Thematic Network on

Information and Communication Technologies in the region of Epirus

CONCLUSIONS AND RECOMMENDATIONS

Ioannina, February 2005

CONTENTS

PREFACE

The aim of this thematic network is to report on the use and application of Information and Communication Technologies in the business sector in the region of Epirus. The strategic goal is to study and analyze business opportunities and entrepreneurial challenges that are derived from the innovation of information and telecommunication technologies.

The aim of the thematic network was accomplished through the study of available info- and infrastructure in the region of Epirus and the review of national and international best practices in the business sector. Finally, a methodological protocol was outlined, in order to acquire all required information and provide the bases for concrete proposals for future applications in the area of ICT innovation in Epirus.

The methodology that followed consisted of the following steps:

- Review of the available data on the adoption of ICTs in European, country and regional level.
- Creation of a questionnaire for local SMEs. The questionnaire targeted to the user needs of ICT solutions, distributed and filled in 30 interested firms.
- The analysis of the questionnaire results is accompanied by a study of best practices and current strategies in the business sectors at a European level
- And finally, proposals and recomendations have been drawn for the efficient application of ICT innovative solution in the region of Epirus.

1.   ICT In Greece

During a time when global IT markets are taking a deep breather after the exuberance of the dot.com era, information technology and communications in Greece present investors with a dynamic area of growth and investment. The country has targeted ICT development at all levels of society as a priority, and is investing heavily to upgrade the country's "technostructrue" in education, government, and business. Greece's Information Society program is benefiting from almost €3 billion in this effort.

ICT, a fundamental backbone of Greece's modernization program, is one of the most advanced, although uneven, sectors in Greece. The country's many well-respected scholars and scientists have shown a strong interest in advanced ICT research, creating a valuable partnership for business and industry. Research funds flow steadily into Greek labs, and the country's potential to expand its R&D efforts is becoming recognized internationally. Growth of Investment in research and technology is currently at an attractive 7%. The Athens 2004 Olympic Games opened up opportunities across the board and OTE, Hellenic Telecommunications Organization, has emerged as Southeast Europe's strongest, active, and most aggressive telecoms operator.

The ICT sector accounts for 4.11% of GDP and growth is expected to continue at above-average rates until at least 2006. The telcoms sector is expected to have a robust 9.4% growth rate during all of 2002. Software development is a leading area, supporting the public sector, banking and finance, and manufacturing. In computer hardware, according to IDC research, Greece is expected to lead EU spending in 2003, especially in storage systems and in the disk area. Major global IT companies have offices or regional headquarters in Greece, including Microsoft, HP, Oracle, SAP, Motorola, Bull, Siemens, and IBM.

Many smaller companies are also finding opportunities in Greece's IT landscape. Dauphin Technology Europe has invested over $1 million in Greece over 12 months and is planning to invest much more in mergers, acquisitions, and direct project deals. According to Dauphin President and Managing Director Michael Politis, "one of the reasons for this is that in Dauphin we have found out that there is indeed more business opportunity and more marketing expansion in this region than in any other region in Europe. New technologies can be processed and new business sectors are actually developing. Furthermore, Greece is well-positioned as a member of the EU and due to its proximity to other developing markets is a smooth springboard to other, even larger business opportunities." Mr. Politis cites the "calm political, social, and business climate in Greece" and its "well developed infrastructure" as "big positive factors in tilting the scale for any company to decide on investing in this region."

Deregulation of the Greek telecoms market has transformed the landscape from one of domination by an elephantine monopoly to one that has dozens of new small, medium, and large ICT companies active in developing and broadening services and products. Companies such as Forthnet, that started out as ISPs just a few years ago, are now vying to become full-service telecoms leaders, offering a wide variety of services, including voice telephony.

PC and Internet use are still low by EU standards. PC usage is at 23%, a number that many investors see as an opportunity, especially in areas such as education, and Internet use, currently at 13%, is set to grow at an astounding 50% during the next two years.

Mobile telephony has surpassed most analysts' expectations. Greece's penchant for mobile telephony (above 70% penetration) has prompted a vigorous interest in 3G and next generation broadband services. Telecom expenditure is a healthy 5.2% of GDP in what many analysts now identify as a small but growing and valuable market. The four mobile providers—Cosmote, Vodafone. TIM, and new comer Q-telecom—have set their sights on expanding services and offerings to consumers increasingly accustomed to using their cell phones as "necessary" business and social communication devices.
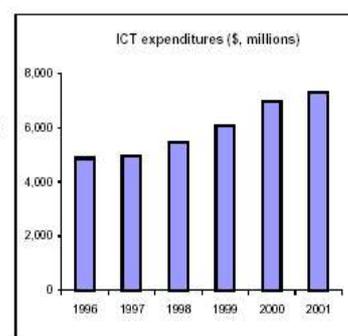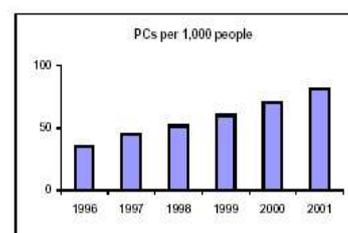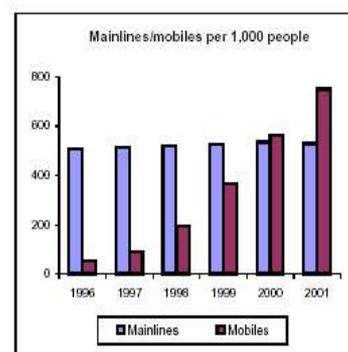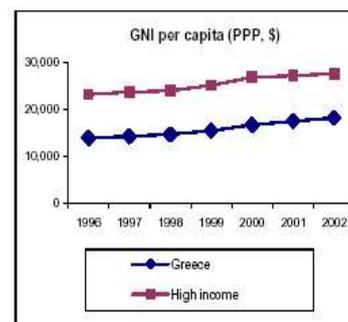
The latest OECD reports shows that Greece's intensity of telecommunications use is much higher than its use of hardware, software, or other IT services and products. The report puts Greece's ICT percentage of GDP at just over 6%. Table 1 gives an overview of ICT figures for Greece.

Country background information	Greece		High income
	1995	2002	2002
Population, mid year (millions)	10.5	10.6	964.7
Poverty (% of population below $1 a day)	..	..	..
Adult literacy rate (% ages 15 and over)	96.2	97.4	..
Urban population (% of total population)	59.2	60.6	77.7
GNI per capita (Atlas method, $)	10,820.0	11,660.0	26,310.0
GNI per capita (PPP, $)	13,470.0	18,240.0	27,590.0
GDP growth (1990-95 and 1995-2002, %)	0.9	3.7	2.5
Scientists and engineers in R&D (per mill. people)	928.0	1,400.1	3,281.3
Expenditures for R&D (% of GDP)	..	0.7	2.6

GNI per capita (PPP, $)

ICT infrastructure & access			
	1995	2001	2001
Telephone mainlines			
Per 1,000 people	494	529	592
In largest city (per 1,000 people)	694	731	..
Waiting list (thousands)	135	8	..
Revenue per line ($)	567	864	1,338
Cost of local call ($ per 3 minutes)	0.03	0.08	0.11
Mobile phones (per 1,000 people)	26	751	607
International telecommunications			
Outgoing traffic (minutes per subscriber)	90	147	204
Cost of call to U.S. ($ per 3 minutes)	..	0.69	0.89
Daily newspapers (per 1,000 people)	153	23	284
Radios (per 1,000 people)	430	478	1,267
Television sets (per 1,000 people)	443	519	676

Mainlines/mobiles per 1,000 people

Computers & the Internet			
	1995	2001	2001
Personal computers			
Per 1,000 people	33.5	81.2	416.7
Installed in education (thousands)	19.3	83.2	..
Internet			
Users (thousands)	80.0	1,400.0	389,451.6
Monthly off-peak access charges			
Service provider charge ($)	..	15.2	13.3
Telephone usage charge ($)	..	5.40	10.62

PCs per 1,000 people

ICT expenditures			
	1995	2001	2001
Total ICT ($, millions)	4,424.0	7,280.0	..
ICT as % of GDP	3.8	6.1	..
ICT per capita ($)	423.4	688.0	..

ICT business & government environment (ratings from 1 to 7; 7 is highest/best)	1995	2002	2002
Broadband internet access availability	..	3.5	5.0
Local specialized IT services availability	..	4.2	5.7
Competition in ISPs	..	4.1	5.3
Government online services availability	..	3.0	5.1
Laws relating to ICT use	..	2.9	4.8
Government prioritization of ICT	..	4.1	4.9
Secure servers	..	116 [a]	116,091 [a]

ICT expenditures ($, millions)

Table 1: ICT in Greece at a glance.

2. **Available info-structure and infrastructure in Epirus**

The region of Epirus is an underdeveloped region both in comparison to other national and European regions. Its disadvantageous geomorphologic position hindered the development of roadways and consequently the fast growth of industries and business initiatives.

In comparison to the whole of the country, the region of Epirus falls behind other regions in terms of telecommunication infrastructure. An interesting fact that presents the potential of the region of Epirus is that although the use and revenues of conventional telecommunication services and leased lines are far lower in Epirus than other Greek regions, the access and use of Internet seem to have a significantly increasing rate, in comparison to the rest of the country.

The comparative analysis concerning the level of diffusion of ICT in the three basic SME's categories of the region (manufacturing and commerce, tourism and transports and small rural units) presents that the category of manufacturing and commerce precedes the category of tourism and transports, while the third category of small rural units presents important delay as for the other two categories. Similar differences are observed between the three categories of enterprises and regarding the level of diffusion of the Information Society, where the order of the two first categories of enterprises is reversed. In the sectors of tourism and transport, the enterprises are more positive towards the Information Society, while the small rural units also present some significant interest.

Table 2 is indicative and show the comparison of the region of Epirus with the rest of the country and Europe. The percentages refer to the SMEs that have Internet access and SMEs that have their own Internet site.

Table 2:   Penetration of ICTs in SMEs in Epirus

Percentage of SMEs with Internet Access	
Epirus	33.1 %
Greece	43.7 %
E.U.	70 %

Percentage of SMEs maintaining an Internet Site	
Epirus	23.8 %
Greece	28.1 %
E.U.	43.4 %

The application of e-Commerce in the Region of Epirus, would link all the SMEs, decreasing the costs of transports from the remote regions promoting the domestic products (foods, drinks etc.) worldwide. The need is imperative in the regionj of Epirus that is excluded geographically and institutionally. The statistical facts show that Epirus is far behind in the use of e-Commerce and ICT but also that this use of ICT would help considerably the economic growth and development of the region.

Apart from the previous figures that state the current situation in terms of ICT services, experience shows that there is a growing interest for innovative applications and efficient infrastructures in the business sector of the region of Epirus. The tourism sector is more interested in the wide promotion of services to the potential customers (B2C), while other sectors such as the food supply SMEs are more interested in Business-to-Business services (B2B), resources planning and management systems, marketing, inventory control, order tracking, customer service and financial and human resources management solutions.

Despite the emerging needs, skepticism still exist due to the low level of informing, training and education on the ICT potential. Therefore, although a few programmes have been financed to reinforce competitiveness of the Epirus business sector through ICT innovation, few have been fully exploited by the local enterprises. A recent example is that of GoOnline, which is currently being implemented in Greece as part of the European GoDigital initiative. The main objective of GoOnline is to encourage the deployment of Information and Communication Technologies (ICTs) by SMEs and make them aware of the benefits and prospects that have arisen in the new technological era. The provided support to the participating SMEs is twofold: financial and educational. However a few local enterprises have responded positively to the initiative and participated.

