer through networking

The IfVW's network partners form vital channels of knowledge and technology transfer improving research, education and business as well as creating qualified jobs.

**Spin-offs – the core of the “Leipzig Network”:** In the course of time several projects have been outsourced into private companies, employing several people, almost all of whom studied at the University of Leipzig. The IfVW and its two spin-offs form the core of the “Leipzig Network” that is active in academic and professional education, basic and application-oriented research as well as information circulation between science, finance business, consultancy and IT service providers. The two spin-offs are the Versicherungsforen Leipzig GmbH (Leipzig Insurance Forums Ltd.) and the Comema AG. The Leipzig Insurance Forums offer an information exchange platform between the insurance practice and “Leipzig Network”. The Forums intensify the dialogue between science and business by constantly providing information about recent research findings, keeping business up-to-date about lecture contents at the University, discussing examples from business practice and generating thematic discussion between enterprises. Another business unit is research in which an interdisciplinary network of scientists, businessmen and advanced students researches on current subjects. In the business unit called Bitubi.de a team of informatics engineers and economic computer scientists offers IT services to insurance enterprises. Education is also conducted: E@cademy is a programme of basic and further education in the field of insurance. Comema – the second spin-off from the IfVW - is the abbreviation of “controlling meets marketing”. The firm offers an instrument that allows the integration of data from business reports and market research from German insurance companies in a web-based information platform. Originally the tool was drafted at the IfVW and is now professionally marketed and further developed by Comema.

**The University of Leipzig:** The official location of both professors is in a building separate from the main campus. The rooms, paid from third-party funds, offer space for all insurance science lectures. However, unlike many other institutes at German universities, the IfVW seeks close links to other units and people at the university. The University of Leipzig and the IfVW have agreed upon a close co-operation in a contract. Networking links to other institutes, chairs and professorships at the university have been established. Many students take part in application-oriented research projects.

**International partners:** The institute co-operates with international partners in the field of education, running exchange programmes. The Chinese-German University College in Shanghai offers a basic education for insurance business, in which the IfVW is involved. It is planned that a group of Chinese students will study in Leipzig in their fifth study semester. As a test and introduction, groups of German and Chinese students and scientists have been exchanged in 2002. Furthermore, an educational exchange between the IfVW and the Southern Illinois University in Edwardsville (SIUE), USA, has been established. The SIUE is very much engaged in financial e-business promotion, hosting some e-business companies on its campus.

### **Encouraging experiences – but barriers as well**

The networks create decisive knowledge synergies, diversity of methods, personal co-operation and critical review of findings. Projects have proved to be suitable to bundling interdisciplinary fields of knowledge in an uncomplicated manner. The university can offer business experience to their students and act as a competent business partner. The university becomes more valuable for the business community because enterprises receive solutions, not only fragments of knowledge, and the opportunity to think beyond everyday business. In contrast to consulting firms, university institutes tend to be more neutral and independent, cheaper and more open. Experience shows that the enterprises involved are open for mutual learning, exchange of knowledge and experience and a constructive co-operation in projects managed by a university institute. The application-oriented kind of learning and working motivates the students. They show high commitment as well as an increased identification with the institute and the subject of insurance science.

However, the co-ordination of such a network takes time. There is a danger that the main co-ordinator is primarily engaged with networking activities instead of his/her own research. Moreover, profiling of the single network partners becomes more difficult because often “only” the co-ordinator or the network as a whole becomes visible in the public. As a consequence, seeking individual benefits rather than network advantages is sometimes a barrier.

Within the university, research funded by third parties and close co-operation with business is regarded sceptically on a part of the teaching staff. “Lack of scientificness”, “prostitution of science” are some of the reproaches. On the other hand, many faculties show sympathy, support and willingness to co-operate.

### **Implications for similar endeavours**

Several preconditions have to be fulfilled in order to create a workable network with effective knowledge transfer:

- Open mutual information exchange must allow every partner to benefit from the network.
- The university needs to conduct a policy of “open doors”.
- The university needs to be able and willing to contact businesses and to offer application-oriented seminars with business representatives as well as excursions to enterprises.
- Selection of subjects that are oriented at reality and practice, and “open ears” for current and urgent matters.
- A work-type oriented towards results, solutions and applications.
- On the part of enterprises, some personal and financial involvement, sometimes also beyond direct and unequivocally identifiable monetary benefits.
- On the part of science, thinking in terms of efficiency in using third-party funds (personally and financially) as well as usability of solutions and results in the enterprises.

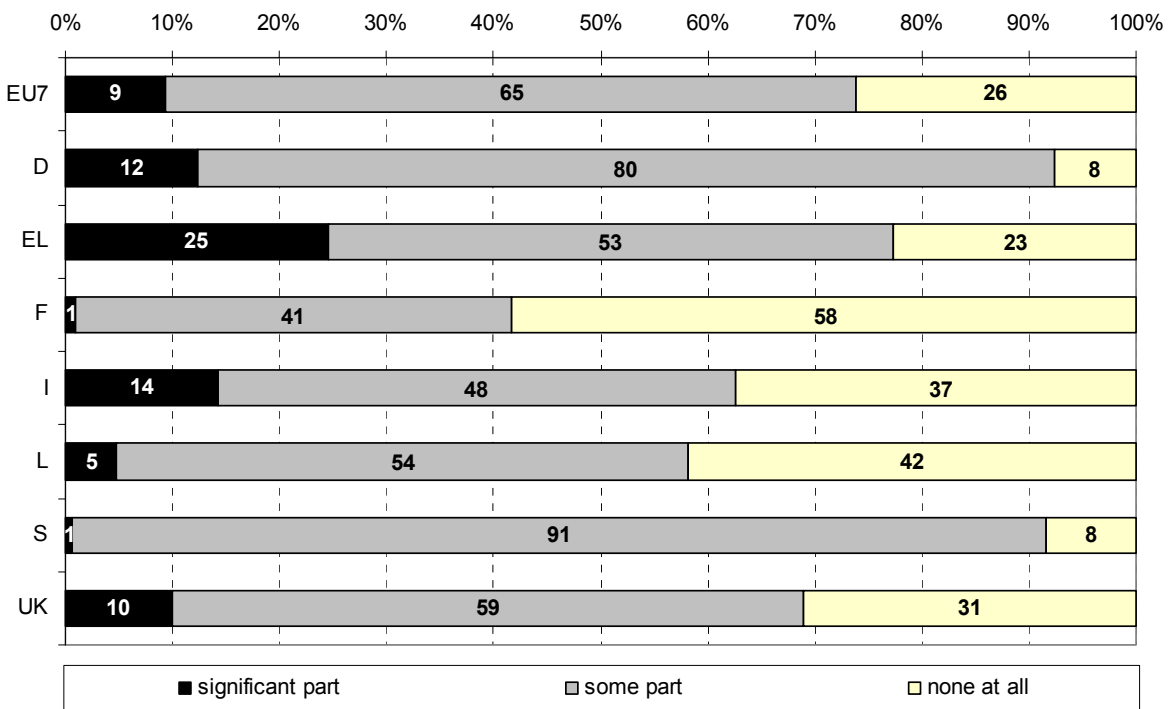
The IfVW representatives believe that their approach can in principal be adopted by other institutions as long as these preconditions are fulfilled. The most important advice they would give to others who intend to found a similar network of excellence is to openly and offensively communicate the strategies and benefits to all participants within the university and the business community. The founders and co-ordinators have to be creative and to think entrepreneurially, and they must be strong enough to resist forces holding the brakes.

## 2.2 ICT and e-business readiness and infrastructure

### 2.2.1 Importance of e-business today

**Altogether:** The insurance sector is characterised by high e-business importance, widespread intention to further invest in e-business technologies, and strong satisfaction with e-business. In 9% of the insurance enterprises in the sample countries, e-business does already constitute a significant part of the way the companies operate today, and in 65% some part – see figure 2-1. 36% of insurers intend to increase their e-business investments within the next 12 months, 3% want to decrease it and in 58% the level is expected to remain the same. However, a recent study by Accenture and the Institute for Insurance Science of the University of St. Gallen revealed that in many cases IT investments are not optimally directed towards the business needs of the enterprise and that an efficient IT control is missing.<sup>3</sup> Of those companies that apply e-business, the proportion that is very satisfied is 14%, fairly satisfied is 73%, fairly disappointed is 9% and very disappointed is 4%.

Figure 2-1: Significance of e-business in EU insurance and pension-funding enterprises



Computation base: all insurance and pension-funding enterprises  
 Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".

Source: *e-Business W@tch* (European e-Business Survey 2002)

**Sector comparison:** the largest share of all sectors is held by enterprises representing 74% of the insurance employees stating a significant or some part of e-business. The second largest proportion is to be found in the financial sector (71%) and the telecommunications and computer services sector (68%). However, the share of insurance enterprises stating that e-business constitutes a significant part of the operations is only slightly below average. The levels of intention to further invest in e-business technologies as well as levels of satisfaction and disappointment are average.

**Countries:** The importance of e-business differs widely by country. In Germany and Sweden, 92% of the enterprises reported that e-business plays a significant or some part, while the level was only 42% in France. Greece has the highest share of enterprises stating a significant part (25%) as well as of enterprises intending to invest more in e-business technologies (79%). The highest level of

<sup>3</sup> Sample: 33 insurance enterprises in Austria, Germany and Switzerland. The survey took place between December 2001 and March 2002.

satisfaction is found in Luxembourg (2% very satisfied, 98% fairly satisfied) and France (6% / 94%); disappointment is highest in the UK (16% fairly disappointed and 14% very disappointed) and Sweden (20% fairly disappointed). Italy has below average e-business significance (57%) and a high level of e-business satisfaction (94%). The low levels of importance and high levels of satisfaction in France and Italy as opposed to high importance and low satisfaction in Germany appear to be slightly contradictory. A high level of satisfaction may indicate that the real importance of e-business has not yet been realised, while a high level of dissatisfaction may be expressed by companies that assign high importance to e-business and realise that they still have a long way to go in this respect.

**Company size classes:** In large enterprises, e-business plays a much more important role than in SMEs. While 73% of enterprises with more than 250 employees reported significant or some role, it was 68% in enterprises with 50 – 250 employees and only 54% in enterprises with less than 50 employees. The intention to increase e-business investments is largest in medium-sized enterprises (46%) and almost the same in small (37%) and large enterprises (35%). The reason for the latter may be that medium-sized enterprises are seeking to catch up, large enterprises have already invested much and are now waiting for the return on investment, while small enterprises lack investment power. The levels of satisfaction are rather similar, with 88% of small, 93% of medium-sized and 87% of large enterprises stating satisfaction with e-business.

**Table 2-1: Significance of e-business in EU insurance enterprises by company size (in %)**

	Importance of e-business in company operations today		
	Significant part	Some part	None at all
EU7	12	42	45
0-49	12	40	46
50-249	9	57	32
250+	9	64	26

Notes: In % of enterprises. Computation basis: All insurance and pension-funding companies.

Source: *e-Business W@tch* (European e-Business Survey 2002)

## 2.2.2 Technical Infrastructure and ICT usage

**Altogether:** The EU insurance sector is characterised by a very highly developed ICT infrastructure. Computer use (97%), Internet access (99%)<sup>4</sup>, e-mail use (93%), and world wide web use (WWW) (94%) are found in almost all companies; Local Area Networks (LAN) (87%), intranets (79%) and Wide Area Networks (WAN) (64%) are frequently used – see figure 2-2. Extranets (41%) are found in a large minority of companies. Electronic Data Interchange (EDI) is traditionally not so important in the insurance business (25%). It appears to be a standard particularly in France and Greece – see below – but it is unlikely to gain importance in other countries. Within the next twelve months, enterprises report that the technologies most intended to be introduced are extranets (15%) and intranets (9%). The focus on extranets may show that many insurers expand their links to external brokers and field personnel.

As regards e-mail, the high level of users does not necessarily point to qualitatively satisfying responses to customer inquiries. A survey by Mummert Consulting covering 200 enterprises in the financial service sector including insurers in September 2002 revealed that every third inquiry was not answered at all and three quarters of the answers were not satisfying. Some enterprises answered within a few minutes but at the expense of quality. It appears that financial services do not yet use e-mail as a serious means of customer acquisition and retention.

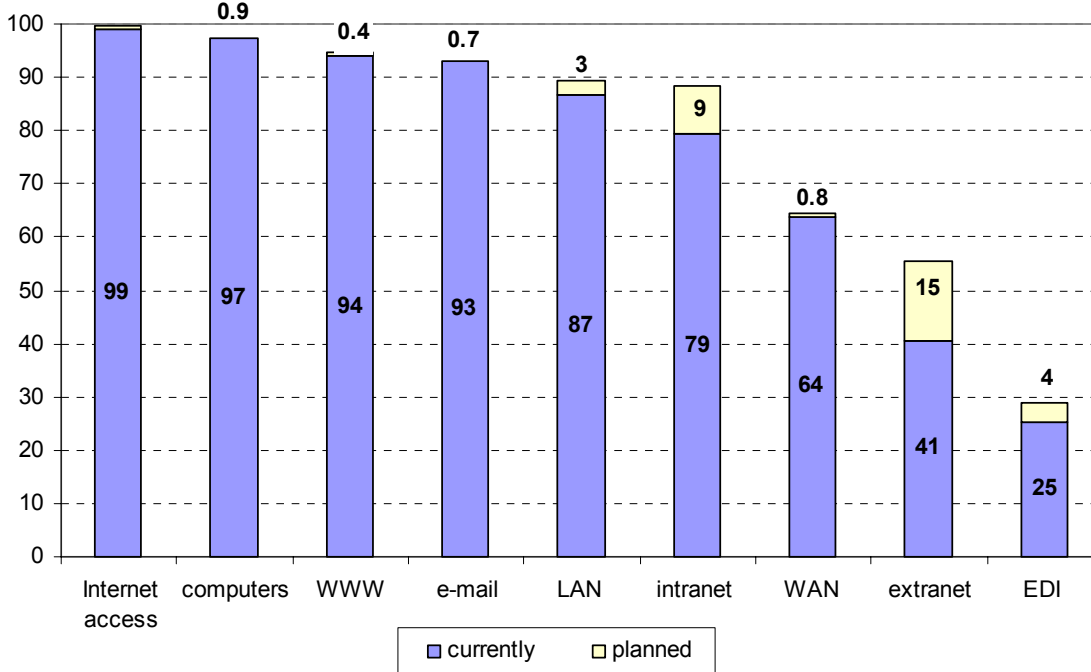
The type of Internet access used most often is an unspecified fixed connection (48%), followed by ISDN (33%), DSL (23%), analogue dial-up modem (11%), and other connections (1%). The majority of

<sup>4</sup> Internet access is higher than computer use because of employment weighting of the data. In % of enterprises, computer use is also 97%, but Internet access is only 92%.

enterprises (53%) can use a bandwidth smaller than 2 megabit per second, 22% have a bandwidth between 2 and 10 MBit/s, and 12% have more than 10 MBit/s available.

The share of employees occupied with maintenance of IT and networks is 35 per thousand, and the number occupied with maintenance of the companies' website is 5 per thousand.

Figure 2-2: ICT use and usage plans in EU insurance enterprises in %



Computation base: insurance and pension-funding enterprises in the sample countries  
 Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".

Source: e-Business W@tch (European e-Business Survey 2002)

**Sector comparison:** The insurance sector is one of the top performers in ICT use. It has the highest penetration of Internet access, the second highest level of extranet use, the third highest level of intranet and WAN use, one of the highest levels of WWW usage, a high share of LAN users and an average share of EDI users. The moderate EDI use may be due to the fact that this technology is traditionally not much used in insurance business. What is also notable is the relatively high share of enterprises intending to introduce an extranet within 12 months.

The number of employees mainly occupied with maintenance of IT and networks per 1000 employees is the third lowest of all sectors, and the number of employees mainly occupied with maintenance of the company's website the second lowest. This may be due to rationalisation effects because the insurance sector has a high share of large companies. A relatively large share of field service employees may also be an explanation. Moreover, some large insurers outsourced their IT departments.

