PAN-EUROPEAN FISH AUCTION (PEFA)

While INFOMAR evolved from a radical to a less ambitious vision of the use of IT in the fish industry, Zeebrugge was developing a plan to link European fish markets into a network. In Summer 1997 Milford Haven Fish Auction, Zeebrugge and La Rochelle linked their three markets using ISDN lines, allowing buyers in each market to bid for fish landed in each other market. It was planned that the network would then be extended to IJmuiden and Den Helder in the Netherlands. On June 19th 1997 boxes of ray and plaice landed at Milford Haven were bought by a buyer in Belgium (Fishing News 1997). However, in Summer 1997 Zeebrugge reassessed their policy of using ISDN lines to link the markets, finding the cost of international ISDN lines excessive. They decided to develop an alternative electronic fish market based on a world-wide web (WWW) site. The site is planned to have various levels of access, from passive observers to active bidders who have credit clearance to buy. The system has been named Pan-European Fish Auction (PEFA) . The site is planned to be in op-eration in Spring 1998 , using the system to build incrementally a network of linked auctions. PEFA and INFOMAR may therefore be seen as very different routes to achieve the same end: a pan-European fish market with remote bidding.

THE BARRIERS TO THE FORMATION OF PAN-EUROPEAN MARKETS

While the success of remote fish markets in Iceland suggests that electronic marketing of fish is practicable, this success can largely be explained by the close network of the Icelandic fish industry. Both INFOMAR and PEFA are seeking to extend this model to a pan-European level. While they started from very different positions, when confronted by the structure of the European fish industry their visions have converged. While European Commission support for INFOMAR may be seen as a policy intervention to make the single European market for fish a reality rather than a rhetorical concept, and PEFA a strategic attempt by Zeebrugge to place themselves at the heart of the European fish market, they have both accepted that to build a pan-European fish market will require the enrolment of existing in-termediaries in the fish industry, both because these are the bodies with the links to the boats and also the only bodies with the expertise to grade fish. However, it is this need for reliable and consistent grading which leads to uncertainty about the success of these electronic market initiatives. In close networks,as seen in Iceland, opportunism is controlled by the knowledge that it will prevent the other party from trading with you again and there will be costs if they tell others of the behaviour, but in anonymous perfect markets these pressures are much less. It was therefore the literal insularity of the Icelandic fishing industry which enabled buying on description to be successful without a complex system to guarantee descriptions. To introduce a market open to all bidders and sellers across Europe requires a means of guaranteeing the transactions, specifically guaranteeing to sellers that they will be paid and to buyers that they will receive the fish described. It was the necessity of these institutional roles which led to realisation that both PEFA and INFOMAR would have to operate through existing markets rather than bypass them.

PROMOTION OF ELECTRONIC COMMERCE BY A REGIONAL CENTRE

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INTRODUCTION

The emergence of the World Wide Web, together with current and anticipated developments in network technology, are likely to lead in the near future to the use of the Internet becoming part of everyday life for most households in the developed world. This expectation has given rise to immense interest in the potential for electronic commerce through this medium. Probably the commonest paradigm for web-based commerce is that of retailing via an electronic product catalogue, and already a large number of such catalogues have been established: for a survey of these, see Palmer (1997). Internet-based retailing offers obvious advantages over other forms of selling, including low set-up costs and overheads and immediate access to world markets. Despite these advantages, the results for early adopters of the technology have been relatively poor, leading some observers to question whether on-line selling will become of major importance as rapidly as had been supposed (Phelan 1996).

With this background, an examination of the barriers to the establishment of electronic commerce is of interest. One obvi-ous problem is that of critical mass: as yet, there are relatively few potential consumers using the Internet, and, except in certain specialised markets, most are not accustomed to using the medium for purchasing. This has made even large companies reluctant to invest in electronic commerce, and consequently the numbers of retailers on the web are relatively small and scattered. The other problem on which much attention has been focused is that of security. In a 1997 KPMG survey of 100 major UK firms, (http://www.kpmg.co.uk/uk/services/manage/ec06.html) lack of security on the Internet was perceived as the greatest current threat by 60% of respondents. Interestingly, however, this was generally seen as a short-term problem for which technological solutions were expected. Among smaller businesses, security seems to be a lesser fear: questionnaire responses

from representatives of small businesses in the Merseyside region (Charlton et al. 1997) reveal relatively little concern about this issue.

Our view is that the major barriers to the establishment of an Internet-based EC industry are now societal rather than technological. The KPMG survey referred to above also reveals resistance to technological change, ignorance of the medium, and lack of competence in its use as factors inhibiting adoption. Only 3% of respondents considered themselves well-informed about the Internet, and only 55% thought their companies had the necessary resources for its implementation. These problems, as well as that of critical mass, must be overcome before a market can be established.