Considering the current situation (Infrastructure, info-structure, problems, needs and local interest), the need for a co-ordinated approach to the dissemination and diffusion of ICT in the business sector of the region of Epirus becomes imperative.

3.   The adoption of ICT among SMEs

The specific advantages for business units of recent ICT developments are hardly confined to the productivity gains given by the information technologies applied in production (such as CAD-CAMS, FMS) or the reduction of coordination and transaction costs allowed, for instance, by LANs and EDI. With the Internet boom of the 1990's it has been possible for the firms not only to attain similar efficiency gains at lower costs but also to enlarge the size of their potential markets and find new opportunities for growing. In addition, in the policy agenda of EC the diffusion of ICTs has been recently achieved the highest priority with particular emphasis on the adoption of e-business practices and digital technologies among SMEs.

There are different reasons for focusing on SMEs: in most EU member states they make up over 99% of enterprises. SMEs generate a substantial share of GDP and are a key source of new jobs as well as a breeding ground for entrepreneuship and new business ideas. SMEs will also particularly benefit from the lowering of entry barriers to markets as a consequence of e-business. Hence, e-business is offen described as the SMEs' gateway to global business and markets. However, Europe will become a center of e-business if European SMEs are fully committed to using the Internet as a leading – edge business tool.

Thus, a thematic network in ICTs must concentrate:
- To provide some statistical information on the adoption of ICT for a sample of Epirus SMEs.
- To introduce some measures of the effective use of ICT and e-business (by looking at the percentages of employees having access to these technologies and the content of firms web sites) and composite indicators of ICTs (included LAN, EDI and Intranet).
- To identify the main factors which affect the penetration of ICTs among SMEs and to identify a taxonomy of ICTs main uses.

Our empirical study is based on a stratified random sample of 30 enterprises located in Epirus to which a questionnaire (see attached it in the Appendix) was submitted. Most of them belong to the manufacturing and tourism sector and some of them belong to other types of services (commerce, etc.).

According to this study we have created the following taxonomy of the adoption and use of ICTs:
- General – use ICTs: include e-mail and internet access; simple rates of adoption are high but lower than the other country and they do not depend on size. When the rate of effective use is measured by the percentage of total employees having access to ICTs, then the size of the company plays the major role. In general the SMEs in Epirus do not have persons with ICT skills and their function does not require use of ICTs.

- Production – integrating ICTs: include LAN, EDI and Intranet; there are linked to production processes mainly carried by the firm; they are more expensive than general use ICTs and require relevant technological skills (often internal to the firm). These are associated with the use of CAD and CAD-CAM technologies, the nature of the firm as subcontractor and the share of employees with secondary and, especially, university education.
- Market – oriented ICTs: they are jointly identified by the presence and the content of a firm's web site; analysis of the local SMEs web sites resulted that they mainly use it to improve visibility and provide detailed information on their products; e-commerce is completely absent (with the exception of the www.epcon.gr portal where local products are sold). The use of ICTs in this last case does not depend on the size of the firm, but mainly on the role of the firm as exporter and its presence in the foreign markets.

The firms participated in the thematic network or received the questionnaire cannot be considered representative of the whole business sector in Epirus, but they can especially address most of the needs. The questionnaire submitted to the selected SMEs composed of three sections. The first was devoted to the firm's characteristics. The second one included some questions on the adoption of ICT innovation within the firm. The third one included questions on the future and potential use of ICTs by the firm.

E-mail and Internet as general – use ICTs

At the new millennium it is hard to find business units located in Europe without access to e-mail or internet. Table 2 above gives the respresentive figures in Epirus, where only one third of the SMEs have access to e-mail or internet. The corresponding figures of the questionnaire sample was 80 %. Most of the them (80 %) own at least one PC and peripherals. All SMEs do not refuse that access to e-mail and internet is an important part of the story. However, lack of skills and sometimes time do not permit the wide use of internet. An important finding is that a barrier to the use of internet is lack of the appropriate linguistic skills. Access to e-mail and internet does not imply that they use them effectively.

Access to e-mail and internet has been greatly improved for about 800 firms in the region using co-financing by the greek GoOnline initiative as we indicated above. The availability of funds is for 3,500 firms but there are not enough applications. An SME can buy either a computer and software or create its own web site. Now a new programme is launched (Diktyotheite II), which offers much better financing conditions for SMEs.   Further information on this exist on the www.goonline-epirus.gr web site.

A surprising fact was that no firm expressed interest in using internet as e-business site, but this will be discussed below.

The use of production-integrating ICTs: LANs, EDI, and Intranet

Those technologies are especially devoted to improve the communication system of the firm, either internal to the firm or to an already established network of firms involved in productive or commercial relationships. There are also two reasons to distinguish them from other uses. First from the technological point of view they are available long before the Internet boom; in our sample most of the large firms (more than 10 employees) have a LAN (80 %) and most of them an EDI system (50 %). However, the use of ERPs is unknown or rare (1 or 2 cases with very bad feelings on ERP use). Secondly, the adoption of these ICTs implies an investment on hardware, software and personnel training far higher than it is required for having internet access or maintaining a web site. In other words, administrating a medium – sized LAN or an EDI infrastructure is by no means a trivial task, and it is more likely that, in the firms that have been using these technologies, some form of technical staff is present.

According to the above arguments and the findings of our survey it is reasonable to assume that the diffusion of these ICTs should be affected by the size of the firms as well as the extent of inter – and intra – firm productive relationships and the quality (in terms of technology and skills) of the activities directly and indirectly linked to production. The general conclusion from our sample is that the rate of adoption of production integrating ICTs is much lower.

Strong productive links with other firms positively affects the production – integrated ICTs penetration, while the presence of one or more than one physical sites gets a positive but not significant coefficient.

The educational level of employees plays an important role in enhancing the use of production – integration ICTs and it is interesting to note that the shares of workers with university degree is low and the majority of workers has a secondary level of education. This affects seriously the use of this category of ICTs and must be considered in a plan for wide adoption of ICTs and modernization of the existing firms.

We resulted that the adoption of production – integration ICTs is associated with the size and the technology and skills content of each firm. Thus, we believe that in the near future it is very difficult to see SMEs in the region to have a real progress in this category. However, more information diffusion and educational activities are needed. Tools to finance those activities exist and are mainly expressed through the new development law (3299/2004) of Greece and several initiatives of the information society programme.

Some of the participants in the network expressed the difficulty they have in finding an IT company which supports those activities. Especially, they mentioned their negative experience they have from the support and success in the installation and use of ERP systems. To that, it is impressive to

mention that most of the graduates of the Computer Science Dept. of the University of Ioannina are employed by the public sector and they do not pursue any career in the private sector. Most of them, even there exist initiatives to finance new IT SMEs, they avoid to do that since they believe that they can make more working in the public sector having in parallel another evening jobh.

Market oriented ICTs: Web sites presence and content

From Table 2 and international surveys it is indicated that the proportion of firms with an internet web site is much lower than that of firms having access to e-mail and internet. From our survey it is concluded that there is a large number of firms not having enough skills, resources or incentives to implement web sites. However, the diffusion process is still extremely dynamic, as the data that we have available indicated that in 2004 the firms having a web site increased by 25 %. However, the above data does not give us any insight on the penetration of e-business and especially of e-commerce, since the presence of a web site does not indicate engagement in e-commerce or e-business. In order to ascertain the real attitudes of the firms towards e-business practices it is necessary to see what is contained in their web sites.

Thus, we visited several web sites and evaluated them according to their content. The sample is wider than the sample used in the questionnaire survey. We focused primarily on quantitative aspects, rather than qualitative issues or aesthetics. We found that 65 % of the web sites consisted of one page with a summary description of the firm only. In these cases we decided that the site had no content. Furthermore, 90 % of them were not linked to the most common internet engines. The percentage of sites having connectivity facilities needed to carry out e-business and e-commerce is rather low: 25 % of them has feedback forms for customers, 5 % allows online ordering and no one contains on-line job offers. It appears that for Epirus the main aim of firms pursue when setting up a web site is that of exposing their supply (possibly in the most effective and detailed fashion) and improving their visibility, rather than encouraging their customers to buy directly via the site.

The only variables that turn out to have a positive and significant impact on the effective use of web sites are the share of employees with a university degree, the export status of the firm and the presence of commercial branches abroad. The affiliation with a business group had a negative influence, suggesting that independent firms have a greater incentive to increase their visibility through a web site and are more flexible in deciding to use such an instrument. The finding concerned with the share of highly educated employees is consistent with the features of Web sites and the firms occupational structure since those are implemented for marketing and advertising purposes and as can be seen from statistical data for Greece more

than 60 % of the workers employed in marketing and advertising activities have a university degree.

SMEs have no difficulty in finding an IT company to make their web site. There are many in the area of Ioannina, but some individuals provide similar services in other areas of the region. There is lack of skills in making high quality e-commerce sites, since most of the firms do not pay for such work. There is no search engine located in the area of Epirus, but as we mentioned some of the sites are linked to large search engines.

4.   Best Practices

The emergence of the new economic model of the "information society" has led to a "digital mutation" in all sectors of the economy. It is now widely accepted by policy makers, enterprises and society at large that information and communications technologies (ICT) are at the centre of an economic and social transformation that is affecting all countries. ICT and globalization have combined to create a new economic and social landscape. They have brought fundamental changes in the way enterprises and economies as a whole function.

European enterprises have begun to realise ICT potential and are moving an increasing share of their businesses on-line taking steps to radically re-engineer their organisational structures and business processes. The participants in the network had the opportunity to share experiences of best practices from other countries of SMEs involved in ICTs and to identify best practices of SMEs using ICT in the region of Epirus. At the end of the operation period of the network in a special workshop SMEs considered as best practices in ICT sector were presented (see best practice SMEs in the form of scenarios in the Appendix).

New information technologies and innovations are not just important from the point of view of products, but also from the point of view of management, production and marketing methods and methods of communication between enterprises themselves and between enterprises and their customers and trading partners. The use of information and communication technologies has a potential to create huge opportunities in a future society as a whole.

All these are recognized by the European Community objective of assisting businesses "to rethink their products, their entire internal procedures and structures, the marketing of their products, their co-operation with business partners, and finally their relations with their customers". Many enterprises face the challenges of embracing digital technologies with an aim to improve productivity and market reach, to adapt their internal structures to global competition and to achieve "internet speed" in their "business reaction" times.

Enterprises are preparing for ICT (and especially e-business): while overall investment in IT has decreased by 6.2 per cent since 2001, e-business budgets are estimated to have risen by as much as 11 per cent in 2002. In 2003 annual growth in e-business investment fell to 4 per cent, but this rate was twice as fast as the growth in overall IT investment

While ICT improve productivity in existing productive activities of enterprises, they also make possible the emergence of new activities such as online outsourcing of services and the production of different types of ICT goods. These activities enable enterprises in several countries, including developing ones, to diversify their economic status, enhance their export competitiveness and produce high-value-added services that boost the local economy.