**Countries:** The use of ICTs in insurance and pension-funding shows some remarkable national features, with Germany, Luxembourg and Sweden as the most advanced users and the UK and France appearing to be least developed. All German insurers have Internet access, use e-mail and the WWW. The share of enterprises using LAN and WAN is the largest of all countries, while EDI use is the lowest. Greece has a 100% access to the Internet and 100% e-mail use as well as an above-average use of intranet, LAN, WAN and EDI. France has – together with Greece – the highest share of EDI use, is above average in WWW use, average in Internet access and extranet use, below average in Intranet, LAN and WAN use, and has the lowest e-mail use. Italy has the lowest levels of Internet access and WWW use and is well below average in WAN and EDI, but high shares of intranet and LAN use.

**Table 2-2: ICT use and usage plans in EU insurance enterprises by country (in %)**

	Internet access		E-mail usage		WWW usage		Intranet usage	
	currently	planned	currently	planned	currently	planned	currently	planned
EU7	99	0.9	93	0.01	94	0.7	79	9
D	100	0.1	100	0	100	0	87	12
EI	100	0	100	0	87	3	87	3
F	98	1.6	81	0	98	0	76	3
I	92	8	92	0	63	8	90	0.4
L	100	0	100	0	96	0	88	7
S	100	0	99	0.3	99	0	93	1
UK	99	0.3	91	0	90	0.6	67	10
	Extranet usage		LAN usage		WAN usage		EDI usage	
	currently	planned	currently	planned	currently	planned	currently	planned
EU7	41	15	87	3	64	0.8	25	4
D	55	24	99	0.1	79	0.1	7	0.1
EI	40	7	96	0	69	5	58	11
F	40	3	81	0.7	59	0.1	58	18
I	37	16	94	0	53	0	17	0.2
L	49	31	90	1	70	0	11	5
S	66	3	94	0	73	0	55	0.3
UK	19	10	71	9	46	2	31	1

Notes: Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".  
Computation base: all insurance and pension-funding enterprises

Source: *e-Business W@tch* (European e-Business Survey 2002)

**Table 2-3: ICT use and usage plans in EU insurance enterprises by company size (in %)**

	Internet access		E-mail usage		WWW usage		Intranet usage	
	currently	planned	currently	planned	currently	planned	currently	planned
EU7	92	4	88	0.04	83	0.2	41	8
0 – 49	91	4	87	0.04	82	0	37	7
50 – 249	96	4	96	0	89	2	73	14
250+	99	0.9	93	0	94	0.9	82	8
	Extranet usage		LAN usage		WAN usage		EDI usage	
	currently	planned	currently	planned	currently	planned	currently	planned
EU7	14	6	59	2	14	6	31	5
0 – 49	11	5	56	2	9	7	31	5
50 – 249	33	14	91	2	44	7	29	4
250+	42	16	88	3	67	0	24	4

Notes: In % of enterprises. Computation bases: all insurance and pension-funding enterprises

Source: *e-Business W@tch* (European e-Business Survey 2002)

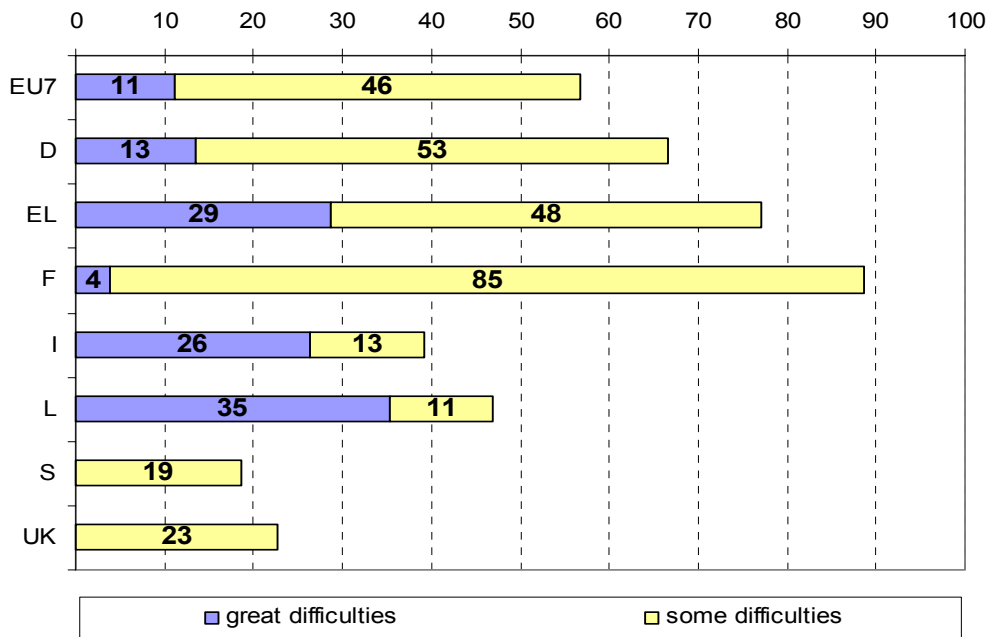
**Company size classes:** ICT use increases by company size class. For every technology except EDI, the share of users is smallest in small companies and largest in large companies (see table 2-3). Considering the basic ICT infrastructure, SMEs do not lag much behind the large ones: The share of large enterprises having access to the Internet is 99%, e-mail is used in 93% and the WWW in 94%, while the respective shares are slightly smaller in small enterprises (Internet: 91%, e-mail: 87%, WWW: 82%). Medium-sized enterprises have an even higher share of e-mail use (96%) than large companies. As regards the other technologies, the differences are more distinct. Exceptions are LAN (medium-sized enterprises have an even higher share than large ones) and EDI (SMEs have a higher use than large enterprises).

### 2.2.3 ICT skills and access

#### Recruitment activities

*Altogether:* 60% of the insurance enterprises have tried to recruit IT specialists in the past 12 months. Of these enterprises, 11% reported significant recruitment difficulties and 46% some difficulties. The difficulties may be related to the existence of legacy systems in many insurance firms: The insurers may need specialists for outdated computer programmes which are hard to find.

**Figure 2-3: Difficulties in recruiting IT specialists in EU insurance enterprises in %**



Computation base: insurance enterprises having recruited or tried to recruit IT specialists in the past 12 months  
 Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".

Source: *e-Business W@tch* (European e-Business Survey 2002)

*Sector comparison:* Recruitment efforts of IT specialists within the past 12 months were higher only in the telecommunications sector; reported difficulties in recruiting IT specialists were higher only in the machinery and equipment sector. These figures show that the insurance sector has been heavily engaged in the extension of ICT and e-business use, which again confirms the high importance of ICT in the sector.

*Countries:* Recruitment efforts have been largest in Germany (91%), medium-level in Greece (59%), Italy (62%), Sweden (67%) and Luxembourg (72%), and particularly low in France (23%) and the UK (37%). Recruitment difficulties – see figure 2-3 – were highest in France (4% great difficulties, 85% some difficulties), Greece (29% / 48%) and Germany (13% / 53%) and lowest in Sweden (19% some difficulties) and the UK (23% some difficulties).

*Company size classes:* Recruitment activities were highest in large companies (62%), medium-level in medium-sized enterprises (45%) and lowest in small companies (11%). Large companies also reported the highest levels of recruitment difficulties, with a share of “some difficulty” of 48% much larger than in SMEs – see table 2-4. The reason for the low recruitment activities in small companies may be that they prefer to purchase ICT services on a case-to-case basis rather than employ specialists.

**Table 2-4: Difficulties in recruiting IT specialists in EU insurance enterprises by company size (in %)**

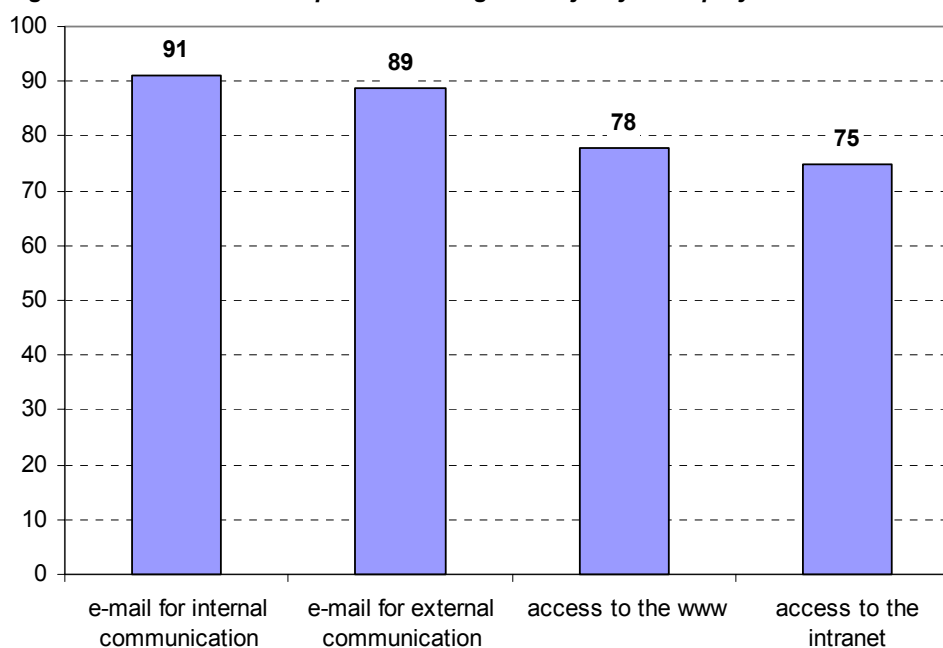
	Difficulties in recruiting IT specialists	
	great difficulties	some difficulties
EU7	9	14
0-49	9	2
50-249	9	18
250+	12	48

Notes: In % of enterprises. Computation basis: insurance enterprises having recruited or tried to recruit IT specialists in the past 12 months.

Source: *e-Business W@tch* (European e-Business Survey 2002)

### Staff access to ICT

*Altogether:* The share of insurance enterprises in which the majority of employees has access to ICTs is generally high – see figure 2-4. The share of insurance firms allowing the majority of employees access to e-mail for internal communication is 91%. To e-mail for external communication it is 89%, to the WWW 78% and to the intranet 75%. Since many insurance firms prevent their employees from surfing the Internet, the high figure for WWW access appears to be slightly questionable.

**Figure 2-4: Insurance enterprises allowing the majority of employees access to ICTs**

Computation base: all insurance and pension-funding enterprises  
Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".

Source: *e-Business W@tch* (European e-Business Survey 2002)

*Sector comparison:* Staff access to ICTs is well developed in sector comparison: access to e-mail for internal communication is the second highest, access to e-mail for external communication and intranet is the third highest, access to the WWW the fourth highest.

*Countries:* Similar to ICT use, Germany, Sweden and Luxembourg are the leaders in ICT access. French insurance firms perform worst, with the lowest shares of access to internal and external e-mail as well as intranet. Italy, Greece and the UK tend towards the average in most ICTs.

*Company size classes:* ICT access is more widespread in large enterprises than in SMEs (see table 2-6). The differences between large and small companies are distinct, whereas medium-sized companies perform proportionately the same as large ones in external e-mail and WWW. The particularly low level of intranet access in small companies may simply reflect the fact that communication can take place there personally.

**Table 2-5: Staff access to ICTs in EU insurance enterprises by country (in %)**

	Enterprises with majority of office workers having access to ...			
	e-mail for internal communication	e-mail for external communication	the WWW	an intranet
EU7	91	89	78	75
D	99	99	87	86
EL	88	89	68	74
F	78	62	61	58
I	91	89	55	82
L	98	95	60	88
S	95	99	98	81
UK	88	90	79	66

Notes: Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".  
Computation base: all insurance and pension-funding enterprises.

Source: *e-Business W@tch* (European e-Business Survey 2002)

**Table 2-6: Staff access to ICTs in EU insurance enterprises by company size (in %)**

	Enterprises with majority of employees having access to ...			
	e-mail for internal communication	e-mail for external communication	the WWW	intranet
EU7	59	78	69	31
0-49	56	77	68	26
50-249	88	88	76	69
250+	93	89	77	77

Notes: In % of enterprises. Computation base: all insurance and pension-funding enterprises.

Source: *e-Business W@tch* (European e-Business Survey 2002)

## 2.3 ICT and e-Business usage and impact

### 2.3.1 Internal processes

**Altogether:** Online technologies to support internal business processes are used only in a minority of insurance enterprises except one case: to share documents between colleagues or to perform collaborative work in an online environment (63%). Working hours and production time are tracked online in 47% of the enterprises, human resources management is supported in 45%, travel reimbursement of employees is automated online in 37% and e-learning takes place in 32%.

**Sector comparison:** Insurance appears to be one of the furthest developed sectors in internal e-business processes. No other sector has a higher share of enterprises supporting the human resources management by e-business means. As regards tracking working hours and production time, insurance is in the lead, together with the telecommunications and the electrical machinery sector. The share of enterprises practising collaborative work and e-learning is, together with one other sector, the fourth highest. However, according to the sector expert it is questionable to what extent the applications are of high quality and whether they are used beyond the IT department.

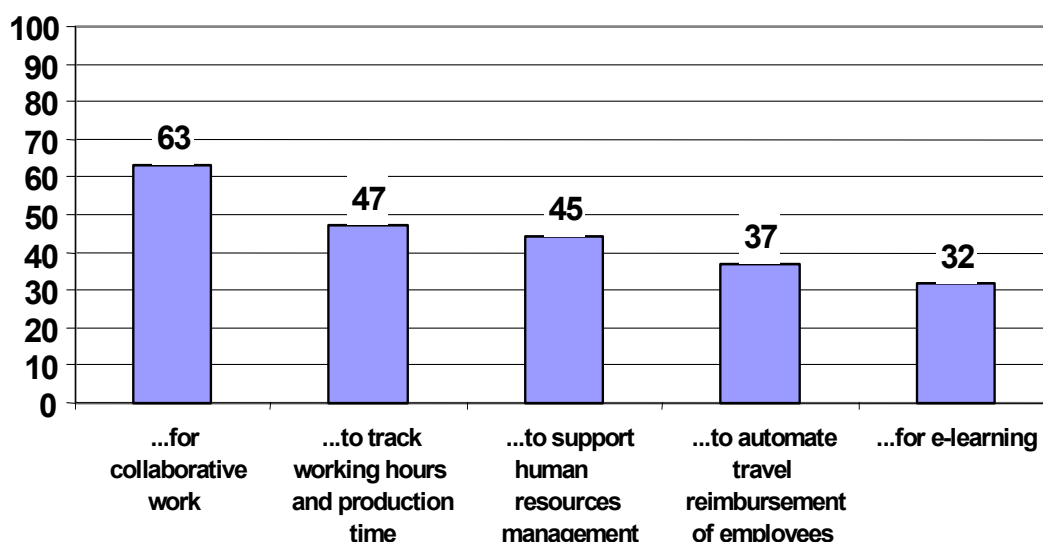
**Countries:** Germany performs best: the country has the highest levels of tracking working hours and automated travel reimbursements, and is above average in collaborative work as well as about average in human resources management and e-learning (see table 2-7). Greece has some of the lowest levels except collaborative work. France has always the lowest or second lowest levels, with a particularly low level of online collaborative work. Italian enterprises reveal the second highest level of e-learning and average or below-average levels in the other forms. Luxembourg has the highest shares of collaborative work and automated travel reimbursement but is below average in the other processes. Sweden has the highest level of e-learning, the second highest levels of collaborative work

and tracking working hours but is below average in the other forms. UK enterprises tend to be moderately below or above average in all kinds of internal e-business processes.

**Company size classes:** Internal e-business processes are much more widespread in large companies than in SMEs – see table 2-8. Only in collaborative work do medium-sized companies reveal the same level as large ones. Collaborative work may be the only application medium-sized firms are forced to use by market constraints, while the return on investment of the other applications may be too small.

**Figure 2-5: Internal e-processes in EU insurance and pension-funding enterprises in %**

Use of online technologies...



Computation base: all insurance and pension-funding enterprises  
Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".

