

the self-report questionnaire that faithfully reflects the emotional factors related to electronic commerce systems. The second study focused on determining the important graphic design factors from the customer's perspective. The causal relations between the emotional factors and design factors were established in the third study, and verified in the final study. Results indicate that it is possible to manipulate the graphic design factors of the customer interface in order to induce a target emotion, such as trustworthiness. These results have important implication for the design and implementation of emotionally usable electronic commerce systems.

DISCUSSION

The design of customer interfaces that provide a pleasant shopping environment is an important research issue in electronic commerce. This paper proposed a research framework of the customer interface for cyber shopping malls. The framework consists of four dimensions: content design, structure design, navigation design, and graphic design. Each dimension was explained together with a description of a study conducted by the author. These studies are merely a starting point in the research regarding customer interface, and further studies are needed to test and extend the framework. Two pre-conditions must be met for more research in the customer interface. First, an experimental test bed must be constructed in the form of a cyber shopping mall that provides a mechanism for manipulating the four dimensions easily and for tracking customers' behavior faithfully. Second, a channel for inter-disciplinary collaboration among researchers with different academic backgrounds must be provided. The relevant areas include marketing, consumer behavior, human factors and human computer interaction.

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INTERNET-BASED SMALL BUSINESS COMMUNICATION: SEVEN AUSTRALIAN CASES

BY SIMPSON POON, SWINBURNE UNIVERSITY OF TECHNOLOGY* AND
PAULA M.C. SWATMAN, MONASH UNIVERSITY, AUSTRALIA**

EXECUTIVE SUMMARY

This paper presents a case study of seven small Australian businesses which are using the Internet to undertake at least part of their normal business operations. The objective of the case study is to investigate the key driving forces behind these companies' Internet adoption and continuous use and the level to which they are using the Internet to support their businesses.

Our results indicate that benefits perceived by these small businesses during Internet use and potential business opportunities are key drivers for Internet use. Management involvement and enthusiasm are also important for the Internet adoption process and ongoing usage.

Based on the research findings, we have constructed a four-stage model which depicts how small businesses use the Internet to support the business relationship development process and the activities in this process which are supported by the Internet. Finally, we advocate that more subtle but critical factors, such as entrepreneurship in Internet use, can have profound effects on the level of ongoing Internet usage success.

INTRODUCTION

The Internet and its applications have created an information infrastructure which now rivals the Plain Old Telephone System (POTS) in size, coverage and popularity. Despite somewhat exaggerated mass media suggestions that the Internet is effectively an enormous database of prospects to be targeted by marketing campaigns, reports in both academic and professional publications (see, for example, Barker 1994; Sieber 1996 and Telstra 1996) do offer support for the view that small business use of the Internet is in-

creasing. Early estimates, however, suggest that the percentage of Australian small businesses which are actively using the Internet is still relatively small – and primarily restricted to the more entrepreneurial organisations (Poon and Swatman 1996).

As commercial use of the Internet grows, it is becoming increasingly recognised that this is a very different business environment from its physical counterpart. For example, marketing approaches which work well for broadcast or print media (such as supplier-driven marketing strategies) may not perform as well on the Internet (Hoffman and Novak 1996). Common ways of exploiting the Internet as a business tool include marketing and information distribution; electronic mail for inter-company communication; and provision of services and products (Brown 1996). Rayport and Sviokla (1995) also suggest that businesses can use the Internet to help them gain access to marketplaces (or "marketspaces") which might otherwise be inaccessible.

Earlier research (Barker 1994) indicated that small businesses which are early adopters of the Internet believe they can gain competitive advantage by using this medium. In previous work (Poon and Swatman 1995) we have suggested that integration of Internet usage with business strategy is critical to success in such a venture – although the amount of integration (or reasons for lack of integration, where relevant) is still unknown. By interviewing a group of seven early adopters from a variety of business sectors who claim to have gained competitive advantage through Internet use, we have discovered that while such competitive advantage does appear possible, it can as yet be described only as a "perceived" benefit. The results of our interviews have

enabled us to construct a four-stage model which reflects the way in which the Internet has been used during the different stages of business relationship development.