Despite the wide range of benefits that can be brought about by ICT, the development and adoption of ICT by enterprises in developing countries have so far been limited. Main reasons include lack of awareness of what ICT could offer, insufficient telecommunications infrastructure and Internet connectivity, expensive Internet access, absence of adequate legal and regulatory frameworks, shortage of requisite human capacity, failure to use local language and content, and lack of entrepreneurship and a business culture open to change, transparency and democracy.

Official statistical data from the **United States** confirm the dominance of e-commerce and especially of B2B transactions in the deployment of ICT technologies by enterprises .In 2001, B2B online sales in the United States amounted to $995 billion, or 93.3 per cent of all ecommerce in that country. The leading adopters are manufacturing, where ecommerce accounted in 2001 for 18.3 per cent of the total value of shipments, and merchant wholesalers, with 10 per cent of total sales.. Once overall B2B transactions recover, the share of online transactions in total B2B trade is expected to grow vigorously, particularly as the integration of Internetbased purchasing systems with companies' back-end systems progresses.

Independent estimates of the value of this trade in the European Union put it at between nearly $185 billion and $200 billion at the end of 2002.29 Forrester Research forecast approximately $520 billion (the original forecast in euros is €465 billion) for 2003, predicting that the amount would more than double to €945 in 2004 and would reach €2,219 billion in 2006. By 2004 B2B e-commerce would represent nearly 10 per cent of all trade between enterprises, a dramatic rate of growth considering that online trade was less than 1 per cent of all B2B trade in Europe in 2001. At the end of this year the industries with the highest percentage of B2B e-sales would be electrical equipment (40 per cent), logistics and storage (30 per cent) chemical, rubber and plastics (30 per cent), energy and utilities (28 per cent), mining and metals (27 per cent) and vehicle manufacturing (27 per cent). The largest volumes would concentrate in France, Germany and the United Kingdom, all of which would see at least 26 per cent of their business trade occurring online. In terms of intensity of use, the Nordic countries are expected to be ahead, with 17 per cent of their total B2B trade moving online by 2004, while Italy, Spain and to an even greater extent the other Southern European economies are expected to lag behind. These patterns respond to differences in average annual per-capita IT investment.

While Sweden and Denmark spend on IT more than 150 per cent of the EU average of €588 per capita, Italy and Spain invest 57 per cent and 46 per cent of that amount respectively.

In **Central and Eastern Europe** (where 90 per cent of e-commerce takes place in just three countries, the Czech Republic, Hungary and Poland), B2B e-commerce amounts to around $4 billion in 2003. This could grow to $17.6

billion by 2006 (IDC 2003a). Although Internet access and use are now fairly common among enterprises in the three countries, particularly among the smaller enterprises use of the Internet clearly remains at a pretransactional phase.

In the more dynamic economies of the **Asia-Pacific** region, adoption of e-commerce is more and more perceived by enterprises as the natural future of business. Governments in the region tend to prioritize the improvement of infrastructure and upgrading of skills that are necessary to participate effectively in the digital economy. As a consequence, B2B e-commerce should grow rapidly, to around $300 billion by 2004 (eMarketer 2002a).

In Japan 8.1 per cent of all enterprises use e-commerce in their business with other enterprises, twice as many as are using e-commerce in their interaction with consumers (National Statistics Bureau of Japan 2002). 4.6 per cent use e-commerce to take orders, 4.2 per cent to place orders, 1.8 per cent for after-sales services and 1.5 per cent for shipping or distribution. Manufacturing, finance and insurance, wholesale and retail trade, general services, and transport and communications are the business sectors making aboveaverage use of B2B e-commerce (National Statistics Bureau of Japan 2002). B2B e-commerce in reached JPY 61.27 trillion ($516 billion) in 2003 (Electronic Commerce Promotion Council of Japan 2002).

As mentioned above Greece is one of the less developed countries regarding E-commerce, although a significant change is observed: the percentage of Internet access has raised from 40% (1999) to 70% (2001)

SMEs confront a lot of obstacles in the process of E-commerce incorporation, mainly due to lack of knowledge and the application of improper business action plans.

The participants in the thematic network paid attention to three best practices in the region of Epirus, which reflect efficient use of ICTs in the region:
- The case of NIKI MEPE, a company located in Katsika, Ioannina, which operates as a branch of a large CAD-CAM company in Germany (TWT, Stuttgart) and make extensive use of computational facilities to provide with simulations of cars and their road behaviour, as well as the study of the use of medical devices. The employees of the company are highly skilled and continuous training helps in keeping the company in the frontiers of ICT based companies.
- The case of a small cigarettes distribution company which makes use of wireless technology to manage effectively daily distribution of cigarettes and other related products in several points of sales. The system was built by a local IT company (TERRACOM Ltd.) which plans to introduce it to other applications.

- EGNATIA EPIRUS Foundation which is a non-profit organisation located in Ioannina, running for several years telematics services, providing also content and a portal for the region of Epirus. The conference centre, owned by the organisation in Metsovo, provides with high technology facilities making extended use of wireless technology and web services.

We have identified also in several cases negative practices like the one with the Bourazani Hotel in the area of Konitsa, where the owners have already an e-booking application and a web site which sells online rooms in the hotel, but the national PTT organisation can provide them with an ADSL line. The owners of the hotel are highly skilled one of them having a PhD degree and they have identified increased demand for their conference center.

5. Recommendations

The adoption and effective use of ICTs among SMEs depends, firstly, on the types of ICT, which in fact require different amounts of financial resources as well as technical skills internal to the firms, and secondly on different firm characteristics. In terms of cost and technological requirements, these technologies range in increasing order from general use to market oriented and finally production integrating ICTs.

In terms of policy implications the findings of our survey suggest that European actions aimed at increasing the use of ICTs among SMEs should be based on a well – aimed policy mix. If the objective is to help firms increase their productivity then the development of production – integrating ICTs should be given priority; if, on the contrary, the policy is aimed at enhancing market opportunities, then the focus should be on market oriented ICTs. In either case, a key factor is the improvement of the human capital within SMEs, which can be achieved by lowering, through different types of policy instruments, the hiring and training costs of educated workers, and especially university graduates.

Moreover, the main "institutional" obstacles to the adoption of e-commerce practices (different standards and regulations, security of transactions and customer protection), must be removed. However, for the region of Epirus lagging behind in the penetration of ICTs and mix of policies is needed.

Thus, the priorities for a region like Epirus will be:

- Promote a favourable environment and framework conditions for electronic business and entrepreneurship.
- Facilitate the take – up of electronic business by making available as much as possible technological developments and enable SMEs in every sector to take advantage of them. To this direction the science and technology park of Epirus as well as BIC EPIRUS must play a major role.
- Contribute to providing information and communication technology skills by alleviating shortages of those skills among SMEs and by exploring and developing new skills for the new economy.
- Improve communication and telecommunication infrastructure by enhancing local and regional broadband networks and permitting high availiability of the national PPT organisation services like ADSL, ISDN, etc. which currently are not available. Cost has not been discussed because this is a national policy and depends to other factors.

To this direction several actions are proposed, which are described in detail below:

Development of a regional information society policy

The scope of such an action is the description and setting up of a regional policy and instruments for the promotion of e-business for SMEs. This can help the region to identify bestb practices and promote the regional policy. It can also help SMEs to identify European funds and other EU initiatives.

For the region of Epirus there are two information society strategic plans (!!). One implemented within the framework of the RISE project (1999) and another one in the framework of the regional operation programme of Epirus (2002). No one of those two plans is under implementation. As conclusion the regional authorities of Epirus should not remain any more inactice and create the necessary structures to promote and materialise the information society policy.

Measuring of take-up of ICT and e-business

The scope of this action is to create an observatory of the information society progress for the region of Epirus. This can be further described as an one stop shop, which can provide with information, consulting and advice to the local SMEs. As we mentioned the local SMEs do not have the appropriate skills to introduce ICTs in everyday practice. The number of IT companies is not enough and most of the existing ones cannot provide the necessary support to systems installed in the SMEs. Thus, it is strongly suggested to develop the sector through actions taken by the science and technology park of Epirus and set up of a one – stop – shop, which will cooperate closely with the regional authorities.

Improve access to information

The scope here to provide with relevant and user friendly information and advice on legal and regulatory issues of e-business and e-commerce, to analyse the practical problems encountered by business operating in the internal market and to take these into account in future policy developments. In this direction the regional authorities can play a vital role especially by activating and upgrading the role of SESY.

Electronic business opportunities

To provide the necessary platforms to the existing SMEs and the necessary means to finance those solutions. In this direction local IT companies can play the major role, but the financing means already exist. Those include the new development law, the Greek GoOnline initiative, the Regional Operational Programme (which is not activated yet in the direction of information society), the information society programme, the competitiveness programme, etc.

Promoting the awareness for going digital

The scope is to provide SMEs with sufficient information about the needs and tools for a wider use of ICT and e-business, building upon regional and business initiatives. In this direction the University of Ioannina and the Technological Institute of Epirus can play a vital role. However, the role of champers of commerce in Epirus is vital too.

Electronic Commerce take – up

The scope is to finance several pilot projects in the region of Epirus to advance electronic commerce. An interesting initiative to this direction is the development of an e-booking portal in the science and technology park of Epirus by 30 owners of small hotels located mainly in the mountaineous areas of Epirus.

Provision of a loan guarantee facility for SMEs

To provide SMEs with loans for investment in ICT and intangible assets (hardware, training, software and introduction to Internet and e-business practices). This mainly can be done through the Regional Operational Programme of Epirus. The Greek GoOnline initiative provides with the necessary means to purchase computers or create a web site. The same initiative provides with training and education on ICT skills of the participating companies. In Epirus the participation is low and this is due to the lack of dissemination of information. Thus, this action should focus initially in some preparatory actions to inform SMEs about the existing technologies, solutions and means of financing.

Better use of structural funds

Access to new technologies and to the information society is considered a key priority for the programming period 2000 – 2006 to help overcome the digital divide. Interventions financed by the structural funds must focus on demand – side measures supporting regions and help SMEs to adopt and effectively use ICT. Crucial role can play the public sector, which adopts ICTs in various forms and can force SMEs to use them in an efficient and effective manner for them.

Support industry – led initiatives for new ICT curricula
It has been emphasised many times the lack of necessary skills within SMEs. Their size in Epirus and their direction in traditional sectors (e.g. food industry) does not permit them to have university graduates or persons having ICT skills. Several applications require special skills internal to the firm. Thus, the local chambers of commerce and other SMEs organisations must take initiatives to operate short training courses in ICT for their personnel with the involvement of the University of Ioannina and other local training and educational organisations.

Creating an ICT skills monitoring group

To establish a working group, with the participation of chambers of commerce, innovation organisations, university and regional authorities, which can introduce training activities. To those training programmes students must participate actively in order to develop entrepreneurship skills and help the future developments of ICTs in SMEs.

APPENDICES

Members of the Network

Dimitrios Fotiadis, Associate Professor, University of Ioannina

Theodoros Apostolopoulos, Professor, Athens University of Economics and Business (Expert)

Ioannis Garofalakis, Professor, University of Patras (Expert)

Dimitrios Zaharakis, TERRACOM Ltd. (Expert)

Konstantinos Platis, Head of the Computer Center- University of Ioannina

Cristos Bitsis, Head of Informatics Division, Prefectural Authorities of Ioannina

Ntinos Trebelis, Head of IT Department, University Hospital of Ioannina

Ioannis Daskalopoulos, Head of chamber of Commerce in Ioannina

Fotis Drougas, Production Manager, NITSIAKOS S.A.