Source: *e-Business W@tch* (European e-Business Survey 2002)

**Table 2-7: Internal e-processes in EU insurance enterprises by country (in %)**

	Collaborative work	Track working hours and production time	Support of human resources management	Automate travel reimbursement of employees	E-learning
EU7	63	47	45	37	32
D	74	61	48	55	30
EL	76	24	22	1	8
F	27	22	21	2	18
I	63	36	44	32	45
L	87	39	65	31	14
S	80	58	29	32	69
UK	67	44	55	36	38

Notes: Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".  
Computation base: all insurance and pension-funding enterprises.

Source: *e-Business W@tch* (European e-Business Survey 2002)

**Table 2-8: Internal e-processes in EU insurance enterprises by company size in %**

	Collaborative work	Track working hours and production time	Support of human resources management	Automate travel reimbursement of employees	E-learning
EU7	37	11	13	8	16
0-49	34	8	11	6	15
50-249	64	34	30	16	16
250+	63	49	47	39	33

Notes: In % of enterprises. Computation base: all insurance and pension-funding enterprises.

Source: *e-Business Watch* (European e-Business Survey 2002)

### 2.3.2 e-Commerce

*Altogether:* 93% of the enterprises have a website, 2% plan to introduce one within one year – see figure 2-4. Almost all of those that have a website present their products and services on the site (95%). Selling online is quite widespread, with 46% of enterprises and 5% planning to do so. Online procurement is similarly common: 47% of insurance enterprises pursue this practice and 12% have plans to do so.

The proportions of online sales amounts are extreme: In 77% of those insurance and pension-funding enterprises selling online the share of online sales is less than 5%. In 14% of the enterprises, the share is 5 – 10%, in 1% each the share is 11 – 25% and 26 – 50%, and 8% conduct more than 50% of their sales online. The vast majority of assurance firms appear to use the Internet as an additional sales channel of minor importance, while a minority uses the Internet as the main distribution channel. Further characteristics of online sales in insurance and pension-funding include:

- 33% of insurance enterprises selling online enable online payment;
- 41% of online sellers sell via electronic market places;
- 55% of online sellers in insurance have been conducting this practice for more than two years, 39% between one and two years and 6% for less than one year;
- 86% of insurance and pension-funding online sellers practise online sales to consumers, 51% to other businesses and 46% to the public sector.

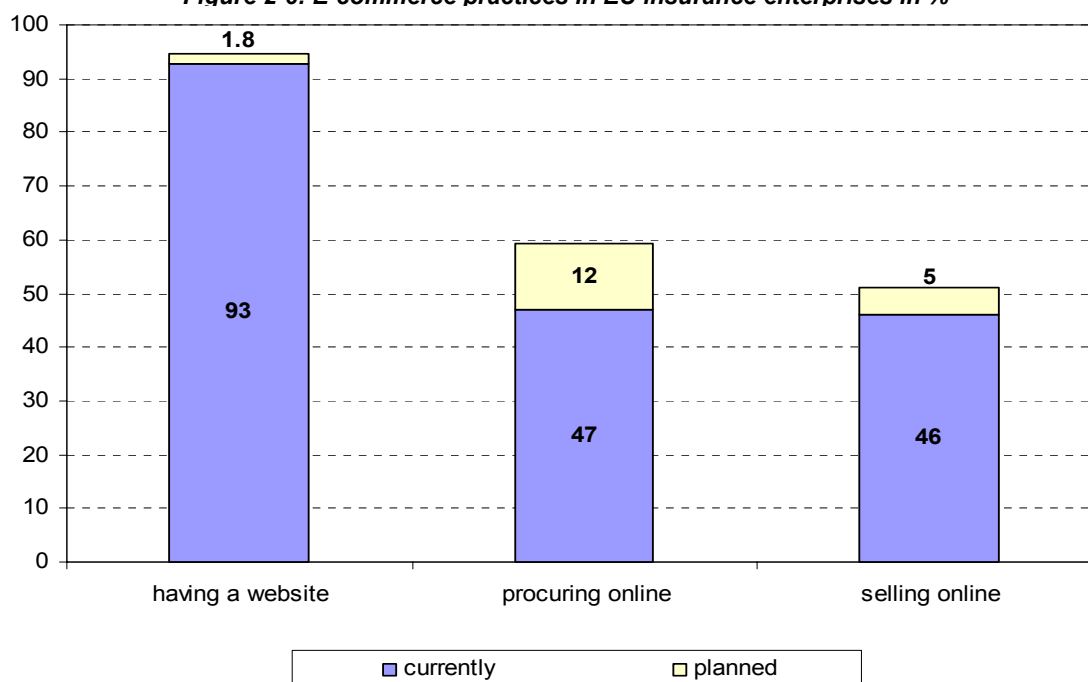
Most enterprises practising online procurement procure only a small share of their goods online: 66% of insurance and pension-funding enterprises in the sample countries procuring online conduct less than 5% of their total procurement online. In the class of 5 – 10% of total procurement the share is 19%, in the class of 11 – 25% it is 4%, in the class of 26 – 50% it is 11% and in the class of more than 50% it is 0.4% of enterprises.

*Sector comparison:* The insurance sector has, together with the financial and the telecommunications sector, the highest share of enterprises with a website and by far the highest share of enterprises selling online. However, in the group of online sellers, insurance firms have also by far the highest share of those selling less than 5% of their sales volume online. Online procurement practice is above average, and the share of online procurers buying less than 5% of their procurement volume online is the highest of all sectors. The level of insurance firms selling via marketplaces is above average.

*Countries:* In Germany, 99% of insurance enterprises have a website, all of them provide product information on the website, and the level of online sellers is slightly above average. However, the level of online procurers is well below average. Greece is below average in having a website and selling online, lowest in procuring online and Greece has the highest shares of enterprises intending to introduce e-commerce practices. France has the lowest shares in having a website (76%) and providing information on it (75%), and France is below average in selling and procuring online. Italy is well below average except in having a website. Luxembourg has average performance except for its extremely small share of online sellers (only 2%). Sweden is characterised by the single highest

shares of online selling (71%) and online procuring (78%). Unlike its bad performance in ICT use, the UK has high shares of website owners and product information providers and performs second best in online selling and online procuring.

Figure 2-6: E-commerce practices in EU insurance enterprises in %



Computation base: all insurance and pension-funding enterprises  
Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".

Source: e-Business W@tch (European e-Business Survey 2002)

Table 2-9: E-commerce activities in EU insurance enterprises by country (in %)

	Having a website (1)		Product information on website (2)		Selling online (1)		Procuring online (1)	
	currently	planned	currently	planned	currently	planned	currently	planned
EU7	93	2	95	n.a.	46	5	47	12
D	99	1	100	n.a.	49	7	38	18
EL	83	14	99	n.a.	19	22	16	24
F	76	2	75	n.a.	36	1	39	18
I	96	3	81	n.a.	21	17	35	16
L	90	8	96	n.a.	2	9	48	9
S	96	1	98	n.a.	71	2	78	0
UK	94	3	99	n.a.	54	3	65	0.3

Notes: Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".  
Computation bases: (1) all insurance and pension-funding enterprises, (2) insurance and pension-funding enterprises with a website. N.a. = not available.

Source: e-Business W@tch (European e-Business Survey 2002)

**Company size classes:** Almost all large insurers have a website (96%), while only 73% of medium-sized enterprises and 49% of small enterprises have one. Among those which have a website, the share of enterprises providing information about products on the website is quite similar in the size classes (between 89% and 94%). The level of online sellers increases by company size. Large companies may find it more rewarding to sell online than SMEs because they are already well-known and can expect more customers to visit their website. Nevertheless, the share of online sellers is only 48% in large companies, indicating a lack of widespread belief in the success of online selling. The level of online procurers is quite the same in small and medium-sized enterprises (38% and 37% respectively) and higher in large enterprises (47%).

**Table 2-10: E-commerce activities in EU insurance enterprises by company size in %**

	Having a website (1)		Information about products on website (2)		Selling online (1)		Procuring online (1)	
	currently	planned	currently	planned	currently	planned	currently	planned
EU7	53	23	93		14	13	38	4
0-49	49	25	93		12	14	38	4
50-249	73	13	89		20	13	37	2
250+	96	0	94		48	5	47	14

Notes: Employment-weighted, i.e. figures should be read : "enterprises representing X% of employees".  
Computation bases: (1) all insurance and pension-funding enterprises; (2) insurance and pension-funding enterprises selling online

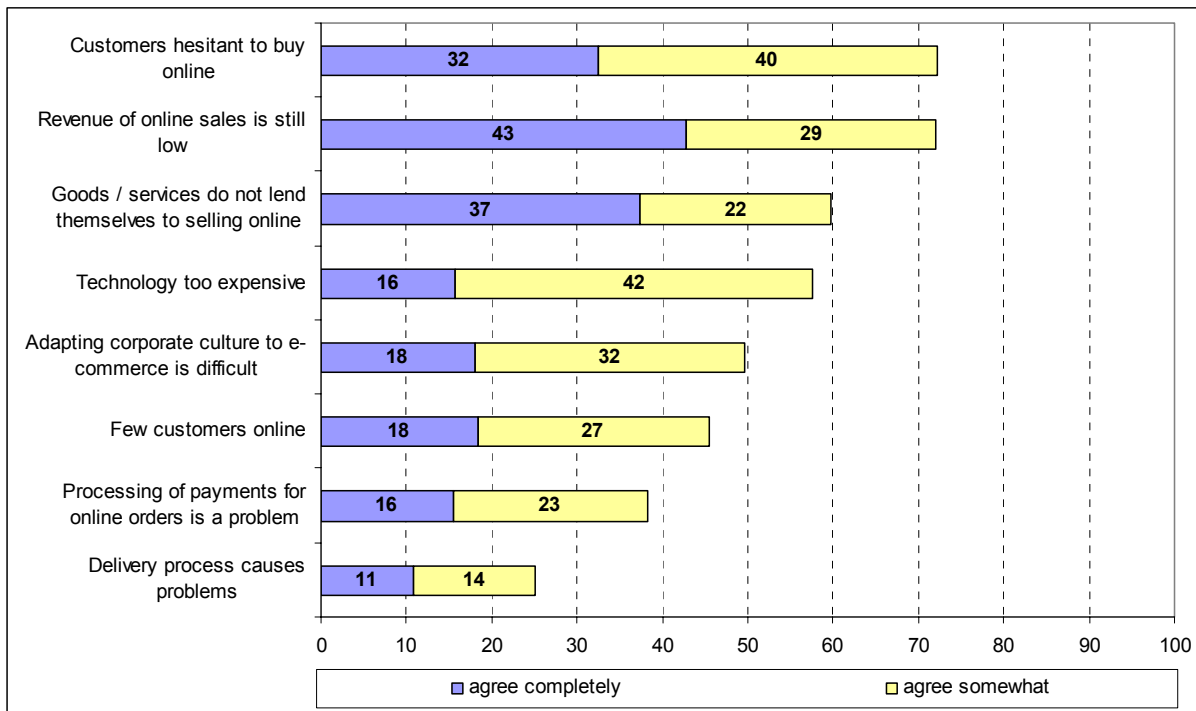
Source: e-Business W@tch (European e-Business Survey 2002)

### 2.3.3 Barriers to e-commerce

#### Barriers to selling online

*Altogether:* Four of eight pre-formulated barriers are agreed to by more than half of the enterprises. The most important barriers are “customers are hesitant to buy online” (32% agree completely and 40% somewhat), “revenue of online sales is still too low” (43% / 29%), “goods do not lend themselves to selling online” (37% / 22%), and “technology is too expensive” (16% / 42%). “Adapting corporate culture to e-commerce” is also an important problem with 18% of enterprises agreeing completely and 32% somewhat.

**Figure 2-7: Agreement to barriers to selling online in EU insurance enterprises in %**



Computation base: insurance and pension-funding enterprises selling online  
Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".

Source: e-Business W@tch (European e-Business Survey 2002)

*Sector comparison:* The share of insurance firms reporting that customers are hesitant to buy online is the highest of all sectors, while the share of those complaining that few customers are online is average. These figures may reflect customer behaviour of using the Internet for information about insurance but refraining from concluding contracts online. Insurers appear to be relatively optimistic

about the opportunities in Internet selling: the share of firms saying that their goods do not lend themselves to be sold online is the second lowest of all sectors.

**Countries:** The differences in answers by country are extreme in many cases. The following are some notable country features: In Germany, the single most important barrier to online sales appears to be that revenues of online sales are still low (50% “completely”, 43% “somewhat”). Greek interviewees tended to favour responses of “completely” and are below the average of agreement in all barriers. France has a very low level of complete agreement to “customers are hesitant to buy online” (6%) and a very high agreement to “delivery process causes problems” (18% “completely” / 37% “somewhat”). Delivery problems may be a consequence of the low levels of ICT and e-business use. Italian insurers’ agreement is well below average in “processing of payments”, “technology too expensive”, “revenue is still low” and “adapting corporate culture” and above average in “delivery processes”. Luxembourg has the highest levels of complete agreement in five barriers, in particular to “goods do not lend themselves to selling online” (66%), “revenue is still low” (64%), and “technology too expensive (60%). Sweden is characterised by low levels of agreement to customer-related barriers and above-average agreement to “revenue is still low” and “goods do not lend themselves to selling online”. The UK has also high agreement to “goods do not lend themselves to selling online”, but the most important barrier appears to be that customers are hesitant to buy online (79% agreement).

**Table 2-11: Barriers to selling online in EU insurance enterprises by country (in %)**

	Few customers online		Customers hesitant to buy online		Goods/services do not lend themselves to selling online		Processing of payments for online orders is a problem	
	completely	somewhat	completely	completely	Completely	somewhat	completely	somewhat
EU7	18	27	32	40	37	22	16	23
D	7	37	37	37	26	19	19	25
EL	27	4	45	8	33	15	9	6
F	19	38	6	58	43	18	4	40
I	40	2	43	27	32	29	8	19
L	33	41	42	17	66	28	38	12
S	15	20	3	35	47	28	17	20
UK	29	12	42	37	49	28	19	10

	Technology too expensive		Revenue of online sales is still low		Delivery process causes problems		Adapting corporate culture to e-commerce is difficult	
	completely	somewhat	completely	completely	completely	somewhat	completely	somewhat
EU7	16	42	43	29	11	14	18	32
D	18	44	50	43	0.03	6	7	37
EL	12	20	29	16	8	3	22	8
F	2	57	38	2	18	37	23	40
I	11	10	28	21	27	19	14	27
L	60	28	64	16	24	8	35	19
S	7	56	54	27	2	3	31	24
UK	21	37	38	29	19	11	30	21

Notes: Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".  
Computation basis: all insurance and pension-funding enterprises

Source: e-Business W@tch (European e-Business Survey 2002)

Table 2-12: Barriers to selling online in EU insurance enterprises by company size (in %)

	Few customers online		Customers hesitant to buy online		Goods / services do not lend themselves to selling online		Processing of payments for online orders is a problem	
	completely	somewhat	completely	completely	completely	somewhat	completely	somewhat
EU7	26	22	41	26	43	17	16	15
0-49	27	21	41	25	43	16	15	14
50-249	22	24	47	28	53	19	26	28
250+	19	27	31	42	35	23	14	23
	Technology too expensive		Revenue of online sales is still low		Delivery process causes problems		Adapting corporate culture to e-commerce is difficult	
	completely	somewhat	completely	completely	completely	somewhat	completely	somewhat
EU7	23	30	33	27	13	15	20	32
0-49	23	30	32	27	13	16	20	32
50-249	18	28	30	22	6	15	38	28
250+	15	43	44	29	12	15	16	32

Notes: In % of enterprises. Computation base: All insurance and pension-funding enterprises.

Source: *e-Business W@tch* (European e-Business Survey 2002)

**Company size classes:** Agreement to the barriers tends to be similar in the three size classes, with differences in the levels of answers of completely and somewhat. Complete agreement to a barrier is always higher among small companies compared to large companies, with the exception of “revenue is still low”. Further striking deviations are particularly high shares of agreement to “goods do not lend themselves to selling online”, “processing of payments” and “adapting corporate culture” among medium-sized companies.