In this paper, we first outline the research method used for the study and provide a summarised background of the case study participants. We then discuss two issues – perceived benefits of the Internet and management involvement in adopting the Internet for business use, both of which appear to be key driving forces for continued Internet use. With the aid of a four-stage business development model and the case results, we analyse the ways in which the Internet is used as a supplement to the traditional business environment. Finally, we suggest that further research needs to be carried out to extend the in-depth dynamics of this mode – including factors such as entrepreneurial approaches to Internet use among small businesses.

RESEARCH METHOD

Yin (1994) suggests that case study is an appropriate choice of research method when researchers have little control over the environment; when the events under investigation are contemporary; and when the context of the research is important. Clearly, we had little (if any) influence over the way in which the study's participants were using the Internet; we were investigating contemporary events; and we were particularly interested in the business context in which the participants were making use of the Internet. We felt that case studies would enable us to gain an in-depth understanding of why and how the firms under investigation were using the Internet for competitive purposes.

Participants were selected from a sample of companies which had already participated in a survey of small business Internet use in Australia, conducted prior to this project (see Poon and Swatman (1996) for a discussion of the results of this study) and who had expressed their willingness to engage in further participation. Selection criteria for the case study participants

**Simpson Poon
(spoon@swin.edu.au) is a
Fellow of the Centre for Information
Systems Research at Swinburne
University of Technology, Australia.
He is currently working on a
research project in the Department of
Information Systems at Monash
University investigating
how small business can improve
their strategic position through the
use of the Internet.*

included the size of their business (micro to small-sized firms), their expressed views on competitive advantage since having adopted the Internet (positive and hopeful) and their business sector (we endeavoured to gain access to a range of business sectors). These case studies form a part of a larger research project which is investigating the strategic use of the Internet by small businesses in Australia – building on the work already undertaken in the survey, the case studies provide a more in-depth investigation of motivation and experience than could be obtained by the broader (but shallower) snap-shot which our survey provided. We were also able to use the case study results to provide a level of validation of the information gathered through the survey.

The case studies were designed to be carried out as a series of interviews and site visits. Where site visits were not feasible, due to distance or time factors, telephone interviews were carried out instead. Interviews were recorded as a series of field notes and subsequently transcribed into more detailed accounts, which were then verified with the case study participants for accuracy. The interviews were carried out in a series of stages:

- ◆ we initially gathered information on the background of each company, its director, and the role played by the director/management in adopting Internet use;
- ◆ we then asked participants to provide examples explaining why they held a positive attitude towards Internet use;

- ◆ next, we attempted to identify how much, and in what ways, the Internet is used to support business activities with particular focus on inter-organisational relationships;
- ◆ finally, we allowed the interviewee to express his/her vision of how the Internet will further be used to help the interviewee's business.

PARTICIPANT ORGANISATIONS' BACKGROUNDS

Each of the seven companies selected came from a different business sector. The group included:

- ◆ a legal firm (Firm A)
- ◆ a public relations consultant firm (Firm B)
- ◆ a printing equipment manufacturer (Firm C)
- ◆ a regional development organisation (Firm D)
- ◆ an internet consulting company (Firm E)
- ◆ a philately auctioneer (Firm F); and
- ◆ an IT networking consultant company (Firm G).

Brief summaries of each company, with its products/services and key reasons for continuing to use the Internet are available in Table 2 (which can be found at the end of the paper).

According to the Australia Bureau of Statistics' definition of small business (Castles 1993), all these companies are small businesses because they conform to the prescribed characteristics:

- ◆ a small business should be independently owned, owners/managers should contribute most of the operating capital and be involved in the principal decision making functions;
- ◆ a small business belonging to the non-manufacturing industries should have fewer than 20 employees – and, if belonging to the manufacturing industries, no more than 100 employees.

DISCUSSION AND ANALYSIS

There are a number of publications on small business use of Information Tech-

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nology (see, for example, Malone 1985; Kagan, Lau, and Nusgart 1990; Bergeron and Raymond 1992; Bili and Raymond 1993; Cragg and King 1993; Naylor and Williams 1994; Iacovou, Benbasat and Dexter 1995; and Poon and Swatman 1996). Some of these studies (for example, Cragg and King 1993; or Naylor and Williams 1994) focus on internal applications systems (e.g., accounting and data base), while others concentrate more on communications technology (Iacovou et al. 1995; or Poon and Swatman 1996). Although all these discussions provide an important understanding of factors affecting the ways small business use IT, very few authors have focused upon these factors in relation to small business use of the Internet.