The role of intermediaries, or "cybermediaries", in this process is examined by Sarkar et al. (1995). The existence of cybermediaries is consistent with traditional marketing theory, which views intermediaries as organisations that support exchanges between producers and consumers, increasing efficiency of transactions and creating economies of scale and scope. In the EC context, we believe cybermediaries also have a role in helping to establish critical mass, and can play a part in overcoming some of the other problems we have referred to. We here describe some of the functions of an organisation of this kind, CONNECT, which has been established in the Merseyside region.

THE CONNECT INTERNET CENTRE

CONNECT, The Internet Centre for Merseyside Businesses, was established in December 1994 as part of the Department of Computer Science at the University of Liverpool (Charlton et al. 1996). This initiative became possible because of the priority status of Merseyside as an economically deprived region within the European Union. This enabled access to European Regional Development Funds for the establishment of a Centre the purpose of which was to assist local small and medium-sized

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enterprises (SMEs) to take advantage of opportunities arising from the emergence of the Internet and related developments. Central to the case for the Centre was the belief that Internet-based electronic commerce offers possibilities for economic regeneration in the region. The nature of the medium is such that some of the geographical reasons which have contributed to Merseyside's problems no longer apply, and we also believe that it may be a means for even small businesses to trade in a world market. The role of the Centre is to facilitate this, both by acting as a cybermediary of the kind referred to above, and also by providing training and support in the adoption of the technology.

Three themes have emerged in the subsequent operations of CONNECT:

i. Awareness raising and training. It is clear that the establishment of a successful local EC industry will require both the overcoming of ignorance and prejudice, and further education and training of the potential adopters of the technology. A programme of courses for local business representatives has been established, including one which focuses specifically on electronic commerce, and is described in the next section.

ii. Promotion of a skilled workforce. We anticipate that the emergence of the industry will create a demand for trained personnel. As well as seeking to meet this demand through training programmes, our aim is to provide a service which will help match employer needs with the skills and aspirations of job-seekers.

iii. Trading infrastructure. Both critical mass and the other aspects of the role of a cybermediary are being addressed through a regional web site, "MerseyWorld".

ASPECTS OF THE ROLE OF CONNECT

1. A COURSE IN ELECTRONIC COMMERCE

The form of this course reflects the context described above. It aims to remedy the perceived lack of knowledge of the field within business, and to help prepare SMEs to make informed decisions on their strategic approach to electronic commerce, particularly using the Internet. For SMEs, loss of staff time spent attending courses can be a significant cost, so one of the objectives was to fit all the necessary material into just one day, divided into four parts.

i. Internet communication and information finding. The first goal of the course is to give attendees an understanding of the use of the Internet as a means of business communication and as a new source of relevant information. As well as e-mail, the course introduces ways of using the Internet to obtain a variety of information of value to business. Directories such as Kompass (http://www.kompass.com/)

and (for Britain) Kelly's (http://www.kellys.co.uk/) enable businesses to search for details of potential business partners. The Internet search engines can be used to find potential customers, as well as other information, including the increasing store of information about electronic commerce itself, and business services such as employment.

ii. Business with consumers. The second part of the course deals with the use of the Web for advertising, publicity, selling and payments. There is a focus on costs and benefits, with examples of successful practice. Aspects covered include the creation of web pages, on-line catalogues, and methods of payment, including outsourcing credit-card transactions (cf. Sullivan 1997). This is supplemented by more advanced uses, including ways of gathering and using customer information.

iii. Business with other businesses. This section is concerned with the use of live information in real-time, including the use of Electronic Data Interchange to substitute for phone, fax and paper-based information. Conventionally, the world of EDI has been divided into hubs and spokes, with the big business hubs dictating the rate of progress. The course seeks to explain EDI so that small businesses also can appreciate the strengths as well as understand the problems and weaknesses. This leads on to an introduction to current methods involving intranets and extranets.

iv. Possibilities and Challenges. Finally, the course aims to stimulate a positive and creative attitude to electronic commerce. The very notable examples of business successes, (cf. Amazon.com), may not seem directly relevant to most SMEs, but pointing out what may be coming soon is a proper part of a broad introduction to electronic commerce. This part of the course examines the possibilities opened up by a focus on client information, for customisation, customer relations, and customer services.

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The course as a whole makes extensive use of hands-on practical work and of business-related case studies. The practical sessions are intended to overcome fear of the technology as well as to impart understanding, and the case studies to illustrate attainable goals for SMEs in elec-

tronic commerce. Both the uptake onto and the feedback from the course have been very encouraging. For the first presentation of the course, given without the benefit of hindsight, 10 out of the 13 responses collected from an end-of-course on-line questionnaire rated the course as a whole "very useful", the highest point on a four point scale. The least well-received part of the course was that on EDI, perhaps reinforcing the conclusion that SMEs are looking for solutions that are not encompassed within traditional EDI. One industry sector that may be implicated here is business and professional services. As they are not suppliers of merchandise, established EDI does not fit well, and it appears that these businesses are looking for solutions involving extensive use of client databases and interactive Web sites.