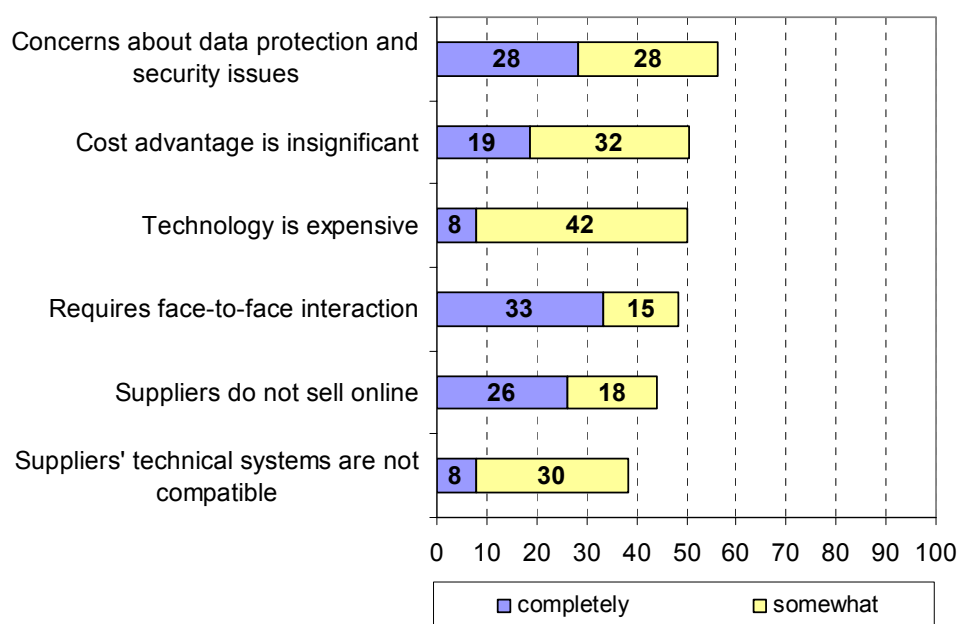
### Barriers to procuring online

**Altogether:** Three of the six pre-formulated barriers to procuring online were agreed by 50% or more of the interviewees in the insurance and pension-funding sector: “Concerns about data protection and security issues” (28% completely and 28% somewhat), “cost advantage is insignificant” (19% / 32%), and “technology is expensive” (8% / 42%). The highest level of complete agreement (32%) was revealed for “requires face-to-face interaction”. This may be due to the fact that the most important suppliers of insurers are reinsurance firms. The reinsurance business is largely carried out face-to-face.

**Sector comparison:** The share of insurance firms agreeing to the procurement barriers is always below average. As regards “technology is expensive”, insurers have the lowest share of all sectors. These low levels may be due to the fact that procurement is not a core issue in insurance. Beside reinsurers, suppliers include vendors of bureau material which does not play a role as important for the value chain as resources in production industries.

**Countries:** Differences in answering behaviour by country are quite distinct. In contrast to common perceptions, Germany has the lowest share of answers of completely for “concerns about data protection and security issues” (1%). On the other hand, in Greece concerns about data protection and security are the single most important barrier. In France, reservations about expensive technology are among the highest of all countries, and the face-to-face issue reveals concerns significantly above average. In Italy, the most important barrier is that procuring online requires face-to-face interaction. Luxembourg has the highest agreement to data protection and security barriers of all countries (39% completely, 44% somewhat). Sweden has the highest agreement to “suppliers’ systems are not compatible” (14% “completely”, 45% “somewhat”) and a high agreement to “requires face-to-face interaction”. The UK insurers have the highest level of complete agreement about data protection and security (67% “completely”, 12% “somewhat”).

Figure 2-8: Agreement to barriers to procuring online in EU insurance enterprises in %



Computation base: insurance and pension-funding enterprises procuring online  
Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".

Source: *e-Business W@tch* (European e-Business Survey 2002)

Table 2-13: Barriers to procuring online in EU insurance enterprises by country (in %)

	Requires face-to-face interaction		Suppliers do not sell online		Concerns about data protection and security issues	
	completely	somewhat	completely	somewhat	completely	somewhat
EU7	33	15	26	18	28	28
D	32	12	25	12	1	37
EL	42	7	29	16	58	15
F	41	20	23	21	23	40
I	38	34	30	39	43	9
L	34	20	28	22	39	44
S	45	22	21	3	19	34
UK	29	10	29	21	67	12

	Technology is expensive		Suppliers' technical systems are not compatible		Cost advantage is insignificant	
	completely	somewhat	completely	somewhat	completely	somewhat
EU7	8	42	8	30	19	32
D	7	36	0.2	31	13	37
EL	10	22	2	9	6	23
F	2	58	19	21	18	40
I	11	18	9	18	19	19
L	40	20	5	8	28	23
S	7	47	14	45	17	35
UK	11	46	11	39	28	22

Notes: Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".  
Computation basis: all insurance and pension-funding enterprises.

Source: *e-Business W@tch* (European e-Business Survey 2002)

**Table 2-14: Barriers to procuring online in EU insurance enterprises by company size (in %)**

	Requires face-to-face interaction		Suppliers do not sell online		Concerns about data protection and security issues	
	completely	somewhat	completely	somewhat	completely	somewhat
EU7	33	17	34	16	45	22
0 – 49	33	18	34	15	46	22
50 – 249	34	11	25	28	47	21
250+	33	16	26	18	27	28
	Technology is expensive		Suppliers' technical systems not compatible		Cost advantage is insignificant	
	completely	somewhat	completely	somewhat	completely	somewhat
EU7	23	24	15	18	21	26
0 – 49	24	23	15	17	21	25
50 – 249	21	25	10	28	11	35
250+	6	44	7	30	19	32

Notes: In % of enterprises. Computation basis: all insurance and pension-funding enterprises.

Source: *e-Business W@tch* (European e-Business Survey 2002)

**Company size classes:** Agreement to barriers of online procurement are quite evenly distributed across company size classes. The largest differences are found in concerns about data protection and security, where agreement of large enterprises (altogether 55%) is much smaller than that of SMEs (altogether 68%). The reason is likely to be that security applications are necessary for online sales but are expensive, creating an investment hurdle for small firms. Large insurers have already installed secure applications. A further notable feature is that only 6% of large enterprises agree completely that technology is expensive. This again points to a higher investment power in large companies in contrast to SMEs.

### 2.3.4 Electronic processes with business partners, suppliers and customers

#### Online business processes

**Altogether:** Online collaboration with business partners with ICTs other than e-mail<sup>5</sup> is practised by only a minority of insurance and pension-funding enterprises, except online exchange of documents with suppliers (54%) (see figure 2-9). The relevant questions were posed to enterprises with Internet access. Electronic exchange of documents with customers (40%) also takes place fairly often.

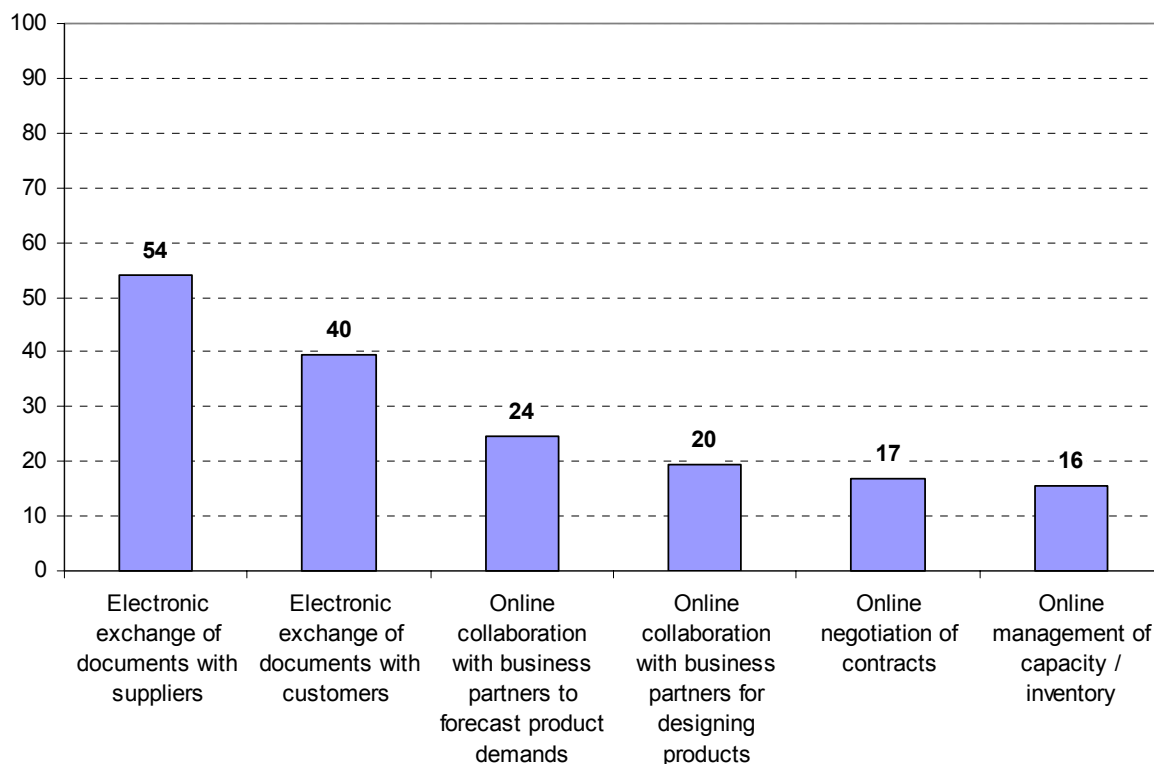
**Sector comparison:** Together with retail and electrical machinery, the insurance sector has the highest share of enterprises collaborating online to forecast product demands. Electronic exchange of documents with suppliers is well above average. However, electronic exchange of documents with customers is well below average, and in the other forms of online collaboration – designing products, management of capacity and inventory, online negotiation of contracts – insurance is average. All in all, the sector takes a significantly lower rank in online business processes than in most other indicators.

**Countries:** Country differences in e-business process with business partners are distinct. Germany has a low level of online management of capacity and inventory and the lowest level of online negotiation of contracts (7%). Greece performs the lowest or second lowest shares in all forms of online collaboration. France has the highest share of forecasting product demands (37%) and online negotiation of contracts (37%) as well as the lowest share of online management of capacity and inventory (0.8%) and electronic exchange of documents with customers (24%). Italy is below average

<sup>5</sup> E-mail was excluded to prevent artefacts of e-business usage. An example of an online collaboration tool is a "restricted area" in a website where business partners can communicate.

except in electronic exchange of documents with suppliers. Luxembourg has the highest share of enterprises practising online management of capacity and inventory (50%). Sweden is highest in “designing products” (40%), exchange of documents with suppliers (85%) and customers (72%). The UK scores particularly highly in online management of capacity and inventory (35%).

**Figure 2-9: Online collaboration with business partners in EU insurance enterprises in %**



Computation base: insurance and pension-funding enterprises with Internet access  
 Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".

Source: *e-Business W@tch* (European e-Business Survey 2002)

**Table 2-15: Online collaboration in insurance enterprises by country (in %)**

	Online collaboration with business partners for designing products	Online collaboration with business partners to forecast product demands	Online management of capacity / inventory	Electronic exchange of documents with suppliers	Electronic exchange of documents with customers	Online negotiation of contracts
EU7	20	24	16	54	40	17
D	18	24	6	56	43	7
EL	8	4	2	27	28	8
F	20	37	1	56	24	37
I	12	12	29	41	34	14
L	19	22	50	47	44	12
S	40	27	13	85	72	17
UK	21	20	35	51	42	19

Notes: Collaboration with online technologies other than e-mail.  
 Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".  
 Computation base: All insurance and pension-funding enterprises having access to the Internet.

Source: *e-Business W@tch* (European e-Business Survey 2002)

**Table 2-16: Online collaboration in EU insurance enterprises by company size (in %)**

	Online collaboration with business partners for designing products	Online collaborating with business partners to forecast product demands	Online management of capacity / inventory	Electronic exchange of documents with suppliers	Electronic exchange of documents with customers	Online negotiation of contracts
EU7	11	8	4	44	41	12
0-49	9	6	3	43	40	11
50-249	25	18	10	49	51	21
250+	19	25	17	54	37	17

Notes: Collaboration with online technologies other than e-mail. In % of enterprises.  
Computation base: All insurance and pension-funding enterprises having access to the Internet.

Source: *e-Business W@tch* (European e-Business Survey 2002)

**Company size classes:** Small companies perform the lowest shares of online business collaboration except for electronic exchange of documents with customers. The levels of online collaboration for designing products (9%), to forecast product demands (6%) as well as online management of capacity and inventory (3%) are below 10% in small companies. However, electronic exchange of documents with suppliers is not much smaller in SMEs than in large companies, and document exchange with customers is even higher in SMEs.

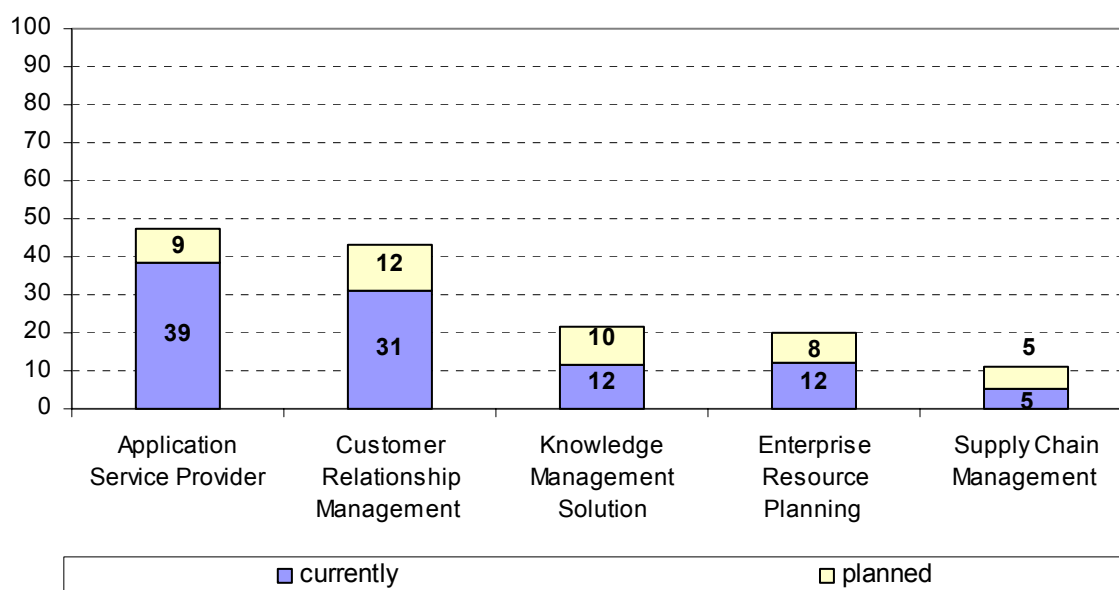
### Usage of special applications

**Altogether:** Specific e-business solutions are used only by a minority of insurance and pension-funding enterprises – see figure 2-10. More than one third (39%) makes use of Application Service Providers (ASP), and almost one third (31%) of a Customer Relationship Management (CRM) solution. As regards CRM, the applications in many firms are likely to be limited to a few operations. According to the *e-Business W@tch* sector expert, comprehensive CRM can only be found in a small number of insurance firms. CRM is the application most often planned to be introduced (by 12% of the enterprises). This high level may reflect that many insurance enterprises are about to restructure their customer databases. The low level of ERP and SCM is due to the insurance value chain that includes neither the procurement of raw material nor a large number of suppliers.

**Sector comparison:** Insurance has the single highest share of enterprises using ASP – three times higher than the average of all sectors. The sector has the fourth highest level of e-CRM use, which confirms the findings from the literature that CRM is an important issue in insurance companies. However, in SCM use, insurance is slightly below average, and the share of insurers applying ERP is only half of the average of all sectors. The low level in ERP shows that the utility of such systems is larger in manufacturing sectors.

**Countries:** Germany is above average in all special applications and plans, top in ASP use and, besides Italy, the only country with a notable level of SCM use. Greek insurers reveal a high level of CRM, KM and ERP but do not use SCM at all. France has almost no use of special solutions at all except CRM. Italy is average except a level below average in ASP. Enterprises from Luxembourg reported the highest levels of CRM, KM and ERP but no SCM use at all. Sweden is quite high in CRM but demonstrates little use of SCM and no use at all of KM. UK firms are below average except for ASP.