Sotiris Mellos, Director, HOTEL DU LAC

Georgios Nousias, Chairman and Managing Director, NOUSIAS S.A.

Dina Baga, Software Engineer

Dora Nanou Software Engineer

Eleni Papageorgiou, Researcher, GoOnline Member

Basiliki Papageorgiou, Researher, GoOnline Member

BEST PRACTICE EXAMPLES

A V DAWSON LTD

Import/export cargo handling firm AV Dawson boasts a large fleet of haulage vehicles along with a 60-acre multi-modal distribution centre, and has used technology to create greater efficiency, cost reductions and increase sales.

Best practice in: Technology, operations
Sector: Haulage (Import/export cargo handling)
Size of firm: 70 employees
Location: Middlesbrough
Website: www.av-dawson.com

OBJECTIVES
A V Dawson needed to find a communications solution for its complicated business, operating supply chain services via sea, road and rail. A large amount of documentation is required in day-to-day operations and, at the same time, the ability to monitor each stage involved in processing large and valuable cargo shipments is vital to the business. The company required a means of sharing data on the status of cargo shipments, temperature and humidity of the warehouses. Given the increasing amount of data and training required for employees, combined with the amount of business data to be shared, Vaun Norman, ICT Manager concluded that the development of an intranet, based on broadband internet and virtual private network (VPN) systems was AV Dawson's best option.

SOLUTION
By using high speed web services provided by Onyx, the company has adopted a warehouse CCTV, heating and dehumidification system which can be remotely accessed and adjusted. Each haulage vehicle is fitted with a transmitter that allows the company to pinpoint the truck to within 20 metres of the exact location. This data is instantly available on the web via broadband.

Employees are able to view the 60-acre site from their office PC. This greatly speeds up the service the firm is able to provide its clients. Customers can be informed immediately once jobs have been completed.

"Information about the ship's log and completed jobs can be provided to the client quickly. In the old days this process used to take 3-4 hours after the vessel had docked," Norman says.

AV Dawson has also used the monitoring software to develop remote control of its steel warehouse dehumidification system. Managers are able to remotely manage the temperature by altering fans and heaters direct from their own computer. This greatly improves productivity and frees up time to be spent on other aspects of the business.

Employee handbooks, regulatory documentation, holiday forms and information about training opportunities are all included on the intranet,

ensuring that staff are fully informed about their rights and benefits. It also acts as a central repository for all documentation required for clients.

All staff, whether on or off-site, can now access AV Dawson's central database for all the information required for running the business, be it documentation, information on fleet movements or temperature controls in the warehouse.

"Technology can be scary to invest in, particularly for small firms, so anything which provides good advice is very beneficial."

RESULTS
The most significant impact has been enabling employees to run the business remotely as the company has harnessed virtual private network (VPN) technology to great effect.

Developments such as the remote controlled temperature system and central company databases have allowed AV Dawson to develop positive and long-term relationships with clients, as well as making significant cost savings.

All the information required for the effective running of the business is immediately available on the intranet, as required.

CHALLENGES
Ensuring that the individuals who will be using the technology are fully trained is an important aspect of AV Dawson's approach. All new systems are implemented with a full stafftraining programme but the option to develop extra knowledge is offered at all times through regular employee questionnaires.

Integration has proved to be the biggest difficulty for AV Dawson. Ensuring that all the company systems have been fully integrated has presented the biggest challenge.

"Although the integration of different operating systems with software, the web and email can be the most rewarding part, it can also be the most frustrating," Norman admits.

Many companies complain of an element of technophobia among their workforce which hinders technological development. However, for AV Dawson this has not proved to be the case. The open and flexible approach to training has ensured that staff can maintain a high standard of knowledge that reduces the risk of problems.

THE LAST WORD
The next big thing for AV Dawson is further enhancements to the company intranet. Plans for web-based real-time reports on stock levels and increased staff access to regulatory, health and safety and training information are due to be implemented soon.

"Technology has allowed us to compete on a level playing field with large companies meaning we can provide a service far in excess of what people would expect from our position in the market," Norman concludes.

LEISURE ESTATES INTERNATIONAL GROUP

Embracing e-business has allowed Leisure Estates International (LEI) to expand and diversify its offer, and develop valuable new partnerships.

Best practice in: Technology
Sector: Travel and tourism
Size of firm: 50 employees
Location: Market Harborough, Leicestershire
Website: www.leisure-estates.co.uk

OBJECTIVES
LEI operates five ski travel agency brands and two villa brands online. Using cross-selling on all its branded websites, LEI is able to cater to the full spectrum of skiing and accommodation needs. As John Neilson, LEI's Chairman, explains: "The travel business suffers from 'the grass is greener' syndrome. Customers always believe they can get a better deal elsewhere. Our multiple brand strategy allows them to shop around but still keeps them within our business."

The different ski and villa brands are supported by one integrated back office system that:
 - contains all the holiday details in a bespoke database
 - filters booking information to the database and accounting systems
 - allows LEI to share information with trading partners
 - generates Customer Relationship Management data for profiling the most valuable customers and targeting sales initiatives.

THE BENEFITS
LEI's integrated internal processes have allowed it to offer a huge range of holidays online and embark on supply chain integration by drawing partner companies into closer relationships.

LEI encourages suppliers to submit information to its holiday database electronically and, in return, allows them to connect directly to its accounts system where they can view transaction information. This forward thinking, collaborative approach has strengthened relationships with suppliers and given the company the capacity to move into 'white labelled' packages. This is where LEI leases its fulfilment system to affiliate companies. Offering holidays this way has enabled the company to strike deals with giants of the travel industry like Expedia.

The net results of using technology are impressive: over 50% of ski holiday sales (worth £4m) come in via the internet, and LEI estimates that 60-70% of its growth can be attributed to e-business.

"The internet is the best medium to market our products, so we have to give our customers all the information they need to find the right holiday."

THE CHALLENGES
Where possible, LEI takes holiday availability information directly from tour operators' systems. The company is convinced that further supply chain integration aimed at smoothing the flow of information will help cut costs industry wide. At the moment, however, tour operators haven't been able to agree on a common data format.

"Getting the support of suppliers to provide data for our accommodation and resort database is our biggest challenge," admits John. "But if we crack that problem, it will give us a huge advantage over our competitors."

THE LAST WORD
John believes that an e-business strategy will only be successful if managers understand the technology as well as they understand the business – it's not enough to trust that consultants or agencies will get it right, particularly if you want to implement a bespoke solution for your business. He advises: "Know how long it takes to design a bespoke piece of software and remember to build time for testing into your schedule. Be flexible with your timescales."

NORTHLINK FERRIES

Using mobile and wireless technology gives NorthLink Ferries the ability to communicate effectively across a broad range of business areas.

Best practice in: Technology
Sector: Travel
Size of firm: 250
Technologies: WiFi Lan, Broadband, EPOS, Mobile, PDA
Location: Scottish Highlands
Website: www.northlinkferries.co.uk

OBJECTIVES
NorthLink Ferries provides passenger and freight transport services between the Scottish mainland and the Orkney and Shetland Islands. "We want to be the carrier of choice for customers and for the communities we serve," says Gareth Crichton, Commercial Director.

The company is bound to a contractual agreement with the Scottish Executive governing the delivery of lifeline ferry services. "Operating under demanding contractual conditions, striving to provide a valued service to customers, we had no option other than look to effective use of technology," says Gareth.

CHALLENGES
For NorthLink Ferries, delivering accurate, timely information to relevant staff and managers is vital for smooth operations. With five port offices in five different locations, four ships constantly ferrying freight and passengers as well as a separate head office where the reservations system is based, the communication system needed to be extremely robust.

SOLUTION
All operational areas including the ships are part of a WiFi LAN and VPN. The ships' computers can connect to the port office computers via a wireless cloud when they are within range (15 minutes from port). The port office computers can connect with the head office system using ISDN and ADSL, with un-metered dial-up as a back-up. This enables them to achieve an 'alwayson' high speed internet connection. The head office itself can also connect to the ships using emergency ship-to-shore data network via satellite (from Immarsat). This means that all the different business areas have a quick and reliable channel for communicating. There are no operational LAN charges, as the business owns the equipment, saving the cost of a commercial service, which would be around £55,000 each year.

"Operating under demanding contractual conditions, striving to provide a valued service to customers, we had no option other than look to effective use
of technology."

RESULTS
Having secure, stable network connections means that NorthLink are able to quickly transfer data from different areas. For example the EPOS system used on board ships automatically transfers data to the port offices, updating information on stock and on-ship staff/resource management. The result is that finance and management information is at worst, half a day old and at best, up to the minute.

This also applies to logistics and operations information. Customers can make reservations through a number of different routes: web, e-mail, call centre and reservation desks which all use a single inventory database. Passenger lists are then automatically produced, saving up to two hours per sailing, compared to a manual system. This works out as a saving of roughly £30,000 a year.

THE LAST WORD
Effective communication also brings productivity savings in managerial effectiveness. With a flat management structure where NorthLink's 20 managers frequently travel between the port offices and the ships, it is vital that they can work anywhere as if they were in their own office. With wireless connectivity they can access the network via a laptop and keep up-to-date with all the latest information. The savings made in terms of time efficiency are estimated at around £30,000 annually. NorthLink Ferries invested in technology in order to gain the efficiencies that technology brings. Without the savings that effective communication and data transfer have made, NorthLink Ferries would be unable to provide the level of service it's contractually obliged to deliver. Compared to its predecessor, NorthLink Ferries offers 20% more sailings and 18% lower fares. "It wasn't a matter of choice," says Reservations Manager Richard Foster, "using technology was the only way we could cost effectively deliver the service we had committed to."

PIZZA EXPRESS

The 1990s was a time of phenomenal growth for restaurant-chain PizzaExpress. It developed from a relatively modest collection of franchise operations in the mid-90s to a household name.

Best practice in: People
Sector: Leisure – restaurant
Size of firm: 5,000 employees
Location: UK-wide
Website: www.pizzaexpress.com

To prevent decision-making becoming too remote from the shop floor, a working group from a wide cross-section of the business was formed to develop a two-way internal communication system.

The group started an employee forum in the summer of 2003 which mirrored the branch, area, regional and national structure of the company. A restaurant staff member became forum co-ordinator.

Non-managerial forum representatives were elected to sit on each level of the forum and employees, who had the opportunity to have their say on management decisions, reported significant improvements throughout the organisation as a result.

Issues such as payslip information and services charges were addressed and a 'green committee' set up to look at environment issues.

To keep employees informed of plans at board level, the company created two formats of its report, 'Management News', one an in-depth version for managers, the other a noticeboard summary informing staff of management issues and decisions. This open 'listening' style has greatly improved employee selfesteem and morale through recent years. The company's new owners, Gondola Express, who took over in 2003, plan for continuous improvement into the future.

In the same vein, Staff Representative Ivano Knight said that partnership had enhanced employees' self-esteem because management was listening to them and allowing them to be involved in the issues.

RIGIBORE

Rigibore's innovative and strategic approach to e-business gave it the confidence to create its own integrated system to increase efficiency and improve information sharing.

Best practice in: Technology
Sector: Engineering
Size of firm: 30 employees
Location: Hayle, Cornwall
Website: www.rigibore.com

OBJECTIVES
Rigibore manufactures precision cutting tools to bore holes in metal. That technology is central to the business is evident from the company's mission statement: 'Innovation in technology and quality in design and manufacture.'

