



Trust Issues and User Reactions to E-Services and Electronic Marketplaces: A Customer Survey

Mike Child, Nadja Linketscher
Trusted E-Services Laboratory
HP Laboratories Bristol
HPL-2001-32
February 28th , 2001*

e-service,
electronic
marketplaces,
trust, user needs

Business-to-business electronic commerce (B2B e-commerce) is booming and is increasingly used by organisations worldwide to improve the effectiveness and efficiency of their supply chain. Electronic marketplaces (e-markets) are the latest development in B2B e-commerce. The vision is to develop e-markets in which all stages of the procurement process – information, negotiation, settlement and after-sale – are automated and services can be dynamically composed. Despite great potential for supply chain optimisation, there are drawbacks relating to human acceptance of, and trust in, these new Internet-based technologies. These arise from the delegation of the end-to-end procurement task to software agents. This study set out to address this issue by exploring i) user needs of a (futuristic) fully automated B2B e-marketplace and ii) product requirements that will satisfy them. To this end, seven representatives of different elements of the supply chain in the freight industry were interviewed in two stages (using a semi-structured and a scenario-based fully structured approach to interviewing, respectively). The focus of the main usability study was to try and ground the arising user needs of delegation to software agents in the trust literature. The qualitative data analysis revealed the following user needs: control as substitute for trust, human intervention in non-routine situations, development of personal relationships, impersonal trust as substitute for personal trust, and system observability. These are discussed in terms of implications for user-centred prototype design and possible contamination effects of the data by data collection, coding and analysis.

1. Introduction

1.1 Electronic Commerce

Electronic commerce is 'the exchange of information across electronic networks, at any stage in the supply chain, whether within an organisation, between businesses, between business and consumers, or between the public and private sectors, whether paid or unpaid' (PIU report 3, 2000). The main advantage of electronic commerce over traditional commerce is its potential 'to improve efficiency and effectiveness within the trading process' through the use of sophisticated information technology (eCommerce Innovation Centre, 2000). Increased effectiveness in terms of a reduction of the procurement cycle due to online processing ranging from ordering to payment, more competitive pricing due to bidding, and global access to markets at low costs (eCommerce Innovation Centre, 2000).

Business-to-business e-commerce is 'commerce conducted between businesses over an intranet, extranet or internet (i.e. IP networks). This trade may be conducted between a business and its supply chain as well as between a business and other business end-customers. B2B e-commerce may be conducted directly between buyer and seller or through a third party' (Skinner, 1999; p.7). The importance of business-to-business e-commerce lies in the fact that there are potentially larger profits and cost savings to be made compared to business-to-consumer e-commerce (Skulley & Woods, 1999). Furthermore, some estimates claim that by far the largest proportion (about 78%) of e-commerce takes place between businesses rather than businesses and consumer (Shaw, 2000).

Business-to-business e-commerce is booming and will continue to do so. Durlacher forecasts a conservative growth rate in the Euro-15 from \$76 billion in 2000 to \$159 billion in 2001, \$366 billion in 2002, \$766 billion in 2003, and \$1.272 trillion in 2004 (Skinner, 1999). The US is ahead of the e-commerce boom in Europe as reflected in the Forrester prognosis from 1998 (PIU report 3, 2000), according to which business-to-business e-commerce is anticipated to reach \$1.3 trillion in 2003. In comparison, business-to-consumer e-commerce is expected to reach between \$40 and \$80 billion by 2002.

The importance of e-commerce for, and its pervasiveness in, the economy are widely recognised. As the Performance Innovation Unit appointed by the Government stated: 'electronic commerce lies at the heart of the Government's vision for building a modern, knowledge-driven, economy in the UK. The Government's aim, set out in the 1998 Competitiveness White Paper, is to 'make the UK the best environment in the world for e-commerce'' (PIU report 1, 2000).

The same report (PIU report 1, 2000) promoting the economic value of e-commerce also draws attention to the prerequisites that need to be met in order to fulfil this potential. Top priority, in this regard, is 'getting businesses, individuals, and Government to accept the new tools of e-commerce and new styles of doing business' (PIU report 1, 2000). According to Shaw (2000), this is likely to happen once the following challenges have been addressed in a satisfactory manner. First, people need to know that their privacy is being preserved and that the security risk involved in engaging in e-commerce is minimised. Second, people need to be able to trust that the information distributed across the Web is correct. Third, people need to perceive that the systems are easy to use and do what they say they do. Fourth, people need to

be assured that any legal issues relating to electronic trading are fully covered as they are in traditional trading practices. Fifth, people need to be assured that there is a way of dealing with the overload of information present in these systems (e.g., data mining or intelligent agents). Sixth, user interfaces need to be designed in a way so as to maximise the effectiveness of people interacting with machines.