**Company size classes:** Special e-business applications are a clear domain of large companies – see table 2-18. For every application, the share of users is smallest in small enterprises, medium in medium-sized enterprises and largest in large enterprises, with quite distinct levels of use. This is due to scale economies – the investment in special applications is more profitable in large firms. The reported level of KM plans in large companies (11%) is remarkably high relative to the current level of usage (12%) which may be related to planned intranet introduction.

**Figure 2-10: Usage of specific e-business solutions in EU insurance enterprises in %**


Computation base: all insurance and pension-funding enterprises  
 Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".

Source: *e-Business W@tch* (European e-Business Survey 2002)

**Table 2-17: E-business solutions in EU insurance enterprises by country (in %)**

	Supply Chain Management		Customer Relationship Management		Knowledge Management		Application Service Provider		Enterprise Resource Planning	
	current	planned	current	planned	current	planned	current	planned	current	planned
EU7	5	5	31	12	12	10	39	9	12	8
D	12	12	36	18	18	12	55	6	18	12
EL	0	0	54	12	24	2	14	1	24	3
F	0	0	20	19	1	0	2	2	1	2
I	5	0.2	32	8	11	24	21	8	12	0.2
L	0	0	62	9	37	2	13	1	26	1
S	1	0	55	2	0	14	25	0.3	25	0
UK	0.1	1	27	1	9	9	45	18	9	8

Notes: n.a. = not available. Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees". Computation base: All insurance and pension-funding companies.

Source: *e-Business W@tch* (European e-Business Survey 2002)

**Table 2-18: E-business solutions in EU insurance enterprises by company size (in %)**

	Supply Chain Management		Customer Relationship Management		Knowledge Management		Application Service Provider		Enterprise Resource Planning	
	current	planned	current	planned	current	planned	current	planned	current	planned
EU7	2	1	12	4	5	3	15	4	2	2
0-49	1	1	10	4	5	2	13	4	1	1
50-249	5	4	20	8	8	2	20	8	6	4
250+	6	6	32	13	12	11	40	9	12	8

Computation base: All insurance and pension-funding companies. In % of enterprises data.

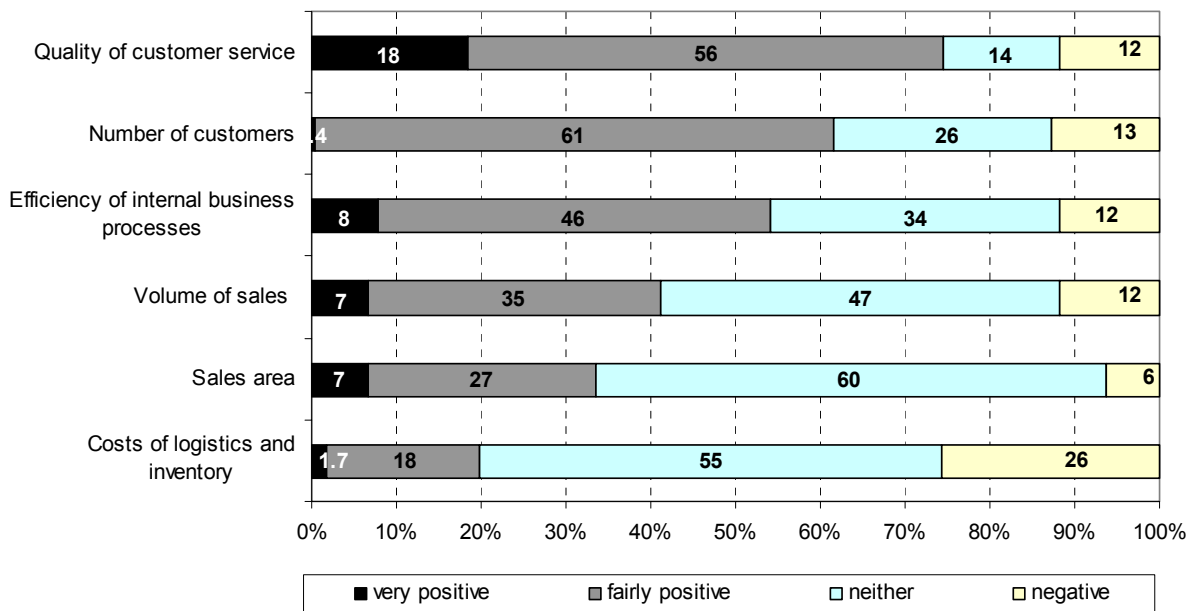
Source: *e-Business W@tch* (European e-Business Survey 2002)

### 2.3.5 Impact of e-business

#### Impact of online sales

*Altogether:* Enterprises selling online were asked about impacts of their online sales. Three of six pre-formulated impacts revealed positive assessments from more than 50% of the interviewees (see figure 2-11). Most positive was “quality of customer service” (18% answered “very positive”, 56% “fairly positive”), followed by “number of customers” (0.4% / 61%) and “efficiency of internal business processes” (8% / 46%). The impact on costs of logistics and inventory are rather negative, with only 20% of interviewees stating positive impacts and 26% negative impacts. This may be explained by high investment volumes that have not yet created sufficient returns. While online selling has been introduced, traditional processes such as field service prevail in parallel, and back-end systems have not yet been integrated in some firms. From this point of view it is astonishing that “efficiency of internal processes” was not more negatively assessed.

Figure 2-11: Impact of online sales on EU insurance enterprises in %



Computation base: insurance and pension-funding enterprises selling online  
 Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".

Source: *e-Business W@tch* (European e-Business Survey 2002)

**Sector comparison:** Striking in sector comparison are the high shares of enterprises reporting negative impacts of online sales. The insurance sector has the highest share of companies reporting negative impacts in number of customers, efficiency of internal processes and costs of logistics and inventory. The negative answers all come from enterprises with more than 250 employees, particularly from the UK, but also from Germany and, in the case of logistics and inventory, from France. This may be due to conflicts between old and new sales channels, or rather, the fear of “sales channel cannibalisation”. In some very large firms, traditional sales channels could have been outsourced or employees from the sales department could have deliberately founded their own business. In any case, the insurance sector is nevertheless in the group of sectors with particularly high shares of answers of positive as regards number of customers and quality of customer service.

**Company size classes:** Online sales appear to be particularly beneficial to medium-sized insurance enterprises. They report the highest level of positive impacts in all cases, usually with a quite distinct lead. The second highest level of positive impacts is reported by large companies in two cases (quality of customer service and number of customers) and by small companies in one case (volume of sales). This finding may be due to the fact that medium-sized insurers have more financial means to invest in a comprehensive e-sales architecture than small companies and at the same time less internal inertia

than large companies. Medium-sized insurers usually do not have much field service personnel but co-operate with brokers which makes them more flexible about introducing online sales. Large companies have to consider the interests of their powerful field service staff departments.

**Table 2-19: Impact of online sales in EU insurance enterprises by company size (in %)**

	Volume of sales					Number of customers				
	very positive	fairly positive	neither	fairly negative	very negative	very positive	fairly positive	neither	fairly negative	very negative
EU7	16	34	45	1	4	4	42	50	2	2
0-49	18	30	48	2	2	4	36	59	1	0
50-249	23	75	2	0	0	11	61	14	14	0
250+	6	33	48	0	12	0	62	25	0	13

	Sales area					Quality of customer service				
	very positive	fairly positive	neither	fairly negative	very negative	very positive	fairly positive	neither	fairly negative	very negative
EU7	13	24	57	4	2	22	44	29	3	2
0-49	14	21	59	4	1	22	38	36	3	1
50-249	23	38	25	13	0	21	78	1	0	0
250+	6	27	61	0.0	6	19	54	15	6	6

	Efficiency of internal business processes					Costs of logistics and inventory				
	very positive	fairly positive	neither	fairly negative	very negative	very positive	fairly positive	neither	fairly negative	very negative
EU7	9	44	43	3	1	3	22	69	5	0
0-49	7	42	48	3	0	4	19	77	0	0
50-249	23	53	24	0	0	0	69	17	14	0
250+	8	46	34	6	6	3	16	53	28	0

Notes: In % of enterprises.  
Computation basis: All insurance and pension-funding companies selling online.

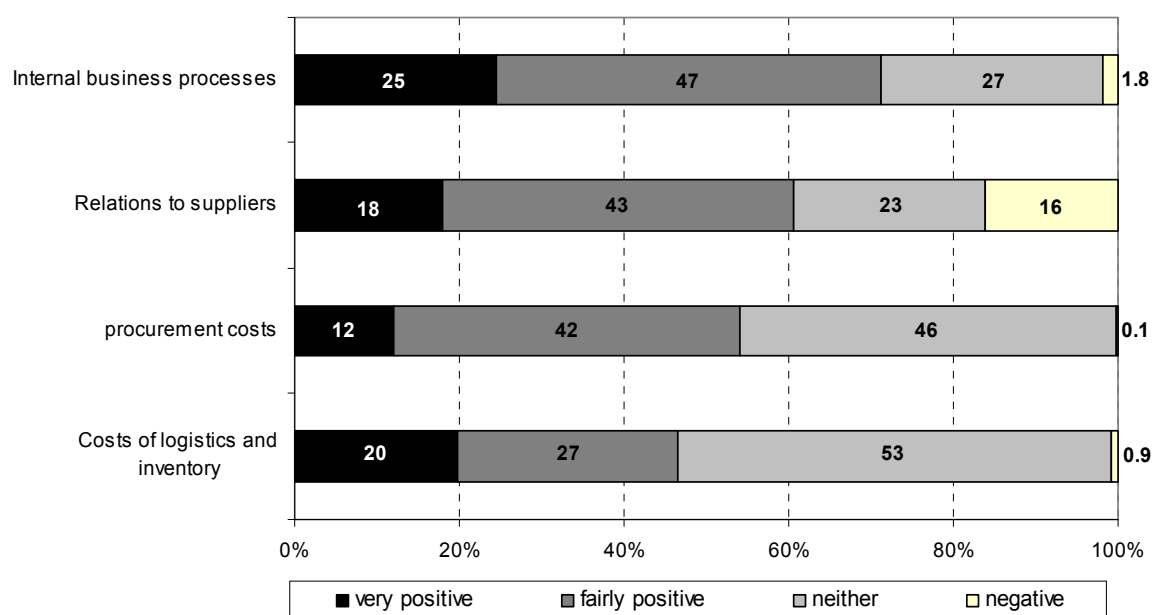
Source: *e-Business W@tch* (European e-Business Survey 2002)

### Impact of online procurement

**Altogether:** Insurance and pension-funding enterprises procuring online were asked about the impacts of this practice. Three of four pre-formulated impacts revealed positive assessment by more than 50% of the interviewees. Most positive was the impact of online procurement on internal business processes: 25% “very positive” and 47% “fairly positive”. Relations to suppliers were influenced very positively in 18% and fairly positively in 43%; the equivalent figures for procurement costs are 12% and 42%. Costs of logistics and inventory were improved in 47% (20% very positive, 27% fairly positive).

**Sector comparison:** In sector comparison, the insurance sector’s position in impact of procuring online varies. As regards relations to suppliers, the insurance sector is top in positive impacts. Considering the impact on internal business processes, insurance has the fourth highest share, and considering procurement costs, the sector has the fourth smallest share. The latter needs to be interpreted against the background that procurement costs do not play an important role in assurance so that the potential to save costs with online procurement is small. Together with chemical industries, insurance has the lowest share of companies in which the number of suppliers decreased due to procuring online. This may be explained by the fact that insurers have a relatively small number of suppliers anyway.

**Company size classes:** In contrast to online sales, online procurement appears to be most beneficial to large and small insurance enterprises. Medium-sized enterprises report the lowest levels of positive impacts in all cases except procurement costs. Large businesses are ahead as regards internal business processes, while small enterprises do not take a clear lead in either of the four cases.

**Figure 2-12: Impact of online procurement in EU insurance and pension-funding enterprises in %**


Computation base: insurance and pension-funding enterprises procuring online  
 Employment-weighted, i.e. figures should be read as "enterprises representing X% of employees".

Source: *e-Business W@tch* (European e-Business Survey 2002)

**Table 2-20: Impact of procuring online in EU insurance enterprises by company size (in %)**

	Procurement costs					Relations to suppliers				
	very positive	fairly positive	neither	Fairly negative	very negative	very positive	fairly positive	neither	fairly negative	very negative
EU7	11	54	32	3	0	9	50	36	4	1
0-49	10	55	31	4	0	8	51	36	4	0.3
50-249	17	48	35	0	0	5	34	54	6	0
250+	12	40	48	0	0	20	41	21	0.1	18

	Internal business processes					Costs of logistics and inventory				
	very positive	fairly positive	neither	Fairly negative	very negative	very positive	fairly positive	neither	fairly negative	very negative
EU7	11	47	29	13	0.1	8	43	11	35	3
0-49	10	48	27	15	0	7	46	12	33	3
50-249	23	25	52	0	0	12	15	6	67	0
250+	25	48	25	0	2	23	25	0	52	0

Notes: In % of enterprises. Computation basis: All insurance and pension-funding companies procuring online.

Source: *e-Business W@tch* (European e-Business Survey 2002)

### Impact of e-business in general

**Altogether:** The largest impact e-business had in insurance enterprises is on work processes. 13% of the interviewees reported a significant change, and 45% some change. All other pre-formulated impacts were agreed by less than half of the enterprises: change of customer relationships (9% / 35%), change of organisational structure (7% / 36%), change of relationship to suppliers (4% / 31%), and change of offer of products and services (12% / 19%). The level of products and services change appears to be rather low, considering the need to present products and services differently on the Internet.

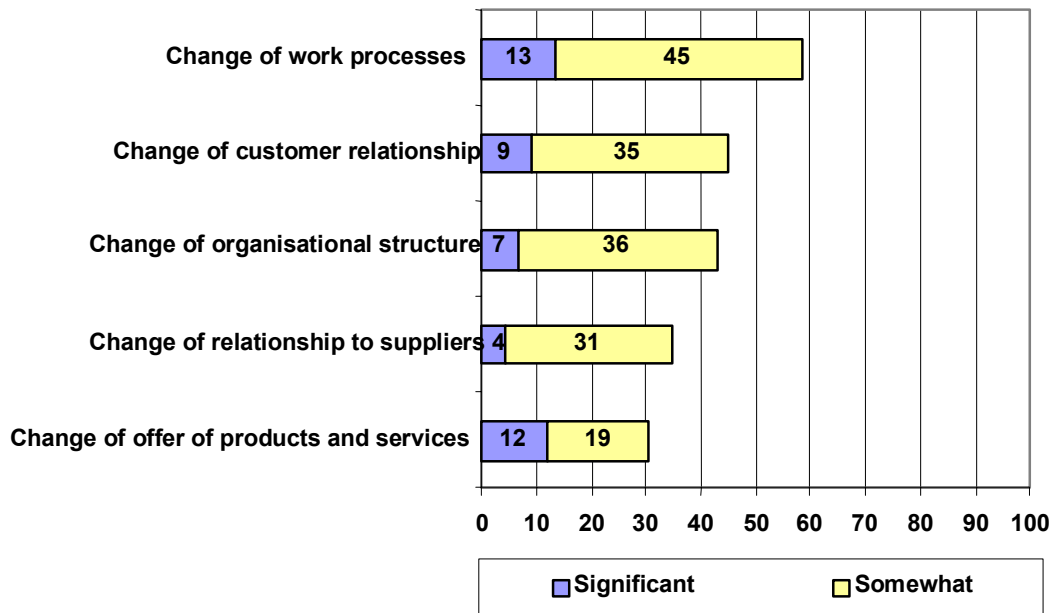
**Sector comparison:** The insurance sector yields some of the highest shares of enterprises reporting significant or some impact of e-business. The impact on the organisational structure and on work

processes is highest, the impact on customer relationships is second highest (together with the telecommunications sector), the impact on relations to suppliers is also second highest, and the impact on the offer of products and services is third highest (together with the publishing sector).