Having used CAD for many years, the company saw that a custom-built, automated design system had the potential to generate improved cost and time savings, and give its customers more control over the product.

The new system integrates the whole manufacturing process from design through to tooling and production, by eliminating the labour-intensive process of converting designs into machine instructions. As Suzanne Bassett, Marketing Manager at Rigibore, enthuses: "We can do in two minutes on our system what would take us two hours to do using CAD software."

The software used to create the designs is simple so that even customers with limited knowledge of tool design can use it, and then e-mail their designs to Rigibore. Building on this success, Rigibore developed a custom tool specifier for its website. This allows customers to choose the type of hole they want to bore or drill, submit the dimensions and then produce a design. This information is then sent to Rigibore, which can quickly respond with an accurate quote or just begin production.

With the manufacturing and ordering processes integrated, Rigibore moved to connect up its other back-office systems. Its accounting software contains the stock management and links into the design software. In turn, information from the stock management system and the customer database is used to calculate discounts and create automatic quotations for customers.

THE BENEFITS
Rigibore's decision to create bespoke software has paid dividends. The design and manufacturing software has dramatically cut the design and engineering time of tool making – by up to 90%. It has also significantly reduced errors and improved customer relationships by opening the process to customer involvement. With integrated back-office systems, errors have been reduced and the time needed to process an order cut dramatically.

Bearing in mind what its customers prefer to use websites for, Rigibore focused on creating a site that generated leads, explained its products and demonstrated its capabilities. The results, in terms of new business, have exceeded all expectations.

"We're a small company with a small team, and the fact that we're still up there is testament to our use of technology."
SUZANNE BASSETT – MARKETING MANAGER

THE CHALLENGES
With the pace of technological change, Suzanne thinks that: "If we hadn't developed the systems we have, perhaps the business wouldn't be here now. Certainly, we wouldn't be competing in global markets."

She's also adamant that businesses need to adopt a strategic approach to technology investment. "We have a very definite vision of what is needed. The decision to go down a non-CAD route was a deliberate move to help us meet that vision," she explains. "We have always directed and managed projects in this way." The company is already planning its next move. When it becomes available in its area, Rigibore will get broadband to connect to its satellite office in the US.

THE LAST WORD
Rigibore is convinced that, by giving employees the autonomy and encouragement to develop their skills and ideas, it will see the potential of technology and help drive forward its use.

Suzanne's advice to other companies is: "Dare to be different. If somebody has a belief in an idea, stand by it and see it through to the end."

AQUAPRESS

The specialist diving book retailer AquaPress retails specialist diving books published by a wide range of publishers to both retail and wholesale customers.

Best practice in: Broadband
Sector: Retail
Size of firm: 2 employees (plus part-time employees as required)
Location: Southend-on-Sea
Website: www.aquapress.co.uk

OBJECTIVES
Established in 1996, AquaPress initially sold its products mainly by orders placed by telephone or post. Catalogues of their products and updates were time consuming and costly to prepare, print and send to their customers. As internet related technology developed AquaPress saw the advantages that the technology could bring to their business. After first starting with a 56K dial-up internet connection, in 2000 they realised that the implementation of a broadband connection could bring considerably more benefits to their business and their customers. They recognised that they needed the extra bandwidth and the always-on connectivity that broadband could provide.

They had started with a static website in 2000 and then progressed to a website which was database driven but still basic. They wanted a broadband solution that would enable them to provide their customers with a high quality website with a number of enhanced features to improve their customers' buying experience and from which their customers could place their orders directly and easily.

They also needed the advantage that broadband could bring in enabling them to streamline the company's internal business operations. The volume of orders had grown to such a high level that they could see that they would be

unable to continue to grow without the implementation of broadband technology.

SOLUTION
AquaPress introduced broadband technology in 2001. It now has an ADSL connection provided by BT Openworld. The company has also integrated its website with its back-office database and as a result of broadband has been able to significantly enhance its website and the level of service offered to its customers as well as streamline its internal operations.

RESULTS
The company's two partners, Chris and Angela Davey, have seen major benefits throughout the company as direct result of the implementation of broadband.

The benefits cover all areas of the company – from their relationships with suppliers and customers, to a transformation of their own internal operations. "Without broadband there is no way that we could be doing what we are doing now," says Chris.

One of the most important aspects of their business and of prime importance for their success is according to Chris the provision of a personal service. The use of broadband combined with other technology has enabled them to enhance this. "Broadband equals communication and business is based on communication. If you do not have an effective tool for communication then you do not have a business."

An example of the improvement in customer service, which it has been possible to provide as a direct result of the implementation of broadband, is weekly product updates by e-mail. These go to the company's subscribers which currently stand at over 10,000, a number that it would not be possible to
e-mail effectively using 56K modem technology. However, the e-mail is designed to be suitable for customers using 56K technology but includes click-through options from the e-mail directly to links on the AquaPress website.

The website offers features such as enhanced image options and sample chapters in pdf format that can be accessed by customers if they wish and if they have the bandwidth to do so. This service has had a direct impact on sales of specific books. In one case this resulted in up to an estimated six times the volume that they would normally expect to sell.

Orders from overseas have also increased significantly with an increase of about 15% in exports in the consumer market. Chris attributes this directly to the enhanced website made possible by the implementation of broadband.

The use of broadband has led to a transformation in the company's own internal operations. "Now the office is quieter! The phones do not ring as much, but orders are up." The electronic receipt of orders has meant that Chris and Angela are able to handle significantly more orders than before and

to schedule their work better. "Without broadband we would have to have a telephone exchange to handle the volume that we are now processing through a single line."

"Without broadband there is no way that we could be doing what we are doing now."
CHRIS DAVEY – DIRECTOR

CHALLENGES
A continuing challenge faced by companies such as AquaPress is the need to continue to attract and gain the confidence of publishers if they are to offer a comprehensive range of products to their customers. Chris has found that having a high quality website has had an important impact on this, helping him to establish credibility with new suppliers at an early stage in their discussions. One publishing company whose books they now retail became aware of AquaPress through their website.

THE LAST WORD
The cost of implementing broadband has been considerably less than operating on the basis of 56K modem technology. The broadband connection costs AquaPress £30 a month. "You can't make many calls on dial-up before you get to £30."

BLACK MOUSE LIMITED

Black Mouse Limited is an online retailer of luxury handmade designer stationery, offering a bespoke design service and an online shop providing a range of stock.

Best practice in: Broadband
Sector: Retail
Size of firm: 2 employees (plus part-time workers as required)
Location: Nottingham
Website: www.blackmouse.com

OBJECTIVES
Black Mouse was established as a bespoke design company in 1995. Prior to the introduction of broadband, the company used a dial-up modem internet connection. "With dial-up I was wasting hours or so a day waiting for connections as I need to be online so much of the time," says Elizabeth Wilson-Smith, Managing Director. The company therefore wanted broadband to enable an improvement in the efficiency and effectiveness of its existing operations. In addition it had identified an opportunity for the introduction of an online shop offering some of its stock range. It was recognised that broadband was required in order to provide a professional online service.

SOLUTION
The business introduced broadband in 2002, prior to the launch of its online shop in October 2002. The business's broadband is provided by a cable connection which Black Mouse has upgraded from 512Kbps, when initially installed, to 1Mbp currently.

RESULTS
Broadband has enabled Black Mouse to operate better and to introduce customer service initiatives that could not have been introduced without broadband. "As a result of broadband we can do what we need to do. It was a compromise with dial-up," says Elizabeth. "Just as technology has advanced so that we no longer worry whether we have got sufficient disk space etc., our online connection through broadband is now something we no longer need to worry about."

"Broadband has enabled us to be more efficient and therefore more productive and therefore increase turnover. The most limited resource for us is time. We used to have to turn bespoke work away as we did not have the resources to do it. However as a result of greater efficiencies in using broadband this is no longer the case as we can handle a greater amount of work. Broadband has made a significant contribution to the increase in our turnover.

As we also opened the shop during this time, this is difficult to quantify exactly, but broadband has in turn played a critical role in enabling us to operate the shop effectively."

The ability to automate business processes is of prime importance to the company. "Without automating things we would drown in paper. Dial-up was a weak link in this automation chain. The benefits of broadband are most when it is integrated with other business processes." An example of this is the automatic link through to the company's back office administration systems when a customer makes an online payment. This avoids additional paperwork and as a result of broadband the administration systems are updated in real-time.

Black Mouse uses a sophisticated image asset management system to enable it to retrieve relevant images for particular clients and automatically create a private web page for the client. This technology, combined with broadband, enables this to be available for the client to view within minutes. "Clients and customer service take supreme priority with us. With the use of broadband, we are able to provide services such as personalised web pages available for clients to view during our e-mail discussion with them. And on a more basic level, seeing e-mails as they come in is critical for customer service. We aim to reply to e-mails within five minutes where possible, with a personalised rather than automated response. This was not possible with a dial-up connection."

"Broadband has made a significant contribution to the increase in our turnover."
ELIZABETH WILSON-SMITH – MANAGING DIRECTOR

CHALLENGES
Broadband assists Black Mouse to meet the challenge of engaging clients at an early stage of their enquiries. "With the use of broadband we are often able to answer their questions which they e-mail to us while they are still on-

line", says Elizabeth. "There is an obvious advantage to us if we are able to respond before they move on to look elsewhere. It creates a good impression as it shows them that we are there and often we can get something underway right away."

THE LAST WORD
One of the major benefits that Black Mouse has recognised from broadband is the freedom to use the online connection without constraint. "With broadband you know what you are paying each month and so it does not constrain your thinking in any way. There is not a meter ticking away in your head. A critical tool for the business is therefore no longer rationed. Using a dial-up connection is in comparison like being an artist and allowing yourself only three pencils a week."

DARLINGTONS LIMITED

Darlingtons supplies coffee, tea and a range of accessories and ancillary products to restaurants and cafes such as Eat, Bagel Factory, the St Austell Brewery pub chain and British Airways' airport lounges.

Best practice in: Technology
Sector: Catering
Size of firm: 24 employees
Location: London
Website: www.darlingtonscoffee.co.uk

OBJECTIVES
Founded from the acquisition of an existing coffee supplier in 1995, the company has now grown its distribution network to include Hampshire, Oxford and Cornwall as well as London and plans to have a complete national network within five years. It is this growth in the distribution chain that was the driver behind Darlingtons' adoption of broadband technology. The company recognised a need to centralise the back-office systems and the customer database in order to manage its business more efficiently and effectively as it grew. Good communications links between the offices were essential in order for this to be achieved.

"The decision to get broadband was driven by the need to streamline our accounting operations and information exchange between the offices as a result of our expansion to four locations," says Graham Ralph, Finance Director. "This is a highly competitive sector with tight profit margins. It is therefore important for us to thin down our administrative overheads and deliver strong customer service in order to be competitive and achieve our growth targets."

SOLUTION
The company uses a combination of ADSL and a leased line to provide the necessary internet connections for a Virtual Private Network (VPN). Supplied by the internet company VIANET.WORKS and supported by the London-based company Oceanwave Digital, this provides secure access to the company's network through the VPN's encrypted channel. The London office

has upgraded from an ADSL broadband connection to SDSL. This provides higher bandwidth and a lower contention ratio.

RESULTS
The broadband technology and the VPN has enabled the company to centralise its customer database and back-office systems on one central file server in London. Prior to this each branch operated independently, running its own order book and accounts. "The benefits of this centralisation include improved financial monitoring, better services for customers and greater flexibility for interchanging staff."