2. Job Matching

One of the assumptions underlying the role of CONNECT is that an emerging local EC industry will have a continuing need for trained personnel who can be effectively matched with job opportunities as they arise. To this end, the centre runs a programme of in-depth training courses, accompanied by an in-house work experience scheme, and is developing more effective approaches for matching job vacancies with prospective employees.

Employment agency is a business service that is relatively easy to offer over the Internet, and stands both as an example of electronic commerce in itself, and also as an aid to businesses that wish to engage in electronic commerce, by helping the recruitment of employees suitable to take forward such work. Employment agency on the Internet in Britain has been successful since 1994 with JobServe (http://www.jobserve.com/), which now allows prospective employees to search through many thousands of IT vacancies gathered by over a thousand recruitment agencies. This is one of a number of employment sites on the Web in Britain. On the other side, there are CV services such as PeopleBank (http://www.peoplebank.com/) where the prospective employee fills in a

very detailed set of forms on the Web. The data are entered into a database which is searchable by employers.

Research on job matching needs to address the problem of poor quality query responses from standard databases. This arises when, for example, a prospective employee searches though a vacancy database, only to find that the large majority of the vacancies selected are not looking for a person with his or her profile. The reverse problem is that of an employer querying a candidate database who finds many people who would not be satisfied with the particular job on offer. Work in progress aims to create a matching system that radically improves the quality of query response in these cases, so that both sides of the labour market can execute more effective and efficient searches in less time.

3. THE MERSEYWORLD WEB SITE

The third major strand of CONNECT's role is more explicitly as a cybermediary in the sense identified above, as the host and co-ordinator of an integrated web site for the region. The MerseyWorld web site (http://www.merseyworld.com/) aims to provide a wide-ranging overview of activities in the Merseyside region, including cultural, social, educational and busi-

ness-related aspects. The part of MerseyWorld that relates most directly to electronic commerce is the "Business Park", within which more than 1000 locally-based businesses are currently represented. The majority of these are, at present, using the site principally as a medium to promote their businesses, sometimes, although not always, with an option to make contact or place orders via e-mail. A number of businesses go further in using the site as a direct trading medium. The latter, grouped under the heading "Merseymall" are provided with a framework to enable site visitors to browse a product catalogue, fill a shopping basket, and place an order, paying (if appropriate) by credit card.

As an intermediary in the electronic commerce business, MerseyWorld achieves three things:

i. It provides an infrastructure to enable small businesses, which lack the physical, financial and human resources to run a web site of their own, to engage in Internet-based marketing. To a degree this is made possible by the existence of EU funding to promote this, but even without this subsidy, economies of scale are a factor here, and we expect the site to be financially viable even when grant-funding comes to an end.

ii. It creates a critical mass for electronic commerce in the region. Individually, the SMEs concerned would find it difficult to establish a presence on the Internet; collectively, however, the site has a high profile (with accesses currently at a rate of 1.23M per month). This is supported by the site's mixture of business and other consumer-related information, which helps to encourage browsing of the site on a regular basis.

iii. Through CONNECT, the site's value is augmented by a number of facilities, including placement of entries on searchable indexes, local catalogue listings, and usage statistics.

CONCLUDING REMARKS

The MerseyWorld site is, we believe, one of the most successful regional web sites with a business orientation to be found in Europe. A key aspect of its strategy for the promotion of electronic commerce is the combination of this "cybermediary" role with two other elements that we believe are essential for the development of the industry: the education and training of business personnel, and assistance in providing and placing skilled staff to enable the business to grow. A University-based centre is well-placed to provide this mixture.

SYSTEMS PLANNING IN AN ELECTRONIC COMMERCE ENVIRONMENT IN EUROPE: RETHINKING CURRENT APPROACHES

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ABSTRACT

Inter-organisational systems (IOS) to exchange structured data lie at the heart of any form of electronic commerce. Despite a number of years' experience and some well-publicised success stories, IOS remain somewhat under-researched. This has inhibited the development of planning guidelines to assist in their implementation. The research described here attempts to remedy this deficiency by investigating the nature and use of planning in IOS. Using a pluralist research method combining a survey and cases, this paper argues that IOS planning has requirements that cannot be met by pure intra-organisational systems planning processes. For more complex IOS projects that involve greater business and technical change across a number of organisations, systems planning needs to evolve beyond a firm-centred approach to take a network perspective.

INTRODUCTION

Electronic commerce relies on inter-organisational systems (IOS). Despite realisations that inter-organisational systems are important, most research has concentrated on describing systems rather then determining how they can be successfully implemented (Swatman and Swatman, 1992). However, recent research has highlighted the importance of planning (Finnegan et al., 1997).