**Countries:** Sweden and Germany lead the way in impacts of e-business in insurance companies. Germany demonstrates the second highest impacts on work processes, organisational structure and on customer relationships. Greek enterprises report levels of impacts smaller than the average except “offer of products and services”. The impacts in French insurers are below average except “change of relationships to suppliers”. Italy is always below average. Luxembourg is below average except for “change of organisational structure”. Sweden always yields the highest shares of impacts. The UK has a particularly high agreement to “change of relations to suppliers”.

**Company size classes:** The changes due to e-business are largest in medium-sized and large companies and smallest in small companies. More than 50% of the interviewees reported impacts on work processes in large companies (14% significant and 44% somewhat) and medium-sized companies (16% / 36%).

**Figure 2-13: Impact of e-business in EU insurance and pension-funding enterprises in %**



Computation base: all insurance and pension-funding enterprises  
 Employment-weighted, i.e. figures should be read as "enterprises representing X% of employees".

Source: *e-Business Watch* (European e-Business Survey 2002)

Table 2-21: Impact of e-business in EU insurance enterprises by country (in %)

	Change of organisational structure		Change of customer relationship		Change of relationship to suppliers		Change of work processes		Change of offer of products and services	
	significant	some-what	significant	some-what	significant	some-what	significant	some-what	significant	some-what
EU7	7	36	9	35	4	31	13	45	12	19
D	0.4	55	18	43	0.1	25	13	61	12	24
EL	12	10	2	18	0	16	12	20	11	27
F	2	20	2	21	1	38	1	40	2	20
I	13	27	7	11	13	13	31	8	15	0.4
L	7	35	8	8	4	16	12	36	9	7
S	0	57	1	71	13	43	14	61	2	55
UK	17	21	2	37	9	38	18	31	18	11

Notes: Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees". Computation basis: all insurance and pension-funding enterprises.

Source: e-Business W@tch (European e-Business Survey 2002)

Table 2-22: Impact of e-business in EU insurance enterprises by company size (in %)

	Change of organisational structure		Change of customer relationship		Change of relationship to suppliers		Change of work processes		Change of offer of products and services	
	significant	some-what	significant	some-what	significant	some-what	significant	some-what	significant	some-what
EU7	6	15	9	18	4	16	10	22	6	14
0-49	6	14	8	17	4	15	9	20	5	14
50-249	13	24	17	26	9	32	16	36	13	15
250+	6	37	8	35	4	31	14	44	12	18

Notes: In % of enterprises. Computation basis: All insurance and pension-funding companies.

Source: e-Business W@tch (European e-Business Survey 2002)

### Assessment of e-business benefits for SMEs and large companies

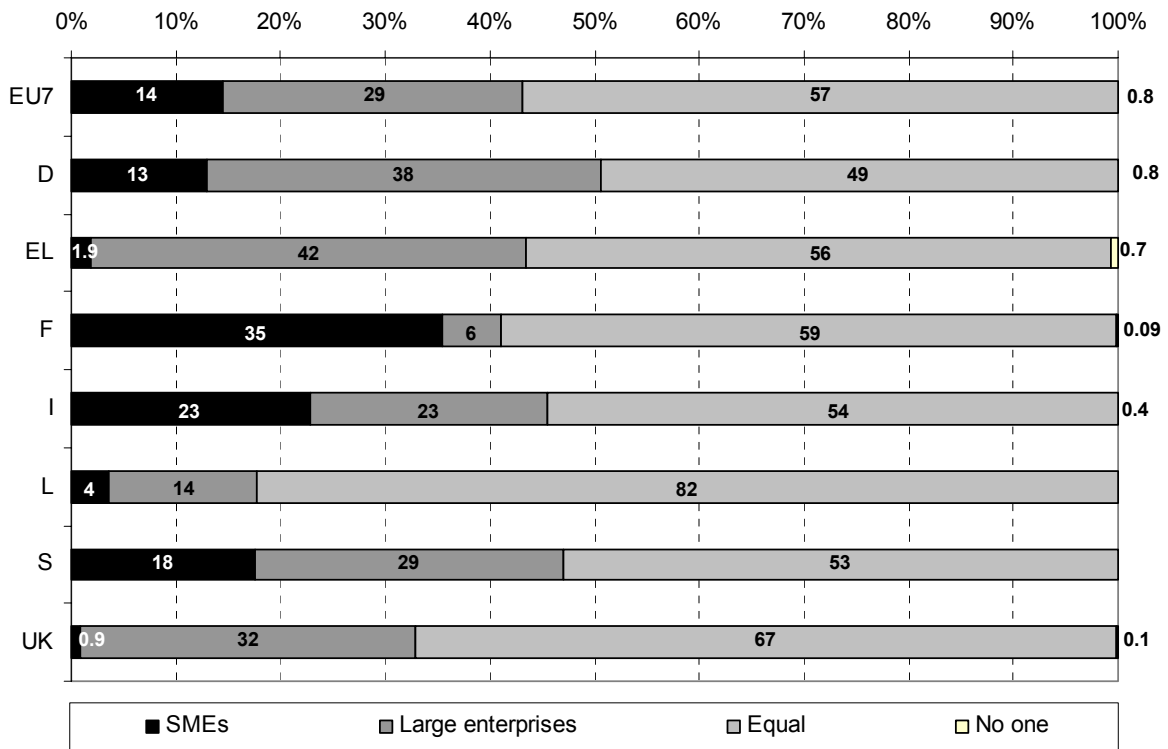
**Altogether:** In the sample countries, a relative majority of 57% of the interviewees believe that both large enterprises and SMEs will benefit equally from e-business (see figure 2-14). 29% express the opinion that large enterprises are the beneficiaries of e-business, 14% say that SMEs are the beneficiaries, and a negligible share of 0.8% says that no one will benefit.

**Sector comparison:** The insurance sector reveals a very low share of interviewees believing that no one will benefit from e-business in sector comparison. In other words: almost every interviewee in the sector believes that e-business is beneficial to insurance business.

**Countries:** While the levels of answers of "both" do not vary that much between the countries, extremely different answers are given in Greece and France. Only 2% of Greek interviewees believe that SMEs will be the beneficiaries, and 42% regard large companies as the beneficiaries. In France, 35% consider SMEs to be the beneficiaries and only 6% the large enterprises. Particularly large shares of answers of both are given in Luxembourg (82%) and the UK (67%).

**Company size classes:** The answering behaviour does not differ much between size classes. The share of representatives from SMEs believing that large companies will benefit is slightly larger than the equivalent share in large companies, and, vice versa, the share of interviewees from large companies stating that SMEs will benefit more is slightly larger than among SMEs.

**Figure 2-14: Assessment of beneficiaries of e-business in EU insurance enterprises**



Computation base: all interviewees in the insurance and pension-funding sector  
 Employment-weighted, i.e. figures should be read as "enterprises representing X % of employees".

Source: *e-Business W@tch* (European e-Business Survey 2002)

**Table 2-23: Assessment of beneficiaries of e-business in EU insurance enterprises by company size (in %)**

	SMEs	Large enterprises	Equal	No one
EU7	12	32	55	1
0-49	11	33	54	2
50-249	12	27	61	0
250+	16	28	56	0

Notes: In % of enterprises. Computation basis: All insurance and pension-funding companies.

Source: *e-Business W@tch* (European e-Business Survey 2002)

## 3 Summary and conclusions

### 3.1 Summary of main findings

#### Economic profile of the insurance and pension-funding sector

In 2000, about 4,800 insurance companies were active in the EU, a 3.8% decrease from close to 5,000 in 1992. During this period of time, the number of companies decreased in Belgium, Spain, France, Greece, Italy and Sweden. It increased in Denmark, Ireland, Luxembourg, the Netherlands and Portugal and remained almost the same in Austria, Germany, Finland and the UK. Employment in EU insurance firms was estimated at around 900,000 persons in 2000, which was slightly less than 1992. There is a trend towards large insurance or financial groups which operate on a European level and dominate the market. However, these are leaving space for specialist insurers on a national or even regional level.

The most important insurance nations in terms of premium volume are the UK (around 30% of the EU market), Germany (18%), France (18%) and Italy (10%). Total direct premium in the EU grew by 50% from 1992 to 1999, calculated with inflation-adjusted data. Growth was particularly high in Luxembourg, Portugal, Ireland and Italy. While life insurance accounted for half of the EU insurance market in 1992 (49%), it increased to almost two thirds (63%) in 1999.

#### Status and potential of e-business application

Insurers have invested enormous sums in the extension of their Internet activities. The “pioneers” in the Member States have realised useful, interactive and modern Internet presentations. However, these are largely information-oriented and more factual than exciting. In Europe and in the USA, the expectations of e-commerce success (B2C) as well as the success of internal e-business new processes have not yet been fulfilled.

New information and communication technologies and e-business practices can impact greatly on the insurance industry. The Internet increases transparency on the insurance market, giving customers more market power. It allows virtualisation of organisational networks, increasing the opportunity for systematic co-operative service offers. It also reduces the amount of capital needed to enter the insurance market, so that new firms find lower barriers to compete in the market. ICTs offer opportunities to rearrange all stages of the insurance value chain: product development, marketing, sales, administration, asset management and claims management. The automation of business processes in the insurance sector can reduce costs significantly.

The suitability of insurance products for Internet distribution varies, depending mainly on how much individual advice the customer demands. Products particularly suited for Internet distribution are private motor, household, private liability and term life insurance. In this classification, the share of products suitable for Internet distribution in the insurance policy market was between 15 and 20% of premiums in Germany and France in 2000.

The importance of the Internet as a distribution channel is questioned mainly because insurance policies are so-called “low-interest products”, i.e. individuals do not normally think about sourcing information about insurance and concluding insurance contracts. Further barriers include: product complexity requiring individual consultation, security reservations and different priorities set by the insurers, internal conflicts in the insurance companies over rationalisation consequences of e-business, fear of technical faults, customers’ preference for personal consulting, the young generation that is most frequently using the WWW is not a insurers’ target group, and regulatory issues. However, a broad variety of insurance business models using the Internet as a distribution channel has already emerged. Functions such as underwriting, policy administration, claims management, investment or risk management are outsourced to an increasing number of specialised external providers.

The Commission formulated a “Communication from the Commission to the Council and the European Parliament on e-commerce and financial services” in 2001. However, hurdles are to be overcome,

above all a number of significant divergences in national rules, fragmenting the financial services internal market.

### Survey findings in sector comparison: insurance among the top performers

In sector comparison, the insurance sector turns out to be among the top ICT and e-business users. The e-Business Watch survey disproves to some extent the common picture of the insurance sector as an ICT laggard. This finding is partly due to the fact that employment in the insurance sector is concentrated in large enterprises with high ICT investment power. Furthermore, one has to bear in mind that the quantitative data do not necessarily say much about the quality of applications. The most important findings by sector comparison include:

- **Importance of e-business:** The percentage of insurance and pension-funding enterprises where e-business constitutes a significant or some part of the way the companies operate today is the largest of all sectors.
- **ICT infrastructure:** Insurance has the highest penetration of Internet access, the second highest level of extranet use, the third highest level of intranet and WAN use, one of the highest levels of WWW use, a high share of LAN and an average share of EDI users.
- **ICT access and skills:** Recruitment efforts of IT specialists within the past 12 months as well as reported difficulties in recruiting IT specialists were higher only in one other sector. The difficulties may be related to a need for specialists for outdated computer programmes to run legacy systems. Staff access to ICTs is well developed in sector comparison.
- **Internal e-business applications:** No other sector has a higher share of enterprises supporting the human resources management by e-business means. As regards tracking working hours and production time, insurance is also at the top. The share of enterprises practising collaborative work and e-learning is the fourth highest. However, it remains unclear whether or not the applications are of high quality and if they are used beyond the IT department.
- **E-commerce practice:** The insurance sector has the highest share of enterprises with a website and of enterprises selling online. Online procurement practice is above average. Insurers have the highest share of firms selling less than 5% of their sales and purchasing less than 5 % of their procurement volume online. The level of insurance firms taking part in B2B marketplaces is slightly below average.
- **E-commerce barriers:** The share of insurance firms reporting that customers are hesitant to buy online is the highest of all sectors, while the share of those complaining that few customers are online is average. The share of firms saying that their goods do not lend themselves to be sold online is the second lowest of all sectors. The share of insurance firms agreeing to the procurement barriers is always below average. As regards "technology is expensive", insurers have the lowest share of all sectors.
- **E-business applications:** Together with two other sectors, insurance has the highest share of enterprises collaborating online to forecast product demands, and electronic exchange of documents with suppliers is well above average. However, electronic exchange of documents with customers is well below average. In the other forms of online collaboration insurance is average. Insurance has the highest share of enterprises using Application Service Providers and the fourth highest level of electronic Customer Relationship Management (CRM) use. In Supply Chain Management (SCM) use, insurance is slightly below average, and the share of insurers applying Enterprise Resource Planning (ERP) is only half of the average of all sectors. SCM and ERP are not particularly suited to assurance's value chain requirements.
- **E-business impacts:** Insurance has relatively high shares of enterprises reporting negative impacts of online sales. The negative answers all come from enterprises with more than 250 employees. Nevertheless, the insurance sector is in the group of sectors with particularly high shares of positive answers as regards number of customers and quality of customer service. The insurance sector's position in impact of procuring online varies. Considering the impact on internal business processes, insurance has the fourth highest share, and considering procurement costs,

the sector has the fourth smallest share of answers of positive. Finally, the insurance sector performs some of the highest shares of enterprises reporting significant or some impact of e-business on the organisational structure, work processes, relationships to suppliers and customer and the impact on the offer of products and services.

### Survey findings broken down by country

The first *e-Business W@tch* survey revealed some notable national features of the insurance and pension-funding sector. All in all, Sweden and Germany perform best, Luxembourg and Greece oscillate between high and low levels, Italy and the UK tend to be average or below, and France presents the lowest performance. Important findings by country include:

- In **Germany** 92% of the enterprises reported that e-business plays a significant or some part. All German insurers have Internet access, use e-mail and the WWW; the share of enterprises using LAN and WAN is the largest of all countries, while EDI use is the lowest. Staff access to ICT is also on a high level. Recruitment efforts of ICT specialists have been largest in Germany, and recruitment difficulties were some of the highest. In internal applications, Germany has the highest levels of tracking working hours and automated travel reimbursements, and is above average in collaborative work as well as about average in human resources management and e-learning. 99% of insurance enterprises have a website, all provide product information on the website, the level of online sellers is slightly above average, but the level of online procurers is well below average. The single most important barrier of online sales appears to be that revenues of online sales are still low. Germany has the lowest share of answers of “completely” for “concerns about data protection and security issues”. Germany has a low level of online management of capacity and inventory and the lowest level of online negotiation of contracts. The country is above average in all special applications and plans, top in ASP use and, besides Italy, is the only country with a notable level of SCM use. German insurers report the second highest impacts on work processes, organisational structure and on customer relationships.
- **France**: The share of insurance enterprises reporting that e-business plays a role is lowest of all countries. France is above average in WWW and EDI use, average in Internet access and extranet use, below average in Intranet, LAN and WAN use, and has the lowest e-mail use. French insurance firms perform the lowest shares of access to internal and external e-mail as well as intranet. France has the lowest shares in having a website and providing information on it, and France is below average in selling and procuring online. It has a very low level of complete agreement to “customers are hesitant to buy online” and a very high agreement to “delivery process causes problems”. The latter may be a consequence of the low levels of ICT and e-business use. Reservations about expensive technology for online procurement are among the highest of all countries, and the face-to-face issue reveals concerns significantly above average. In internal e-business processes, French insurers have always the lowest or second lowest levels. France has the highest share of enterprises forecasting product demands online and online negotiation of contracts as well as the lowest share of online management of capacity and inventory and electronic exchange of documents with customers. It has almost no use of special solutions at all except CRM. The e-business impacts are below average except “change of relationships to suppliers”.
- **Greece** appears to be much more developed than commonly-held perceptions of ICT use in South European countries may lead us to expect. Greece has the highest share of enterprises stating a significant part of e-business as well as of enterprises intending to invest more in e-business technologies. Greek enterprises reported a 100% access to the Internet and 100% e-mail use as well as an above-average use of intranet, LAN, WAN and EDI. Recruitment efforts were medium-level and recruitment difficulties among the highest. In ICT access, Greece tends towards the average. It is below average in having a website and selling online, lowest in procuring online and has the highest shares of enterprises intending to introduce e-commerce practices. As regards barriers to online sales, Greek interviewees are below the average of agreement in all barriers and tended towards responses of complete agreement. In Greece, concerns about data protection and security are reported to be the single most important barrier to online procurement. Greece

performs the lowest or second lowest shares in all forms of online collaboration. Greek insurers reveal a high level of CRM, KM and ERP but do not use SCM at all. Greek enterprises report lower than average levels of e-business impacts except for “offer of products and services”.