Since the Internet is an infrastructure designed for inter-organisational communications, factors relating to successful use of the Internet are more likely to concern inter-organisational activities and systems than internal application systems. For example, factors reported by Iacovou et al. (1995) such as reduced transaction costs, better customer service and more efficient information access; as well as those reported by Poon and Swatman (1996), including advertising and marketing, global communications and shortened communication cycles, are all relevant to successful Internet use. Further, most Internet applications are standard packages (eg. Web browsers, or file transfer software) and so those factors which have contributed to success in firm-specific or customised systems are often irrelevant in the context of the Internet.

Despite these distinctions between Internet-based commerce and other forms of electronic commerce, the results of our study of seven small firms suggest that a number of factors are relevant both to the Internet and to conventional IT. Some of the factors which have been found in previous studies to contribute to IT success were

*Table 1
Direct and Indirect benefits gained by using
the Internet among participants.*

****Paula M.C. Swatman**
(*paula.swatman@is.monash.edu.au*)
is Associate Professor and Acting Head
at the Department of Information
Systems at Monash University, Aus-
tralia. Her major research interests
involve Electronic Commerce. She
supervises a number of PhD, Masters
and Honours students researching in
this area and is involved in a variety of
projects within the field of EC.
Please send any correspondence to
Simpson Poon.

also relevant to this study, particularly perceived benefits and managerial enthusiasm (identified by Cragg and King 1993; and Iacovou et al. 1995), which were found to be common among the seven firms. By contrast, factors such as the presence of a systems analyst/consultant or the number of administrative applications existing proved to be unimportant (at least at this stage) in contributing to positive experiences among the participants. It would appear, therefore, that attitudes of staff and management are relevant to all types of computing – whether Internet-based or not.

PERCEIVED BENEFITS FROM
INTERNET USE

Iacovou et al. (1995) noted that the benefits obtained from EDI use include both direct and indirect benefits. One characteristic of direct benefits (such as reduced

transaction costs or lower inventory levels) is that they are relatively easy to quantify. Indirect benefits, which include examples such as better customer services and improved trading partner relationships, are notable for being difficult to quantify and for taking longer time to eventuate (see, for example, Tengende 1993; Chin 1995 or Quach 1995). Swatman et al. (1993) have also pointed out that to achieve longer-term benefits from telecommunications-based information systems, an organisation needs to combine its inter-organisational systems strategy with existing business strategy.

From the results of this study and also from our earlier survey (Poon and Swatman 1996), we observed that benefits gained from Internet access nominated by small businesses can also be classified into direct and indirect benefits, as Table 1 illustrates.

An interesting fact is that firms A, D and E did not explicitly state that they had gained direct benefits from the Internet. In fact, even for those participants who did state that they had gained direct benefits (ie. the rest of the group), the savings/incomes obtained were marginal – and often circumstantial. Interestingly, however, none of the firms suggested that the lack of direct benefits would cause them to cease using the Internet in the

Direct benefit from using the Internet	Organisations gaining such benefit
Savings in communication costs	C, G
Savings in advertising costs	B, F
Indirect benefit from using the Internet	Organisations gaining such benefit
Communication efficiency improvement	A, B, C, F, G
Speedy and timely access to information from websites	A, B, C, D, F, G
Create an up-to-date corporate image	B
Obtain know-how through discussion with others on the Internet	A, F, G
Create new business opportunities	A, E, F

near future. These early adopters view the indirect and often non-immediate benefits as being more important than direct gains (at least at this stage) and it is the possibility of such benefits which keeps them connected to the Internet. For example, one comment made was that having access to the Internet is like having a facsimile machine – although one cannot directly quantify the amount of revenue brought in by having a fax machine, few businesses can afford to do without one.