Customer information is held centrally and accessed from the branch offices via the secure broadband connections. "Orders from the branches are made directly on the central system. Invoices are generated centrally by the system and automatically printed locally." The benefits from this include faster response times to customers and increased efficiencies in internal operations as all the information required is immediately accessible from one place.

The centralisation of accounting information means that the need to audit four separate operations is eliminated. Graham estimates that "with over 2,500 invoices generated each month we should be able to reduce our accounting and auditing costs by almost £30,000 per annum which is a considerable saving for us."

The time saved through the increased efficiencies of the operations as a result of centralisation is also important to Darlingtons. "A saving of three hours a week equates to a saving of around £1,000 a year in salary costs. There are many tasks for which we are now able to achieve that sort of saving
on a regular basis. An example is the preparation of our customer statements that used to involve collecting information from each branch. Now that the information is all in one place the time taken to do this is reduced significantly."

The system provides greater flexibility in where work is undertaken enabling more effective sharing of work across the organisation, for example when people are on holiday. "It has also changed the way we view the Hampshire office. We have space and budget restrictions in the London office. We are now able to base staff in Hampshire where previously they would have had to be based in London to have full access to our systems. We now have a sales and marketing person based in Hampshire who would previously have had to be based in London. This is a cost saving for us."

"We needed to streamline our accounting operations and information exchange."
GRAHAM RALPH – FINANCE DIRECTOR

CHALLENGES
Although the systems are now in place for Darlingtons to benefit from these efficiencies across the company, only the London and Hampshire offices are fully integrated at present. The Cornwall office is a small operation with only

one person and will be integrated as it grows while the Oxford branch is waiting for ADSL to become available where their office is located, currently scheduled to be at the end of this year. The Oxford branch currently connects to the company network via a secure dial-up ISDN connection. "As a result of not having broadband in Oxford we are only achieving 60% of the efficiencies which we achieve in Hampshire and it takes a great deal of effort to achieve that. Our system cannot be fully effective without broadband."

THE LAST WORD
Whilst looking forward to the major benefits that an ADSL connection at the Oxford office will bring, the higher bandwidth and lower contention ratio provided by the SDSL connection in the London office has had a major impact on performance particularly in terms of speed of response in peak times. "It has made a huge difference. The ADSL connection was absolutely fine for us initially but our requirements at our London office reached a stage where we had out grown it. This highlights the fact that in some cases a combination of broadband solutions across an organisation may be the best approach to meeting requirements cost effectively."

BENUGO

Free wireless internet connectivity is bringing in the customers for Benugo.

Best practice in: Technology
Sector: Food and Catering
Size of firm: 150
Technologies: WiFi Lan, Broadband
Location: London
Website: www.benugo.com, www.broadscape.net

OBJECTIVES
Taking its name from co-founders Ben and Hugo Warner, Benugo cafıs opened for business in 1998. They offered customers a new style of cafı with 'pizzazz', in an environment where people could relax and enjoy their food. With 11 cafı shops in and around London, 150 staff employed throughout the business and annual revenues of over £6m, Benugo has proved to be a big hit with customers. "At Benugo we know that the customer always has a choice," says Tim Parfitt, Finance Director, "We want Benugo to be that choice as often as possible."

From its inception, technology has played an integral part in the way Benugo operates. An internal WiFi and wired LAN at Head Office provides a computer network which is linked to the internet. All external sites (the cafıs) have ADSL connections to the internet and to the central network at Head Office. This means that communication between the various sites is quick and easy. It also means that stock information can be kept up-todate. "Timely, effective communication is crucial for managing the business," says Tim. "Having up-to-the-minute information on my laptop most of the day means I have instant access to information that keeps my finger on the pulse."

SOLUTION

But in today's market margins are low and competition is fierce. Business survival depends on sustaining profitability and maintaining customer satisfaction. This is why Tim was intrigued by the proposition from technology solutions provider, Broadscape. The proposal was to provide Benugo's customers with high speed internet access over a Wireless LAN with a WiFi access point. This would effectively mean that a customer could come into a Benugo's cafı, open up their laptop and have instant access to the internet without having to plug in any cables. Benugo trialled the idea in two of their cafıs. They offered wireless internet connections free of charge as long as customers spent £2 or over on food or coffee for every 30 minutes of use. A short flyer tells customers how to set up the WiFi access on their laptop and within minutes they're online.

Broadscape's installation also included Bluetooth which allowed compatible PDAs to connect to the internet as well. The innovative aspect of the system is that customers are not charged directly for internet access. Which in turn means that there are no billing issues and nothing complicated to consider with billing updates.

"Having up-to-the minute information on my laptop most of the day means I have my finger on the pulse."
TIM PARFITT – FINANCE DIRECTOR

RESULTS
So far the trial has been successful – more customers have been attracted into the shops and are consuming more products in order to stay online. Staff are pleased too as they are able to sell more without having to undergo extensive training. The total set up cost was £1,500, with DSL lines installed in the two trial cafıs for internet connectivity through WiFi access. Although technically feasible to use the primary ADSL line, they chose to use a second line for security and peace of mind.

THE LAST WORD
Wireless technology also allows management instant access to the latest information as they move around different locations. "I visit different locations and use my laptop to keep up to date with e-mail and business," says Tim. "A rough calculation suggests we save at least 500 man hours a year which equates to about a £25,000 saving." The success has been such that Benugo is now planning to add further cafıs with WiFi access.

DAVID HALSALL INTERNATIONAL LTD

David Halsall International designs, imports, manufactures, and distributes toys, as well as decorations, and gifts. It also holds licences for many well-known characters.

Best practice in: Technology, operations
Sector: Toy manufacturing and retail
Size of firm: 140 employees
Location: Lancashire
Website: www.dhalsall.com

OBJECTIVES

The company has a turnover of £70m, 140 staff, and offices in Paris and Hong Kong. A central requirement for the effectiveness of its business is its mobile sales team and the relationships the company has with product suppliers in the Far East.

Halsall's business is built on its responsiveness to customers and suppliers. It relies on email as its main form of communication, especially when staff are working away from the office or abroad. The company's performance was hindered by the fact that staff weren't able to pick up emails while on the move.

Managing the orders process was also a problem. With over 30 members of staff at any one time attending trade fairs, order taking was a major task. Traditionally, details were written on order pads that were then passed to order processors for manual input to the back office computer system.

After a major trade show it could take as long as two weeks for all of the orders to be entered. Another problem at the shows was the risk of missing sales opportunities, simply because the manual order taking process was so onerous. The company needed to streamline its system, to maximise sales and speed up data entry.

Because of the company's extensive contacts in the Far East, a solution was needed which worked in far flung places such as Hong Kong.

SOLUTION

IT Director John Lord realised that the business needed an affordable mobile email solution that would improve responsiveness and work internationally. Mobile employees needed to be able to send and receive critical information remotely – anytime, anywhere. The BlackBerry service from 02 seemed to fit the bill.

02's TAAPS software enabled David Halsall to develop its own sophisticated order taking system in-house, using Symbol PDT 3100 scan-enabled portable data terminals for data capture in the field.

The terminals link into the back office system, allowing orders taken remotely to be transferred into order processing at the end of each day without any re-keying.

"Connected communication gives us an edge."
JOHN LORD – IT DIRECTOR

RESULTS

Using the BlackBerry handsets enables the company to communicate across time zones, with emails received within one minute. This naturally led to an improvement in business responsiveness, enabling immediate reply to emails and the ability to send and receive attachments – all of which increases company turnover.

The BlackBerry also offered a combination of ease of use and reliability. The system uses GPRS technology for a fixed monthly fee, there is no need for any dial-up facilities and it works across all time zones.

John Lord, Halsall's IT Director explains that "connected communication gives us an edge". Halsall's mobile staff are able to keep in touch with up to date stock availability and prices, to ensure that they give their clients the best service they can.

All sales data (stock and price) is immediately available to mobile sales staff. Orders taken can be sent to the UK and fulfilled immediately. They know when a product is not available, and are able to offer a replacement or alternative.   It provides a way to seamlessly integrate sales into the production and warehousing cycle, therefore increasing customer satisfaction and ultimately, sales.

CHALLENGES
According to Lord, working with a number of different technology standards can be a problem. He also accepts that individual reluctance to change can be a problem with such implementations, but that he is seeing this less and less.

Lord does admit that the majority of staff using BlackBerry handsets use it for email rather than telephony, although a number of staff do use that function.

Lord says the difficulty with some Smartphone offerings is that they are 'pull' technology and that staff have to actively engage.

The power of the BlackBerry service is the 'push' technology. Lord says that its biggest benefit is that "its permanently updated and simple to use".

THE LAST WORD
David Halsall is currently planning to integrate its international offices into its ERP network, which it has recently upgraded.   At the same time, the company plans on updating its extranet to expand services for staff and customers.

Lord says: "While it's unquantifiable specifically, we believe that ICT implementation gives us a competitive edge over rivals who have not invested in such technologies." He went on to say: "We're more efficient, margins are higher and everyone has the right information. Connected communications give us the edge."

GBS LIGHT HAULAGE UNLIMITED

From his farmhouse office in Gloucestershire, Gary Ball keeps track of his delivery vans as they travel across Europe with GPS tracking.

Best practice in: Technology

Sector: Transport
Size of firm: 5
Technologies: GPS, SMS
Location: Gloucestershire
Website: www.gbshaulage.hypermart.net

OBJECTIVES

In 1986, due to poor economic conditions, Gary Ball was forced to sell his family farm. Having to find other means of earning a living, Gary started moving farm machinery for other farmers, initially in the local area but subsequently further afield. From these humble beginnings, Gary created GBS Haulage and with the help of wireless technology has turned it into a thriving business, delivering goods across Europe. He has bought back the farm and runs the company from the farmhouse, with the kitchen doubling as a meeting room and the shed next door as an office.

SOLUTION

The success of the business has been due to the quality of service that GBS delivers: "I try hard to make the first sale," says Gary. "Our service makes the sales thereafter." The quality of service is a direct result of the technologies that GBS employs. For a fee of £2 a day per van, GBS rents out a computer telemetry system from BOX telemetrics. This system, called a spotonBOX fleet management system, allows Gary to keep track of the progress of his vans as they make their deliveries. The computer in the GBS office is connected to a wireless transmitter and receiver which in turn is connected to a GPS (satellite) tracking system. A receiver and transmitter is also positioned in each van and responds to the GPS 'tracker'. Using features of the tracking software, Gary can choose 'events' (such as a van being off the plotted course) to send alerts to his mobile phone. These arrive as SMS messages sent automatically to Gary's mobile phone by the computer when it encounters a pre-defined 'event'. In practice this means that if a van hits an 'event', like being off course, Gary is immediately alerted and can then come to the driver's aid. Using 'interactive polling' Gary can locate, on a map on his computer screen, the exact location of the van. He can then relay messages to the driver, advising them on the best route to take to get back on course.

"I'm a farmer's boy who wants an easy life. My computer and my mobile let me do that."
GARY BALL – PROPRIETOR GBS HAULAGE

RESULTS

This system is invaluable for giving customers accurate up-tothe- minute information when they call about deliveries. It also means that GBS are better able to deliver on contracts. Contracts with customers include bonuses for on time deliveries throughout Europe and penalties for delays unless it's possible to prove that the delay was due to factors outside the control of GBS and its staff. With the tracking system it is easy for Gary to provide information proving that delays were unavoidable, although in most cases, because of the efficiency of the system, he finds he's picking up the bonus instead.