- **Italy** tends to be average in e-business use, with below average e-business significance and a high level of e-business satisfaction. Italy has the lowest levels of Internet access and WWW use and is well below average in WAN and EDI, but has high shares of intranet and LAN use and tends towards the average ICT use in most cases. Italian enterprises reveal the second highest level of e-learning and average or below-average levels in the other forms. The country is well below average except in having a website. Italian insurers' agreement to barriers of online sales is well below average in “processing of payments”, “technology too expensive”, “revenue is still low” and “adapting corporate culture” and above average in “delivery processes”. In Italy, the most important barrier is that procuring online requires face-to-face interaction. Italy is below average except in electronic exchange of documents with suppliers, average except a level below average in ASP, and always below average in general impacts of e-business.
- **Luxembourg** is frequently in the lead or at least above average in ICT and e-business use. The highest level of satisfaction with e-business is found in Luxembourg. The country has a 100% Internet access and e-mail use as well as above-average levels in intranet, extranet, LAN and WAN. In e-commerce practices, Luxembourg's performance is average except for an extremely small share of online sellers. It has the highest levels of complete agreement in five barriers to online sales and the highest agreement to data protection and security barriers of online procurement of all countries. Luxembourg has the highest share of enterprises practicing online management of capacity and inventory. Enterprises from Luxembourg reported the highest levels of CRM, KM and ERP but no SCM use at all.
- **Sweden** appears to be the country with the furthest developed insurance enterprises in terms of e-business. 92% of the enterprises reported that e-business plays a significant or some part. Sweden demonstrates 100% Internet access as well as almost complete use of e-mail and the WWW. Intranet and extranet use is the highest of all countries; LAN, WAN and EDI use is above average. Recruitment difficulties were reported to be very low. Sweden is characterised by the single highest shares of online selling and online procuring. It is characterised by low levels of agreement to customer-related barriers of online sales and above-average agreement to “revenue is still low” and “goods do not lend themselves to selling online”. Sweden has the highest agreement to “suppliers' systems are not compatible” and a high agreement to “requires face-to-face interaction”. In online business collaboration, the country is highest in designing products online and exchanging of documents with suppliers and customers. It is quite high in CRM but performs small use of SCM and no use of KM. Sweden always performs the highest shares of e-business impacts.
- The **United Kingdom** reveals quite low levels of e-business use, considering the country's top position in EU insurance market shares. Disappointment about e-business is highest in UK insurance firms. The country has the lowest intranet, extranet, LAN and WAN use and is below average in e-mail and WWW use. The UK has high shares of website owners and product information providers and performs second best in online selling and online procuring. The UK has high agreement to “goods do not lend themselves to selling online”, but the most important barrier appears to be that customers are hesitant to buy online. As regards barriers to online procurement, UK insurers have the highest level of complete agreement to data protection and security concerns. The UK is particularly high in online management of capacity and inventory and average in the other forms of online collaboration with business partners. Its firms are below average in applying special e-business solutions. As regards e-business impacts, the UK has a particularly high agreement to “change of relations to suppliers”. Possible explanations for the low performance include that its insurance industry is oriented towards pensions and life insurance which are unlikely to be sold online, that UK insurers had established efficient and convenient distributions channels – telephone sales in particular – before the arrival of the Internet, and that swiftly changing regulatory structures since the late 90s have absorbed management time rather than e-business.

## Survey findings by company size class

The survey findings broken down by company size classes – enterprises with 0–49, 50–249 and more than 250 employees – reveal that SMEs generally lag behind large companies, but not in all respects. The use of basic ICTs such as e-mail and WWW does not show much difference.

- **Importance of e-business:** In large enterprises, e-business plays a much more important role than in SMEs. The intention to increase e-business investments is largest in medium-sized enterprises and almost the same in small and large enterprises. Medium-sized enterprises may seek to catch up while large enterprises are waiting for returns of their IT investments and small enterprises lack investment power. The levels of satisfaction with e-business are rather similar.
- **ICT infrastructure:** ICT use increases by company size class which is likely to be due to scale effects: mass processes are necessary to make technologies profitable. For every technology except EDI, the share of users is smallest in small companies and largest in large companies. Considering the basic ICT infrastructure (Internet access, e-mail, WWW), SMEs do not lag much behind the large ones.
- **ICT access and skills:** Recruitment activities were highest in large companies, medium-level in medium-sized enterprises and lowest in small companies. Large companies also reported the highest levels of recruitment difficulties. ICT access is more widespread in large enterprises than in SMEs. The differences between large and small companies are distinct, whereas medium-sized companies perform quite the same shares as large ones in external e-mail and WWW.
- **Internal e-business applications:** Internal e-business processes are much more widespread in large companies than in SMEs. Only in collaborative work do medium-sized companies reveal the same level as large ones.
- **E-commerce practice:** Almost all large insurers have a website, while only three quarters of medium-sized enterprises and half of the small enterprises have one. Among those which have a website, the share of enterprises providing information about products on the website is quite similar in the size classes. The level of online sellers increases by company size. The level of online procurers is quite the same in small and medium-sized enterprises and higher in large enterprises.
- **E-commerce barriers:** Agreement to the barriers of online sales tends to be similar in the three size classes, with differences in the levels of answers of completely and somewhat. Complete agreement to a barrier is always higher among small companies as compared to large companies, with the exception of “revenue is still low”. Further striking deviations are particularly high shares of agreement to “goods do not lend themselves to selling online”, “processing of payments” and “adapting corporate culture” among medium-sized companies. Agreement to barriers of online procurement are quite evenly distributed across company size classes. The largest difference is found in concerns about data protection and security, where agreement of large enterprises is much smaller than that of SMEs. The reason is likely to be that security applications are necessary for online sales but expensive, creating an investment hurdle for small firms.
- **E-business applications:** The levels of online collaboration for designing products to forecast product demands as well as online management of capacity and inventory are below 10% in small companies. However electronic exchange of documents with suppliers is not much smaller in SMEs than in large companies, and document exchange with customers is even higher in SMEs. Special e-business applications are a clear domain of large companies. For every application, the share of users is smallest in small enterprises, medium in medium-sized enterprises and largest in large enterprises, with quite distinct levels of use.
- **E-business impacts:** Medium-sized insurance enterprises report the highest level of positive impacts of online sales. Online procurement appears to be most beneficial to large and small insurance enterprises. Medium-sized enterprises report the lowest levels of positive impacts in all cases except procurement costs. The reported changes due to e-business are largest in medium-sized and large companies and smallest in small companies.

## 3.2 Economic implications

### **E-business is significantly impacting the insurance sector value chain and is likely to further penetrate business practices**

The high uptake level of e-commerce practices as well as of internal and external e-business practices in the insurance sector shows that e-business is significantly impacting the insurance value chain. The vast majority of insurance enterprises also intend to meet the requirements of the Information Society by further investing in e-business. Consequently, e-business practices are likely to become even more widespread and more sophisticated in the future. In this process, the efficiency of IT investments and an effective investment controlling remain a big challenge, particularly when facing the integration of powerful legacy systems.

### **Quantitative level of e-business uptake is high but not yet comprehensive**

There is still a long way to go until e-business uptake can be considered as really comprehensive in the sector. The share of enterprises stating that e-business constitutes a significant part of the operations is slightly below the average of all sectors only, which appears to be very low in an information-driven sector. Online sales and procurement is not yet practised by the majority of insurance enterprises. Online collaboration with business partners appears to be a field where higher uptake could be particularly rewarding, considering the higher levels in other sectors. The level of insurers that changed their products and services offer is small considering the need to present products in a different manner in the Internet.

### **Quality of applications needs to be improved to increase online sales and customer satisfaction**

While the quantitative performance of the insurance sector is high compared to the other sectors, the quality of applications still needs to be improved. A lack of consumer interest in concluding insurance contracts online may well be a consequence of poor Internet presentation and service. Findings from other sources as well as expert statements suggest that insurance websites need to be adjusted to customers' needs and e-mail service needs to be improved. Product design needs to be adjusted to Internet requirements, e.g. as there may be less confidence in Internet products due to non-personal interaction, contract duration could be shorter and contract termination could be easier than offline. This may at least apply to non-life insurance. Trust in Internet products could be increased by hallmarks of good quality. Products need to be presented more clearly, e.g., insurers need to explain unanimously which risks are covered and which are not. Website functions need to be easily manageable, without hang-ups and without losing data entered when moving back to previous sites. Special website tools to help find the right product could meet the customers' need for information and consulting. Furthermore, electronic Customer Relationship Management tools, reported to be used in almost a third of the enterprises, are likely to be non-comprehensive in most cases and could be further expanded. This does not mean that the quality is necessarily better in other sectors.

### **E-business induces opportunities and threats for insurance SMEs and new businesses**

The e-Business Watch survey shows that online sales offers opportunities for SMEs and for medium-sized companies in particular. The fact that the middle size class reports distinctly more positive impacts than large companies is an encouraging finding for SMEs that have not yet dared to step into online selling. A crucial opportunity for SMEs is networking. For marketing purposes SMEs can cooperate with enterprises or associations from other industries – e.g. automobile sellers for motor insurance – to tap into their customer base. SMEs can use the portal of large enterprises to draw attention to own products. However, in the case of marketing success SMEs need to be able to manage automation and call centre operations in order to cope with a sudden large number of inquiries and contracts to be processed.

The rationalisation and outsourcing process currently on-going in the insurance business offers opportunities for small and medium-sized companies supplying special insurance services. Reduced transaction costs due to Internet applications change the make-or-buy decision of insurance firms. Special services in the field of product development, distribution, administration, asset management and damage management can be outsourced to special suppliers. This may be an opportunity for SMEs, giving them specialisation strength parallel to the strengths acquired by large business units through mergers and acquisitions.

### **New work roles and skills requirements are unlikely to replace field service**

New work roles and skills requirements are emerging: Answering e-mails and call centre inquiries require different social and technical skills than communicating personally with customers in the field. Employees need to adjust their skills and companies need to offer training to their personnel. However, there is not necessarily a trend towards dramatically reducing field service in the course of increasing online sales. Online sales will probably only capture a minor portion of total sales because some products – e.g., life insurance and pensions – are better sold personally, and many customers prefer personal interaction. The Internet has already gained an important role in pre-sales information and after-sales service, but it is unlikely to replace field service.

## **3.3 Policy implications**

Desk research and empirical findings of the first *e-Business W@tch* survey allow the formulation of a more detailed set of policy implications for improved e-business application in the EU insurance and pension-funding sector. The following set of (possible) implications arising from the impact of electronic business on the insurance sector are likely to be important for the future development and should be considered as policy already relevant at this point.

### **Promoting specialised research, education and knowledge transfer is vital to assist insurance firms to be at the forefront of e-business application**

The research and education system could contribute more to e-business penetration in the insurance sector. The research for this report highlights the fact that there may be a lack of e-business expertise in insurance research and education. Student education as well as political and business consulting in the insurance field may benefit from promoting insurance e-business in university research and teaching. Networks of excellence between public research institutions and insurance firms can be established and promoted to facilitate a transfer of knowledge about technology and business practice. The approach of the Institute for Insurance Sciences at the University of Leipzig, as described in this report, is an example of such a network. Links to universities may also ameliorate difficulties of recruiting IT specialists that were reported by a large part of the insurance enterprises.

### **Identify and communicate good practice in using electronic communication tools**

The most important e-insurance barriers may be not of legal or technical nature, but related to human behaviour. Insurance policies are so-called “low interest products”, i.e. of little everyday interest to people, and customers often require personal consulting. These barriers can hardly be overcome by policy initiatives. However, they can be tackled by indirect means, for example, industry associations can identify and communicate good practice of how insurance firms raise awareness for their products in the Internet and how they communicate electronically in an attractive way.

### **Developing technical applications could decrease security reservations and increase usability of the Internet for complex insurance products**

In technical terms, IT security standards should be further developed, and electronic signatures should become more economic in order to be accepted by Internet users. Both fields could benefit from publicly funded pilot projects. As regards preferences for personal consulting and product complexity, it is up to the insurers to develop Internet applications that allow in-depth online information about insurance products.

### **Encouraging SMEs to apply e-business is important to bridge the digital divide between company size classes**

The fact that insurance SMEs generally lag behind large companies revealed by the e-Business Watch survey may call for particular measures supporting e-business use in insurance SMEs. However, such measures should take into account that SMEs are a very heterogeneous group. Firstly, they differ in size: a one-man or one-woman firm is quite different from a 30-employee company or even an enterprise with 249 employees. Secondly, the target of e-business promotion in SMEs should not be to simply increase quantitative application levels. If SMEs lag behind large companies in ICT and e-business use, this may be due to the fact that SMEs do not need certain applications. For example, e-CRM data mining tools may be useless in a small company with personal contacts all customers. In any case, the policy implications on networks of excellence and good practice communication mentioned above could be of particular value for SMEs, too. Further possible policy activities include issues related to the limited investment power in SMEs, such as fostering the development of affordable e-business modules and security technology for SME needs and promoting open standards and interoperability.

### **Creating the European legal framework is necessary to facilitate cross-country insurance business**

The *e-Business W@tch* survey did not include questions on the legal framework, but literature evaluation and expert statements show that legal aspects should have a high priority in promoting e-business in the insurance sector. In respect of cross-national legal issues, it continues to be of high importance to pursue the European policy road map towards an internal market for retail finance until 2005. Currently an insurer needs to develop a local product for every EU market because insurance law in the Member States is not identical, the EU Directive on distance marketing of financial services is implemented in different ways, and the tax frameworks for pensions are inconsistent. Further harmonisation of the implementation of the e-Commerce Directive and the Distance Marketing Directive as well as harmonisation of trade-mark right would appear to be helpful. Such harmonisation would be of particular benefit to SMEs which may lack the resources for marketing and selling in a large number of countries with different legal frameworks. Moreover there should be clarification under what preconditions an online contract has been concluded in legally binding terms. Nevertheless, even in a situation of complete legal harmonisation, cultural barriers such as differing security attitudes as well as language barriers would remain so that there would still be impediments to international marketing.

### **Weighing consumer protection and easy marketing opportunities to promote online insurance**

For promoting Internet insurance, a thoughtful weighing of consumer protection and easy marketing is required. Some insurance regulations may appear to be overly strict, requiring the insurance firms to explain contract conditions in unanimous juridical terms at the expense of comprehensibility. However, since the Internet opportunities of personal consulting are limited, customers who do not understand the terms are unlikely to conclude insurance contracts online. Thus, at least as regards simple non-life insurance that does not imply much risk and is not expensive, it may be advisable to limit the level of regulation to minimum standards.

### **Country-specific activities are advisable to enhance e-business use in laggard countries**

The national differences revealed by the e-Business Watch survey call for country-specific measures to promote e-business in insurance firms. France in particular and to some extent also the UK revealed unexpectedly low levels of ICT and e-business application. Since these are two of the three largest insurance markets in the EU, it could be of EU-wide benefit if French and UK insurers increased their e-business sophistication. However, the assurance in other countries could also benefit from national activities in those e-business fields in which they performed unsatisfactorily.

## References

Accenture (ed.) (2002): CRM in Europe: Customer Retention Due to the Inconvenience of Switching. Study by Accenture and Siebel Systems.