MANAGEMENT'S ROLE IN INTERNET ADOPTION

The positive relationship between level of management involvement and success of IT within the organisation has been identified in a number of small business systems research projects (see, for example, Yap, Soh and Raman 1992; Cragg and King 1993). Management enthusiasm for Internet adoption was also observed to be a common thread among the seven firms in our study. Often the director or a senior partner can see the potential the Internet offers to his/her business and plays an active role in adopting the technology. This scenario is strikingly similar to the observation made by Runge and Earl (1988), who emphasised the importance of product champions having:

- ◆ a vision of the organisation's strategy
- ◆ an ability to secure resources for projects
- ◆ the power to shortcut the decision process and
- ◆ the opportunity to change attitudes of resistance.

Our findings also agree with Runge and Earl's finding that technical knowledge does not seem to be as important as a positive attitude towards the business potential of the IT project. The most striking example of such concordance was that only one of our seven interviewees had a formal IT-related qualification. Despite the lack of formal IT training of our seven project champions, however, they have somehow managed to acquire a conceptual understanding of the ways in which the Internet can be exploited for business purposes.

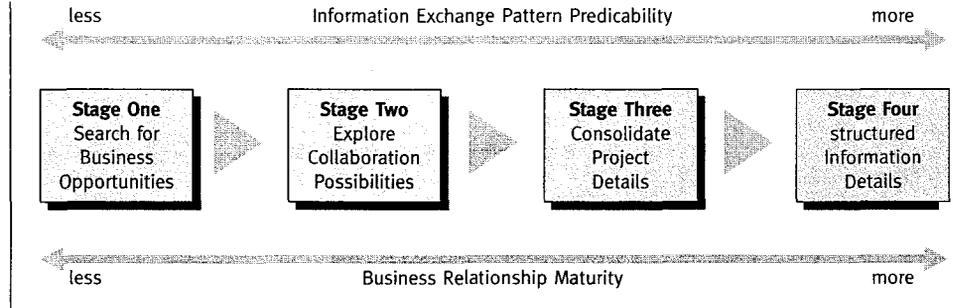


Figure 1 Business relationship development process

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¹<http://www.gen.com>
²<http://www.east.link.net.au>

They do not seem to blindly believe the media hype which is currently so pervasive – but have instead tried and experienced first hand ways in which the Internet can enhance their strategic position.

When we asked our participants what drove them to use the Internet reasons expressed included curiosity, the need to explore new business opportunities and a fear of being left behind in the era of electronic commerce. Regardless of their initial motives, participants' interest in the Internet grew as they started gaining hands-on experience and realised the potential of the Internet. The only exception to this was Firm D, where direct management involvement in Internet adoption has been minimal. Firm D's success in using the Internet is mainly due to a special project funded by its board of directors to help their customers to network and share business information.

IMPACT OF THE INTERNET ON BUSINESS RELATIONSHIPS

Different groups (see, for example, GEN¹ and LinkNet²) have established alternative business environments on the Internet, where small businesses can carry out their usual business and networking activities "virtually". Our study suggested that small businesses are using the Internet as a supplement to the traditional business environment. In fact, we can identify how small businesses are using the Internet to supplement the different stages of their typical business cycle. A model depicting the four stages of a business relationship development process is illustrated in Figure 1, which also shows that as the business relationship matures, the pattern of

information exchange and the target groups with which such exchanges are conducted become more predictable. Using this model, we can discuss how our participants are using the Internet to supplement typical business activities and how much it is used.

STAGE ONE -

THE SEARCH FOR BUSINESS OPPORTUNITIES (HIGH USAGE)

The Internet, particularly mailing lists and Usenet newsgroups, has been used by Firms C and F to explore potential business opportunities. Such processes can be either a one- or two-way approach. Firm C (a printing equipment manufacturer) has a web page set up to advertise and market its products. Through Usenet newsgroups (such as alt.industrial), the owner of Firm C responds to enquiries and at the same time provides product information:

- ◆ Firm C has been trying hard to ensure that its webpage is linked to a number of search engines (both regional and international). Since its owner has business links to Switzerland and Germany, he has also submitted its webpage to search engines in Europe. At the same time, the owner of Firm C has been eager to answer enquiries received via electronic mail about its products and look for potential business opportunities by browsing at other pages. By monitoring search engines results, he tried to gather other companies, both local and overseas who provide similar products;
- ◆ Firm F (a philately auctioneer) has been participating in mailing lists dedicated to exchange and discussion of philatelic issues and has managed to link up with people interested in his auction items. Some of these collectors, who are often overseas customers, even offer their collections to be auctioned by the owner of Firm F. The owner of Firm F also subscribes to a number of Usenet newsgroups which he feels are related to his business. He is already making some of his auction items available on his company's webpage by displaying specifications and pictures. The

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owner of Firm F believes the Internet will bring in additional businesses because he has noticed that some of his customers are actually from academic institutions worldwide.