THE LAST WORD

The system also allows Gary to comply with safety regulations and computerised invoicing has eliminated the need for employing an accountant, a cost saving of around £15,000 per year. But perhaps the biggest benefit of all, certainly for Gary, is the fact that all the time saved by technology means that he can balance his work with his lifestyle. "I'm a farmer's boy who wants an easy life," says Gary. "My computer and my mobile let me do that." Gary collects vintage tractors which he restores himself and another of his hobbies is flying his microlite, with his own take-off and landing strip on the farm. Without the use of wireless technology Gary wouldn't be able to maintain such
a healthy work/life balance.

COMMONTIME

Established in 1994, software applications developer CommonTime provides both connected and wireless mobile computer solutions for businesses.

Best practice in: Technology, communications
Sector: Software development
Size of firm: 23 employees
Location: Derby
Website: www.commontime.com

OBJECTIVES
Some 60% of CommonTime's sales are from clients based overseas, so good communications are crucial to maximising revenues. While much business can be conducted over the telephone or via email, face-to-face meetings are often necessary. This used to involve frequent travel abroad, which was not only expensive but also meant key members of staff were out of the office for extended periods of time.

The company prides itself in post-sales support through ongoing advice and training for clients that have purchased CommonTime software. However, the level of service they wanted to provide was limited by the physical distance between them and their clients.

CommonTime therefore sought a technology solution that would reduce travel costs, improve staff management and allow the company to provide enhanced customer service and support. An application able to connect to their existing PC network and allow participation from multiple users was also vitally important.

SOLUTION
During a trip visiting clients in the US, CommonTime staff discovered that many customers were using videoconferencing software. This, they believed, could provide a solution to their problem.

Back in the UK, CommonTime contacted a videoconferencing reseller and received demonstrations of equipment from various manufacturers. A product from TANBERG stood out. The PC Presenter function, allowing connections

to existing PCs, met with CommonTime's important requirement and eliminated the need for new hardware costs.

"As a small, high-tech company, we were concerned with value for money and excellent functionality," says Omotosho. TANBERG fitted the bill.

CommonTime has also adopted Lotus Sametime, an instant messaging system. This allows all staff working on site and remotely to communicate privately within the corporate network. Staff who have to be out of the office for whatever reason are able to take part in discussion and training sessions.

"As a small high-tech company we were concerned with value for money and excellent functionality."
OLLIE OMOTOSHO – VICE PRESIDENT MARKETING

RESULTS
TANBERG videoconferencing allows users throughout CommonTime's company network to join meetings either silently or actively. Files can be shared and clients can be easily taken through the training process.

CommonTime has made significant cost savings as the need for foreign travel has been reduced and meetings can now be arranged on a more ad hoc basis.

"The videoconferencing software greatly enhances the service we can provide our customers. During our pre-sales process we can use it to make sure client systems configure with our software. Post-sales, the system allows us to resolve any problems and take customers through software training," says Omotosho.

The system also features a web cam option which helps CommonTime to maintain a personal relationship with clients.

CHALLENGES
CommonTime was able to connect its existing PC network to the videoconferencing system so the configuration process passed smoothly.

As a software company, CommonTime staff understand the need for trialling systems before full implementation so any major problems with adopting the new technology were averted.

Omotosho and his colleagues place great importance on involving all end users in proposed systems before going live. This process took place when adopting TANBERG's videoconferencing application.

"When adopting systems created by a third party we always make sure the company has a partnership mentality and formulate a reciprocal agreement for ongoing support. Without this reciprocal arrangement, technology will not work to its full potential," Omotosho comments.

CommonTime widely promotes technical support over videoconferencing to its clients and the system has also been used to pitch for new business. A new contract with a wireless business client in Canada, for example, was secured using it.

The success of virtual training has prompted CommonTime to begin developing real time technical support on its website. Some 65% of revenue is already generated via the web with software available for download on the site. The company also has plans in place for website integration with client systems for self-service account management.

"The hopes for the technology we have implemented have certainly been realised and it has all helped us and our clients," Omotosho says.

INFORMATION FROM DATA

Established in 1992, Information From Data (IFD) provides data management software for use by local education authorities in England and Wales.

Best practice in: Communications, people
Sector: Education
Size of firm: 8 employees
Location: London
Website: www.ifd-education.co.uk

OBJECTIVES
In the early days of his organisation, IFD Managing Director Geoff Abbot used to spend many hours on the road visiting clients and setting up conferences and workshops in hotels and conference halls around the country.

As a diabetes sufferer who occasionally needs to use a wheelchair, Abbot is prevented from driving so had to rely on train travel. However, this was proving to be expensive as he spent £10,000 a year on train tickets. Abbot believed the money and time he spent on trains could be far better used on improving his business and securing new clients.

SOLUTION
Abbot turned to virtual conferencing technology provided by WebEx. The WebEx Meeting Centre provides the facility for online meetings, training sessions and conferences. The system integrates into existing PC systems including Microsoft Outlook and uses standard SSL encryption to ensure secure and private logins, accounts and meetings.

Using the WebEx Meeting Centre, Abbot is able to show full demonstrations of his company's software products via the web. Clients are able to view the presentation on their own PC and access files. The system also includes a messenger feature for instant communication.

RESULTS

For Information From Data the benefits of implementing the WebEx Meeting Centre have been significant.

"Using WebEx, where you are geographically is irrelevant. The system is very useful. I am able to fully demonstrate our software to clients without having to physically go and see them."

Abbot has been able to cut back dramatically on the £10,000 a year he used to spend on train travel and he has also been able to arrange meetings and training sessions on a more ad hoc basis than the physical workshops and conferences IFD previously held only 3 times a year.

"The same presentation that used to take hours during a workshop can be encapsulated via WebEx in an hour," Abbot says.

As time restrictions are no longer an issue, IFD is able to spend more time training individual rather than groups of clients. This allows the company to provide a much more personal service, a factor in many of IFD's sales. Abbot and his staff are also able to conduct WebEx meetings from home.

The benefits of the WebEx system for IFD were demonstrated by the fact that one client agreed to purchase the company's software after taking part in a WebEx presentation without ever physically meeting the IFD team.

"I thought that WebEx could just cut down on the number of visits required. I didn't think clients would order using Webex," Abbot admits.

"We are wary of not losing touch with customers. It is imperative to still go and see most clients."
GEOFF ABBOT – MANAGING DIRECTOR

CHALLENGES
Although the advantages of the WebEx Meeting Centre have been significant, Abbot admits he has informed his staff to not forget the benefits of face-to-face meetings.

"We are wary of not losing touch with customers. It is imperative to still go and see most clients at least once as it's always better to put a face to a name. We are selling a service so that's important," he comments.

Another challenge for IFD is dealing with the inefficiencies of client's systems. For example, Some LEAs lack broadband which means the speed with which IFD prefer to demonstrate their services is reduced. Other clients are wary of using new technology which makes it harder to communicate the benefits of online meetings and training.

The simplicity of systems is another important issue for Abbot.

"Sometimes technical experts make it difficult for users. Things have got to be easy to use otherwise people turn off. When conducting a meeting via WebEx

we always phone the client beforehand to check everything is working correctly," he says.

THE LAST WORD
Information From Data will continue to demonstrate to LEAs the benefits of using their software to turn complex data into useful and meaningful information and online meetings play an important part in this process.

"We are branching out into more commercial and finance products such as time recording services which help education authorities identify which schools they need to be targeting for support," Abbot says.

Technology and the WebEx system has played an important part in the success of IFD which Abbot hopes will continue.

"I sold a business many years ago that didn't even had a fax machine. Nowadays the expectations are so much higher. We can do things immediately. The whole process is so much easier. For me, the whole immediacy of communication is unbelievable."

PARTHENON PUBLISHING

Established during the 1970s, the Parthenon Publishing Group produces books, journals, videos and multimedia software for healthcare professionals and environmental scientists around the world.

Best practice in: Technology
Sector: Publishing
Size of firm: 50 employees
Location: Lancaster
Website: www.parthpub.com

OBJECTIVES
Until the summer of 2002, Parthenon Publishing operated out of two offices – a headquarters in London and a building in Lancaster. In each office, the company had Norton ISDN technology in place which allowed it to patch telephones and computers into the same system. The enabled the firm to operative a productive and cost effective operation. Using the IP telephony-enabled Business Communications Manager (BCM) from BT, the company benefited from integrated voice and data brought together in one, easy-to-operate 'single box.'

By August the company was growing rapidly, so it was decided the time was right to expand to another office in Lancaster. The company wanted the two Lancaster sites to work as one but it was decided that creating two separate computer networks and telephone systems would have been prohibitively too expensive.

Parthenon Publishing turned to BT to see if the telecoms company could fulfil their needs.

SOLUTION

Parthenon invested £20,000, and within a month BT engineers had laid fibre optic cables between Parthenon's two offices. The two buildings were then linked together through the Business Communications Manager, creating one single Local Area Network (LAN).

The company was now able to integrate e-mail, fax, telephone and other applications across the two sites ensuring cost effective inter-office communications.

RESULTS

Parthenon Publishing has enjoyed significant benefits from the integrated system in terms of efficiency, productivity and cost savings. Linking the two offices via fibre optic cables removed the need to install expensive new services and telephone systems in the new office, and the communication between the two sites has worked well.

"The second office behaves as if it was part of our other building. It has been totally seamless," says Jeremy Smith.

Efficiency has been maintained throughout the company with the integrated e-mail, fax and telephone systems. Due to the integration, employees are able to work in either office and access all the applications and data they require.

Using BT's IP technology, Parthenon has also been able to make cost savings on telephone calls. If someone in the original office requires a colleague in the new building, calls are carried over the IP network which costs significantly less than using the standard external public telephone network.

Making adjustments to the system, such as when new staff are taken on or employees are moved to a different location, are simple using the Business Communications Manager, Smith says.

Parthenon relies heavily on e-mail so the integrated system is vitally important. Staff are continually dealing with authors and printers sending in copy and designs. Sending these items electronically saves a great deal of time and money.

"We have seen a huge rise in the use of e-mail attachments. Using this method, the speed of getting content in is much faster than by courier and we can respond instantly," Smith says.

The company website is also developing an increasingly important role. Leading medical research, the mainstay of the company's business, can be posted on the site almost immediately after publication rather than the weeks taken to convert it into a traditional printed format.

"There is not an area within our business that hasn't been favourably changed by our technology implementations".

JEREMY SMITH

CHALLENGES
Parthenon Publishing takes a cautious approach to implementing new technologies. The IT team always observe and thinks about the needs and requirements of the people who will actually be using the system before adopting any new solutions.

But for Jeremy Smith, dealing with the preconceptions of staff about the capabilities of technologies is sometimes a difficult issue. "Some employees expect too much," he says, "when new systems are implemented." However, through regular and informative communications of the abilities of systems these problems are overcome.

Smith's approach to implementing new technology is 'always over supply.' "Always provide more than you thought in terms of hard disk space, internet networks etc. Expectations change and unforeseen demands occur," he says.

THE LAST WORD
Smith believes that the communications system Parthenon Publishing has in place is flexible enough to grow as the business develops. If the company expands to further sites, Smith is confident the same productivity and efficiency levels will be maintained as the infrastructure is already in place.