[http://www.accenture.com/xd/xd.asp?it=enWeb&xd=industries\financial\insurance\profile\\_one.xml](http://www.accenture.com/xd/xd.asp?it=enWeb&xd=industries\financial\insurance\profile_one.xml)

Accenture; Institut für Versicherungswissenschaft, Universität St. Gallen (eds.) (2002): Informationstechnologie als Wettbewerbsfaktor. Die strategische Bedeutung von IT-Investitionen in Versicherungsunternehmen. Eine Umfrage in Deutschland, Österreich und der Schweiz.

Commission of the European Communities (ed.) (2002a): Financial services: new FIN-NET guide will help consumers to complain across borders. Press release, 2<sup>nd</sup> September 2002.

[http://www.europa.eu.int/rapid/start/cgi/guesten.ksh?p\\_action.gettxt=gt&doc=IP/02/1258|0|AGED&lg=EN&display=](http://www.europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=IP/02/1258|0|AGED&lg=EN&display=)

Commission of the European Communities (ed.) (2002b): Commission welcomes Council agreement on proposed Pension Funds Directive. Press release, 5<sup>th</sup> June 2002.

[http://www.europa.eu.int/rapid/start/cgi/guesten.ksh?p\\_action.gettxt=gt&doc=IP/02/820|0|AGED&lg=EN&display=](http://www.europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=IP/02/820|0|AGED&lg=EN&display=)

Commission of the European Communities (2001a): Report on e-commerce and financial services to the Financial Services Policy Group.

[http://www.europa.eu.int/comm/internal\\_market/en/finances/general/fspg-report.htm](http://www.europa.eu.int/comm/internal_market/en/finances/general/fspg-report.htm).

Commission of the European Communities (ed.) (2001b): Communication from the Commission to the Council and the European Parliament.

[http://www.europa.eu.int/comm/internal\\_market/en/finances/general/fspg-report.htm](http://www.europa.eu.int/comm/internal_market/en/finances/general/fspg-report.htm).

Commission of the European Communities (ed.) (2000): Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information services, in particular electronic commerce, in the Internal Market ('Directive on electronic commerce'). In: Official Journal of the European Communities, 17<sup>th</sup> July 2000, L 178, p. 1 – 16.

Commission of the European Communities (ed.) (2000): Directive 1999/93/EC of the European Parliament and of the Council of 13 December 1999 on a Community framework for electronic signatures. In: Official Journal of the European Communities, 19<sup>th</sup> January 2000, L 13, p. 12 – 20 .

Commission of the European Communities (ed.) (1998): Proposal for a Directive of the European Parliament and of the Council concerning the distance marketing of consumer financial services and amending Council Directive 90/619/EEC and Directives 97/7/EC and 98/27/EC. Brussels, 14<sup>th</sup> October 1998.

Datamonitor (ed.) (2000): Frontrunners in Internet insurance, 2000. Ensuring success on the Web.

Datamonitor (ed.) (2002): Online Customer Management and Cross-Selling in FS.

Datamonitor (ed.) (2002): European Insurance Technology Spending Strategies.

European Insurance Committee (ed.) (2001): European insurance in figures. Basic data 2000, complete 1999 data. Paris.

Eurostat (ed.) (2002): European Business. Facts and figures. Data 1990 – 2000. Luxembourg: Office for Official Publications of the European Communities.

Farny, Dieter (1999): The development of European private sector insurance over the last 25 years and the conclusions that can be drawn for business management theory of insurance companies. In: Geneva Papers on Risk and Insurance, Vol. 24, No. 2, p. 145 – 162.

Köhne, Thomas; Koch, Gottfried (1999): Die virtuelle Versicherung. Konzept, Charakteristika, Herausforderungen und künftige Entwicklung. Sonderausgabe der Management-Information. Vol. 2. St. Gallen.

Köhne, Thomas: Online-Insurance (2002). Internetvertrieb von Versicherungsdienstleistungen im Zuge der Virtualisierung einer Branche. Leipziger Arbeitspapiere zur Versicherungswissenschaft, Nr. 1.

- Leyesdorff, Loet; Etzkowitz, Henry (1998): Triple Helix of innovation: introduction. In: Science and Public Policy, December 1998, p. 358 – 364.
- Mummert + Partner (ed.) (2002a): Finanzdienstleister bieten nur unzureichenden E-Mail-Service. Press Release, Hamburg, 27th November 2002.
- Mummert + Partner (ed.) (2002b): Kein Ende der Rationalisierungswelle in der Versicherungsbranche. Press release, Hamburg, 22<sup>nd</sup> January 2002.
- Paoli, Pascal; Merllié, Damien (2001): Third European survey on working conditions 2000. European Foundation for the Improvement of Living and Working Conditions. Luxembourg: Office for Official Publications of the European Communities.
- Swiss Re (ed.) (2001): World insurance in 2000: another boom year for life insurance: return to normal growth for non-life insurance. sigma No. 6.
- Swiss Re (ed.) (2000): The impact of e-business on the insurance industry: Pressure to adapt – chance to reinvent. sigma No. 5.
- Wirtz, Bernd W.; Vogt, Patrick; Denger, Katharina (2001): Electronic Business in der Versicherungswirtschaft. In: Zeitschrift für die gesamte Versicherungswissenschaft, Vol 190, p. 161 – 190.

## Annex: Methodology of the e-Business Survey 2002

### Background

The data presented in this report are derived from the European e-Business Survey 2002, a cornerstone of the monitoring activities of the *e-Business W@tch*. In total, 9,264 telephone interviews with decision-makers in European enterprises in all EU Member States were conducted during June and July 2002. For the construction of the questionnaire and for underlying definitions, OECD recommendations were taken into account.

### Fieldwork

The fieldwork of the survey was carried out by INRA Germany in co-operation with its partner organisations on behalf of the *e-Business W@tch*:

Country	Organisation	Country	Organisation
Austria	Spectra Marktforschung: Brucknerstr. 3-5/4, 4020 Linz	Italy	INRA Demoskopia S.p.A., Via Rubicone 41, 00199 Roma
Belgium	INRA Belgium, Avenue de la Couronne 159-165, 1050 Brussels	Luxembourg	ILReS Market Research, 46, Rue di Cimentière, L-1338 Luxemburg
Denmark	Gallup TNS Denmark, Masnedogade 22-26, 2100 Copenhagen	Netherlands	Blauw Contactcenter, Conradstraat 18, 3013 AP Rotterdam
Germany	INRA Deutschland GmbH, Papenkamp 2-6, 23879 Mölln	Portugal	Metris GfK, Av. Eng. Arantes e Oliveira 3-2, 1900-221 Lisboa
Finland	Taloustutkimus Oy, Lemuntie 9, 00510 Helsinki	Spain	INRA España S.A., C. Alberto Aguilera, 7-5, 28015 Madrid
France	CSA TMO, 22 rue du 4 Septembre, 75065 Paris Cedex 02	Sweden	GfK Sverige, Box 401, 221 00 Lund
Greece	MEMRB – K.E.M.E, 24 Ippodamou St., 11635 Athens	UK	Continental Research, 132-140 Goswell Road, EC1V 7DY London
Ireland	Lansdowne Market Research, 49 St. Stephens Green, Dublin 2		

### Interview method

The fieldwork was carried out in June and July 2002 using computer-aided telephone interview (CATI) technology. The decision-maker in the enterprise targeted by the survey was normally the person responsible for ICT within the company, typically the IT manager. Alternatively, especially in small enterprises without a separate IT unit, the managing director or owner was interviewed.

### Population coverage and sampling

The highest level of the population for the e-Business Survey was the set of all enterprises which are active at the national territory of one of the EU Member States and which have their primary business activity in one of the 15 sectors specified by NACE Rev. 1 codes. The most important used viewpoints for breakdown of the population in the survey were (i) the economic activity, (ii) the national territory of the enterprise and (iii) the size in terms of employees. The survey was carried out as an enterprise survey, i.e. data collection and reporting focuses on the enterprise (rather than on the establishment), defined as a business organisation of one or more establishments comprised as one legal unit.

The sample included enterprises from 15 sectors of the economy, defined by NACE Rev. 1 business activities (see table below). The composition of sectors took into account their economic importance, homogeneity with respect to the analysis of e-business, and the relevance of e-business activities.

Population coverage of the e-Business Survey (2002)			
No.	NACE Rev. 1 Codes (Section – Division/Group)		Sector Name
01	D	15, 16	Manufacture of food products, beverages and tobacco
02	D / O	22, 92.1, 92.2	Publishing, printing, reproduction of recorded media, audiovisual services
03	D	24, 25	Manufacture of chemicals and chemical products
04	D	28	Manufacture of metal products
05	D	29 (except 29.6, 29.7)	Manufacture of machinery and equipment
06	D	30, 31 (except 31.3 - 31.6), 32	Manufacture of Electrical machinery and electronics
07	D	34, 35	Manufacture of transport equipment
08	G	52.11, 52.12, 52.4	Retail
09	H / I / O	55.1, 55.2, 62.1, 63.3, 92.33, 92.52, 92.53	Tourism
10	J	65.12, 65.2	Credit institutions, investment firms and leasing enterprises
11	J	66	Insurance and pension-funding services
12	K	70	Real estate activities
13	K	74	Business services
14	I / K	64.2, 72	Telecommunications and computer-related services
15	N	85.11, 85.12, 85.3	Health and social services

The sample drawn was a random sample of companies from the respective sector population in each Member State where the respective sector was to be surveyed with the objective of fulfilling quota with respect to company size class. Target quota were to include a share of at least 10% of large companies (250+ employees) per country-sector cell and at least 30% of medium sized enterprises (50-249 employees). Samples were drawn locally by the INRA partner organisations based on the following business directories and databases:

Country	Directory / Database	Country	Directory / Database
Austria	Herold BUSINESS MARKETING database	Italy	Dun & Bradstreet
Belgium	SPECTRON database by Vicindo	Luxembourg	Répertoire des entreprises luxembourgeoises“ by STATEC (the official list of the National Statistic Administration).
Denmark	KOB (Købmandsstandens Oplysnings Bureau)	Netherlands	MarktSelect
Germany	Heins und Partner Business Pool	Portugal	Business directory by INE (the National Statistics Institute)
Finland	Blue Book - Salesleads database by the Helsinki Media Company Oy (Sanoma Magazines Finland)	Spain	Dun & Bradstreet
France	IDATA, based on „INSEE Siren file“ (the National Institute of Statistics) and other directories	Sweden	Swedish Post Address Register (PAR)
Greece	ICAP directory (the major database for Greece and member of the European Association of Directory and database Publishers)	UK	Dun & Bradstreet
Ireland	Bill Moss / Dun & Bradstreet		

## Interviews per country and average interview length

In total, 9,264 interviews were carried out. The following table shows the breakdown by country and the average interview length:

Country	No. of interviews	Average length	Country	No. of interviews	Average length
Austria	308	17.0 min.	Italy	1517	22.5 min.
Belgium	300	18.2 min.	Luxembourg	102	17.4 min.
Denmark	304	20.2 min.	Netherlands	500	17.2 min.
Germany	1500	18.8 min.	Portugal	300	23.0 min.
Finland	308	20.6 min.	Spain	502	18.4 min.
France	1362	17.2 min.	Sweden	260	19.8 min.
Greece	308	16.5 min.	UK	1538	16.5 min.
Ireland	155	20.1 min.	<b>TOTAL</b>	<b>9264</b>	<b>~ 18 min.</b>

## Problems encountered

No major problems were reported by the fieldwork organisations with respect to interviewing (e.g. comprehensibility of the questionnaire, logical structure). A statement from the institute that carried out the survey in the UK summarises this general assessment very well: "On the whole, the fieldwork went relatively smoothly. The questionnaire was logically structured and flowed naturally. Most problems stemmed from the difficulties of conducting research projects among ICT decision-makers in general rather than from any specific flaws in design of this project itself. Dedicated ICT professionals are heavily researched and therefore securing their participation can be difficult. This is a particular problem in larger companies."

In some countries, it was not possible to accomplish the number of interviews envisaged, mainly in those cases where the total population of enterprises was relatively small (e.g. in the insurance sector in smaller countries). In some cases, the objective of including a share of 10% of large companies could not be accomplished; if possible, these were then replaced by interviews with SMEs.

An issue – which was known in advance but is unavoidable in telephone interviews – is that it is not always easy to find the right target person. Fieldwork organizations reported that sometimes a data processing manager is not very aware of the consequences of e-business on the whole of the company, on the personnel level and on the financial level. On the other hand, the general manager may not always be aware of the implementation status and technical consequences.

## Tabulations

Within the coverage specified above, and in line with the special task of the *e-Business Watch*, results were compiled for two main sets of data:

1. An activity breakdown of the population of enterprises into 15 sectors. This breakdown is based on the aggregate of four countries (D, F, I, UK), as in these countries all 15 sectors were included in the survey and therefore comparability of the sample is given. These four countries represent more than 60% of the market volume in any of the 15 sectors and in most sectors actually more than 70%.
2. A size-class breakdown of the population of enterprises into three categories: small enterprises (including micro-enterprises, i.e. enterprises with 0-49 employees), medium sized enterprises (50-249 employees) and large enterprises (250+ employees).

A breakdown of the population by EU Member States is also available, but it is restricted to four countries (D, F, I, UK) for the same reason as explained in (1.) above. This implies that two different kinds of totals were calculated: (i) an EU-4 total consisting of the results from Germany, France, Italy and the UK and (ii) a sector total consisting of all countries included in the survey of a particular sector. For reasons of comparability and consistency, the tables in this scoreboard build on the EU-4 totals. Sector totals are composed of 6-8 countries per sector.

(cf. databases on [http://www.empirica.com/marketwatch/database/sector\\_database.htm](http://www.empirica.com/marketwatch/database/sector_database.htm))

In addition, the activity breakdown was cross-tabulated with the country as well as with the size-class breakdown. These cross-tabulations are offered in special sector databases. However, depending on the indicator and the filter questions, the number of observations can become very small in many cells of this cross-tabulation. It is therefore recommended to limit the breakdown of data to one dimension (in the case of pre-filtered questions) or two dimensions (if all enterprises were asked).

## Weighting principles

Two weighting schemes have been applied: weighting by employment and by the number of enterprises. Data are presented in either way depending on the kind of the analysis to be made.

Values that are reported as employment-weighted figures should be read as "enterprises comprising x% of employees". To give an example: The indicator "*percentage of companies selling online*" is – if employment-weighted – defined as "companies comprising x% of employees sell online". The reason for using employment-weighting is that there are very many more micro enterprises than non-micro enterprises. The unweighted figure would effectively represent mainly the smallest sizes of firm.

Values that are reported as enterprise-weighted figures are to be read as "x% of enterprises", reflecting the number of enterprises as legal entities but not their relative economic importance in terms of employment.

Weighting was based on the latest available universe figures by Eurostat. Missing or undisclosed universe data had to be imputed. The imputation procedures depended on auxiliary or proxy data availability, taking into account where available information about higher industry aggregations, nearest neighbour data, turnover-employment correlation and secondary sources other than Eurostat and allowing for the constraint of predetermined ranges such that imputed data had to be contingent with published sectoral, national and European universe totals as well as for final plausibility checks for every single imputed data item. The weighting cells correspond to the data reporting pattern used as regards industries and employment size-classes. Uniform expansion factors are applied to enterprises within one of the three size-classes per industry per country. As for data that refer to a base other than the universe of all enterprises (e.g. indicators appropriately reported for on-line selling enterprises only), expansion factors are adjusted to the different shares of observations per cell that build the computation base.

## Variables - indicators

The set of ICT and e-business indicators for which data were collected in this survey can be structured into five main modules:

Module A: ICT infrastructure and e-skills development in the company

Module B: E-commerce and e-business usage

Module C: Barriers to e-commerce

Module D: Impact of selling and procuring online

Module E: Impact of and satisfaction with electronic business

The choice of indicators includes a basic set of widely accepted measures for e-commerce and e-business (as used in related surveys on e-commerce and e-business e.g. by Eurostat), but also introduces a few innovative indicators which have a pilot character and are not yet widely tested. The full list of variables which was the basis for preparing the questionnaire can be downloaded (in \*.xls format) from the *e-Business W@tch* website at its "database" section:

[http://www.ebusiness-watch.org/marketwatch/database/survey\\_info.htm](http://www.ebusiness-watch.org/marketwatch/database/survey_info.htm)