STAGE TWO -

EXPLORE COLLABORATION POSSIBILITIES (MEDIUM - LOW USAGE)

A senior partner of Firm A (the law firm) provides an interesting example of how the Internet can be used as a medium to explore collaboration possibilities, without incurring heavy time or expense overheads. Firm A has been approached by an overseas businessman interested in setting up business establishments in Australia. This businessman wanted the business to be established in such a way that he would attain maximum flexibility and benefit, but the senior partner was unsure if this strategy would work. Unfortunately there was little help available locally to confirm the senior partner's strategy, due to its novelty. An enquiry was posted on a mailing list and a number of Usenet newsgroups. A UK legal firm provided leads to the senior partner which enabled him to make contact with a researcher at Cambridge University who has published on this particular issue. Firm F is now in collaboration with the UK legal firm and they are involved in a number of joint projects.

Other participants do not report any Stage Two activities which rely heavily on the Internet. Most consider that such activities require some face-to-face activities before proceeding further into Stage Three and Four of the business development model in Figure 1. It seems that although the Internet is a very useful tool for Stage One activities, further consolidation of the initial business contacts requires more direct interaction or perhaps a richer communication medium.

STAGE THREE -

CONSOLIDATE PROJECT DETAILS (MEDIUM - HIGH USAGE)

After identifying collaboration activities and pinning down preliminary collaboration plans, most participants feel comfort-

able, at least partially, in resorting to electronic mail for further exchanges. By this stage the collaborators have already established a more in-depth business relationship and they know the people with whom they are communicating. What seems to be important is the 'handshake' in Stage Two which makes further virtual communications worthwhile. All participants agreed that Internet-based communication is preferred if it is more convenient and effective to both parties involved in the communication. At the same time, all agreed that telephone, fax, post and most often face-to-face meeting are still necessary.

Electronic mail and the Web had been used during this stage of the business development. The owner of Firm B (a public relations consultant) described a situation in which he was working on a new product launch for a client which is the regional office of a multi-national company. The headquarter of the client company is in the USA and products are often launched in the US before in Australia. As the owner of Firm B was finalising his report over the weekend (which he had to submit on the coming Monday morning), he found out that he needed some vital information on the new product. Knowing the product has been launched in the US, he visited the website at the company's headquarter in the US and downloaded the information he needed to finalise the report. In fact, he managed to surprise his client because of the timeliness of the information, which at that time had only just arrived from the US headquarters!

STAGE FOUR -

STRUCTURED INFORMATION EXCHANGE
(HIGH USAGE)

All participants tend to use the Internet fairly extensively during this stage of business development. Again, electronic mail is the principal service used to exchange documents and information:

- ◆ Firm G (an IT networking consultant), in particular, suggested that they relied so heavily on the Internet as a coordination medium that outages on the

Premenos Inc.

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Quach L.C. "*Cost-Benefit Analysis of EDI: A Means for Justification*", Department of Information Systems, Honours thesis, Monash University, Melbourne, Victoria, 1995.

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Internet have a more serious impact on its business operations than problems on the phone lines. Apart from electronic mail, Firm G also logs onto customers' computer systems over the Internet to carry out maintenance and diagnostic tests. File Transfer Protocol (FTP) is also used to upload and download information and software;

- ◆ Firm F (the philately auctioneer) allows customers to submit proxy bids for its auction items via the Internet, which contain all the necessary information for the executor to make decision on behalf of his/her clients;
- ◆ Firm E (the Internet consultant) accesses its clients' websites to carry out homepage maintenance and allows clients to do their own updates to their homepages if needed;
- ◆ Firm C (the printing equipment manufacturer) uses electronic mail to exchange design documents with its Swiss business partner, by sending an electronic version of its design as electronic mail attachments. The owner of Firm C said that if electronic mail was not used for document exchange, a computer disk or laser printed documents would have to be physically sent because faxed copies do not provide sufficient resolution for such documents.