"There is not an area within our business that hasn't been favourably changed by our technology implementations," Smith concludes.

QUESTIONNAIRE

ΕΡΩΤΗΜΑΤΟΛΟΓΙΟ

Στοιχεία επιχείρησης

1. Είδος επιχείρησης

2. Κύριες δραστηριότητες

(π.χ. παραγωγή προϊόντων, πώληση προϊόντων, παροχή υπηρεσιών)

3. Γεωγραφική κάλυψη

(σε ποια περιοχή [επίπεδο πόλης, νομού, περιφέρειας, κλπ] δραστηριοποιείται η εταιρεία, έχει υποκαταστήματα σε άλλες πόλεις και τι περιοχές καλύπτουν αυτά, κάλυψη πελατών στο εξωτερικό)

4. **Έτη λειτουργίας** (αριθμός)

5. **Προσωπικό που απασχολεί** (αριθμός)

Στοιχεία Επαφής
6. Ονοματεπώνυμο και θέση στην επιχείρηση

7. Στοιχεία επικοινωνίας (Διεύθυνση, τηλέφωνο, e-mail)

Καινοτομία στις επιχειρήσεις

ΜΕΡΟΣ Α

1. Έχετε χρησιμοποιήσει νέες τεχνολογίες και πληροφορική στην επιχείρησή σας;

NAI…….

OXI…….

a. Αν **OXI**, γιατί;

(π.χ. λόγω κόστους, έλλειψης γνώσης ή ενημέρωσης, άλλοι λόγοι);

b. Αν **NAI**, παρακαλώ σημειώστε τα παρακάτω:

    i. Ποιες τεχνολογίες ή προϊόντα εφαρμόσατε και για ποιο σκοπό;

    ii. Πότε εφαρμόστηκαν οι παραπάνω λύσεις και για πόσο χρονικό διάστημα;

    iii. Η επένδυση για την εφαρμογή των παραπάνω λύσεων έγινε με χρήση εξωτερικής χρηματοδότησης ή από ίδιους πόρους ή συνδυασμός αυτών;

    iv. Η ιδέα εφαρμογής της τεχνολογικής λύσης προήλθε από κάποιο σύμβουλο ή την σκεφτήκατε μόνοι σας (και αν ΝΑΙ ποιά ήταν η αφορμή για την εφαρμογή της ιδέας σας);

    v. Τι είδους δυσκολίες αντιμετωπίσατε κατά τη διάρκεια της εφαρμογής (σε όλα τα στάδια της εφαρμογής της ιδέας: έρευνα αγοράς, παραγγελία, εγκατάσταση, εκπαίδευση, λειτουργία, κλπ)

(π.χ. ελλιπής εκπαίδευση, τεχνική υποστήριξη, δυσχρηστία, ενσωμάτωση στην καθημερινή πρακτική εργασίας, κτλ.)

    vi. Αξιολόγηση της λύσης που εφαρμόστηκε
Οφέλη/Ζημίες για την επιχείρηση

Οφέλη/Ζημίες για τους εργαζομένους

(π.χ. αύξηση/μείωση της παραγωγικότητας/ποιότητας εργασίας, αύξηση/μείωση της παραγωγής/πώλησης, οργάνωση επιχείρησης

και οικονομική διαχείριση, αύξηση/μείωση της ποιότητας/ταχύτητας εξυπηρέτησης των πελατών, αύξηση/μείωση κέρδους κτλ.)

vii. Για την υλοποίηση της τεχνολογικής λύσης αναζητήσατε τη συμβουλή κάποιου ειδικού συμβούλου/προμηθευτή;
NAI………
OXI………

- Αν **NAI**, μείνατε ευχαριστημένοι από τις υπηρεσίες του;

- Αν **OXI**, πως υλοποιήσατε την τεχνολογική λύση;

2. **Γενικά αναζητείτε πληροφορίες και ενημερώνεστε για νέες τεχνολογικές εφαρμογές που σχετίζονται με την επιχείρησή σας ή γενικότερα;**
NAI…….
OXI…….

a. Αν **NAI**,
   i. Πως ενημερώνεστε;

   (π.χ. εφημερίδες/περιοδικά, σύμβουλος, Internet, φίλους, κτλ.)
   ii. Πόσο συχνά;

   iii. Είστε ικανοποιημένοι από την ενημέρωση που λαμβάνετε;

   (π.χ. βρίσκετε αυτό που ζητάτε, είναι κατανοητό)

b. Αν **OXI**, γιατί δεν επιδιώκετε ενημέρωση;

(π.χ. δεν υπάρχει οικονομική δυνατότητα, δεν υπάρχουν σχέδια ανάπτυξης ή δεν είμαι σίγουρος αν μπορούν να υλοποιηθούν με τεχνολογίες πληροφορικής οι ιδέες που έχω, δεν γνωρίζω πως να ενημερώνομαι)

3. **Τι θεωρείτε καινοτομία για τον κλάδο σας και την επιχείρησή σας, γενικότερα;**

ΜΕΡΟΣ Β

4. Ποιο/α από τα παρακάτω θεωρείτε ότι περιγράφει την «καινοτομία» των νέων τεχνολογιών και της πληροφορικής στην επιχείρησή σας;

- ☐ Σύνδεση στο Internet
- ☐ Χρήση πακέτων λογισμικού οργάνωσης γραφείου (π.χ. Office, Excel, κτλ).
- ☐ Επικοινωνία μέσω e-mail με προμηθευτές-συνεργάτες
- ☐ Διαφήμιση της επιχείρησης μέσω web site
- ☐ Ηλεκτρονικό εμπόριο (πώληση προϊόντων ή παροχή υπηρεσιών σε πελάτες μέσω Internet)
- ☐ Ηλεκτρονικό εμπόριο μεταξύ συνεργατών (business-to-business)
- ☐ e-Banking (διαχείριση τραπεζικών λογαριασμών μέσω Internet)
- ☐ Χρήση ηλεκτρονικών υπηρεσιών εφορίας (π.χ. TAXIS)
- ☐ Δικτύωση - Μηχανοργάνωση επιχείρησης και υποκαταστημάτων
- ☐ Αγορά μηχανημάτων αυτοματισμού παραγωγικών διαδικασιών (π.χ. ειδικό μηχάνημα σχεδιασμού και κοπής υαλικών, ειδικό μηχάνημα αυτόματου ποτίσματος)
- ☐ Πιστοποίηση ποιότητας παραγωγής-μεταφοράς-αποθήκευσης προϊόντων και παροχής υπηρεσιών
- ☐ Εφαρμογή εξαγωγής στατιστικών στοιχείων για την επιχείρηση (π.χ. παραγωγή, πωλήσεις, αποθήκη)
- ☐ Εκθέσεις προϊόντων/ υπηρεσιών με χρήση υπολογιστών ή άλλων νέων τεχνολογιών (π.χ. τρισδιάστατη αναπαράσταση, επίδειξη εφαρμογής, κλπ)
- ☐ Άλλο ………………………………………………………………………………………… ……..

5. Ποιο/α από τα παρακάτω θα ενδιαφερόσασταν να χρησιμοποιήσετε με βάση τις ανάγκες της επιχείρησής σας; (σε περίπτωση που δεν χρησιμοποιείτε ήδη)

- ☐ Σύνδεση στο Internet
- ☐ Χρήση πακέτων λογισμικού οργάνωσης γραφείου (π.χ. Office, Excel, κτλ).
- ☐ Επικοινωνία μέσω e-mail με προμηθευτές-συνεργάτες
- ☐ Διαφήμιση της επιχείρησης μέσω web site
- ☐ Ηλεκτρονικό εμπόριο (πώληση προϊόντων ή παροχή υπηρεσιών σε πελάτες μέσω Internet)
- ☐ Ηλεκτρονικό εμπόριο μεταξύ συνεργατών (business-to-business)
- ☐ e-Banking (διαχείριση τραπεζικών λογαριασμών μέσω Internet)
- ☐ Χρήση ηλεκτρονικών υπηρεσιών εφορίας (π.χ. TAXIS)
- ☐ Δικτύωση - Μηχανοργάνωση επιχείρησης και υποκαταστημάτων
- ☐ Αγορά μηχανημάτων αυτοματισμού παραγωγικών διαδικασιών (π.χ. ειδικό μηχάνημα σχεδιασμού και κοπής υαλικών, ειδικό μηχάνημα αυτόματου ποτίσματος)
- ☐ Πιστοποίηση ποιότητας παραγωγής-μεταφοράς-αποθήκευσης προϊόντων και παροχής υπηρεσιών
- ☐ Εφαρμογή εξαγωγής στατιστικών στοιχείων για την επιχείρηση (π.χ. παραγωγή, πωλήσεις, αποθήκη)
- ☐ Εκθέσεις προϊόντων/ υπηρεσιών με χρήση υπολογιστών ή άλλων νέων τεχνολογιών (π.χ. τρισδιάστατη αναπαράσταση, επίδειξη εφαρμογής, κλπ)
- ☐ Άλλο ………………………………………………………………………………………… ……..

6. Γιατί δεν έχετε εφαρμόσει κάτι από αυτά μέχρι σήμερα;

(π.χ. δεν υπάρχει οικονομική δυνατότητα, δεν υπάρχουν σχέδια ανάπτυξης ή δεν είμαι σίγουρος αν μπορούν να υλοποιηθούν αυτά που θέλω, δεν γνωρίζω που πρέπει να απευθυνθώ, φόβος για την ασφάλεια που προσφέρει το Internet και οι νέες τεχνολογίες)

REFERENCES

R. Lucchetti and A. Sterlancchini, The adoption of ICT among SMEs: evidence from an Italian survey, 2002.

C. Bakker, Information and communication technologies and electronic commerce in Canadian industry, 2000.

M. Chiarvesio and S. Micelli, Networks without technologies in industrial districts of Northeast Italy, 2001.

Commission of the European Communities, eEurope: An information society for all, 1999.

Commission of the European Communities, eEurope2002 Action Plan, 2000.

EITO, European Information Technology Observatory, 2000.

M. Falk, Diffusion of information technology, internet use and the demand for heterogeneous labour, 2001.

E. Huizingh, The content and design of web sites: An empirical study, 2000.

E. Santarelli and S.D. Altri, The diffusion of e-commerce at the firm level: theoretical implications and empirical evidence, 2002.

T.M. Scally, M. Stansfield and K. Grant, An investigation into the use of internet and e-business among SMEs in Lanakshire, 2001.

F. Zimmerman, The impact of ICT use on export orientation of SMEs. Theoretical considerations and empirical evidence from Chile, 2000.

P. Forcheri and A. Quarati, Training issues for successful ICT innovation in companies, 2003.

Y. Choi, Understanding ICT adoption from the SME user – centred perspective: views from the boutique fashion SMEs & the Australian government, 2002.

J. Bosch, L. Capel, Chapter 7: The Barcelona ICT impact study, 2000.

Regional high – level workshop on electronic commerce and ICT for Central America and the Caribbean, 2002.

Department of trade and industry web site: www.dti.com

J. S. Brown and P. Duguid, The social life of information, 2000.

Egnatia Epirus Foundation, EPIRUS 2000: Human Resources and Communication Highways, 1992.

M. Dertouzos, What will be: how the new world of information will change our lives, 1997.

RISE: Regional Strategy & Action Plan for Information Society in the Region of Epirus, 1999.