Judging from the variety of activities carried out on the Internet, the Internet seems to be most useful for opportunity search (Stage One) and routine message exchange (Stage Four). Whereas when deeper mutual understanding is needed (for example, during Stage Two and Three), richer communication media or even face-to-face interaction is important.

Hidden behind this four-stage model, we believe the effect of a subtle but very important factor warrants further investigation in our future research. This is the ability to apply entrepreneurship to Internet use. By entrepreneurship, we mean the ability to seize business opportunities quickly and exploit them to the firm's full advantage so that future competitiveness is consolidated. This is similar to the abil-

ity to perceive the market potential of a new product and carry out rapid product development to capture market share. Both the ability to conceive of bright ideas and to make them work in practice will transform intangible benefits to tangible outcomes in Internet use. While we still lack firm empirical support for this conjecture, it appears that the small businesses can preserve their edge gained by continuously applying entrepreneurship in business use of the Internet.

CONCLUSION

The results of our study of seven small business users of the Internet suggest that perceived benefits and management involvement are two common factors common for companies having a positive outlook on Internet use. They also suggest that while some factors leading to small business IT success in earlier studies were specific to the environments and applications studied, at least two apply to the latest IT application – the Internet. By reviewing the way in which the Internet is used during the different stages of a business relationship, we were able to construct a four-stage model illustrating what small businesses use the Internet for and

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how much they use it. Being aware of the limitations of the results generated by this study due to the small sample size, we have already engaged in a more extensive project involving a larger number of small businesses.

We intend to test the validity of the model and further refine it, if necessary, by applying the findings to a new sample of Internet-using small businesses, over the next 6-12 months. We will also test the findings on a group of small businesses based outside Australia, to examine the importance of external factors such as business culture and technology availability. A number of research partnerships have been established with colleagues from the UK, New Zealand and Switzerland and we anticipate gaining access to small businesses in these countries.

Finally, the role played by entrepreneurship as a factor influencing the structure of the model warrants further investigation. As yet we are unsure of exactly how the influence of this factor will affect our model – but hope to discover the answer to this question during the next stage of the research project.

Firm	A	B	C	D	E	F	G
Type of business	Legal Practice	Public Relations Consultants	Padprinting Equipment Manufacturer	A Regional Development Organisation	Internet Consulting Company	Philately Auctioneer	IT Networking Consultants
No. of persons (including director)	- 2 Partners - 4 Legal assistants	- 2 Partners - 3 Staff	- 2 Directors - 1 Administration assistant	- A Board of Directors - 22 Staff	- 2 Directors - 5 Staff	- 2 Directors - 2 Staff	- 4 in Management - 16 Staff
Products/ Services	Legal advice and consulting	Public relations programs and advertising consulting	Supply padprinting equipment and design services	Provide assistance and advice to members (regional businesses)	Web and Internet-based systems implementation and technical support	Auctioneer services to both buyers and sellers	Networking consulting services and solution implementation
Turnover (\$ range)	\$401K - 700K	\$201K - 400K	\$401K - 700K	\$401K - 700K	\$201K - 400K	\$701K - 1.5M	\$2.4M
Years been using Internet	About 2.5 years	About 1.5 years	About 1 year ago	About 1.5 years ago	About 2.5 years ago	About 1 year ago	A few years ago, in the past for gathering technical information
Briefly say why the Internet is important to you?	- Reach out to other legal professionals and clients - cost savings for communication	- Gather information from clients' webpages - Seen as being technologically capable - Electronic mail communication (convenient)	- Document exchange with overseas partner companies - Potential business opportunities from overseas companies	- Provide Internet access for members - Information dissemination - Provide one-stop-shop information kiosk for members	- Preferred communication medium by customers - A medium to provide services - The sole reason why the company exists	- Through mailing list to get buyer/seller contacts - Web-based advertising - Customer electronic mail contact	- Access information - Use others' expertise - Obtain software - Access customer (communication and provide services)
Management involvement	Yes, one partner	Yes, one partner	Yes, director	Yes, special project initiated	Yes, directors	Yes, director	Yes, director

Table 2 Business and technological overview of participating organisations.

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