In other words, what comes out of the above is that 'users must be willing to engage in e-commerce' (PIU report 1, 2000) for it to become a success. But as with all kind of new technology, there are barriers to that willingness. One of these barriers is distrust in technology. The report stresses one can only capitalise on the full potential of e-commerce to the extent that users have 'the confidence to use e-commerce without a fear of material loss or harm through interference with your rights as an individual or a business' (PIU report 10, 2000). That is, that they possess trust in the technology. The importance of this issue is reflected in the fact that the PIU report (10, 2000) devotes a whole chapter to discuss in what ways people's trust in e-commerce might be shattered.

1.2 Electronic Marketplaces

Electronic commerce has come a long way since the development of EDI (Electronic Data Interchange) and CALS (Computer Assisted Lifecycle Support) more than 20 years ago. These initial forms of e-commerce have never lived up to the expectations set in them. Due to the high implementation costs involved, only large companies could afford them resulting in limited use of the technology. To circumvent this problem, a new generation of electronic commerce has been developed, which is based on Internet technology. Reasons for adopting Internet solutions, apart from lower costs, include low entry barriers, global distribution of the system, revolutionised supply chain management and new revenue opportunities (Sculley & Woods, 1999). One of the latest developments in e-commerce is electronic marketplaces. The topic of electronic marketplaces is the focus of this study and will be introduced briefly at this stage, before being elaborated on later.

An electronic marketplace has several defining characteristics. First, it '... brings multiple buyers and sellers together (in a 'virtual' sense) in one central market space and enables them to buy and sell from each other at a dynamic price which is determined in accordance with the rules of the exchange' (Sculley & Woods, 1999; p.7). Price is an important, yet not the only issue of negotiation among business partners, quality of service is the other one. Second, the kind of services available (i.e. aggregation of a number of integrated services) is enabled and delivered via the Internet. Third, the relationship between suppliers and buyers is tightened and, to an increasing extent, automated (Ariba, 2000). In the age of e-services, the vision is to establish electronic marketplaces '... in which contracts can be automatically negotiated and E-services can be dynamically composed' (Durante, Bell, Goldstein, Gustafson, & Kuno, 2000). This is not to say that the automation of the supply chain is new. According to Weller (2000; p.16), '... many large companies have been automating direct goods procurement via electronic data interchange (EDI) for over 10 years.' However, the 'new' Internet-based technologies facilitate the extent of automation in procurement.

The list of benefits associated with electronic business-to-business exchanges is long. Sculley and Woods (1999) named global reach of buyers and sellers, one-stop as opposed to multi-

stop shopping, dynamic pricing (i.e. through auctions), and greater transparency of the trading process (i.e. pricing, trading history etc.) as added values. Others pointed to the advantage of a maximisation of speed and efficiency of the marketplace such as a reduction of transaction costs (Ariba, 2000). Still others promoted the greater flexibility in trading, in addition to the enablement of smaller businesses to compete with the larger players in such marketplace (Weller, 2000).

Judging by the forecasts for electronic marketplaces, this is just the beginning of what could be a 'revolution' and 'new economy' (Ariba, 2000; p.2). Well renowned market research groups like the Gartner Group, for instance, predicted the emergence of 7,500 to 10,000 B2B electronic marketplaces by 2002 (as cited in Ariba, 2000). As to the value of the transactions, Goldman Sachs Investment Research estimated that over one-third (i.e. in excess of \$600 billion) of all online B2B transactions in the US, estimated to amount to \$1.5 trillion, will be conducted in marketplaces by 2004 (as cited in Sculley & Woods, 1999). Ariba (2000) went so far as to say that 'marketplaces are the latest and most significant weapon to reshape B2B commerce relationships, and will soon affect all businesses in one way or another'.

1.3 Rationale for Psychological Research

Research in the development of electronic marketplaces is commonly associated with computing/engineering sciences and management studies or related fields, not with the study of psychology. However, psychology has a lot to offer in this regard as will be outlined below.

Electronic marketplaces represent a phenomenon for psychological investigation as their main players are humans, humans whom interact with software agents. Software agents, in this context, can be defined as 'programs to which one can delegate (aspects of) a task' (Guttman, Moukas, & Maes, 1998). Because of its position at the 'intersection between psychology and the social sciences, on the one hand, and computer sciences and technology, on the other' (Carroll, 1997; p.501), electronic marketplaces are of particular interest to psychologists studying human-computer interaction (subsequently referred to as HCI). Simply speaking, this multi-disciplinary science sets out to study users' behaviour at the interface with a view to evaluating and ultimately improving technology and its applications (Carroll, 1997). The improvement consists of taking a more user-centred approach to system design thus optimising the usability of hardware and software systems. A need which has emerged from the realisation that designers cannot be considered as typical users, as their perception of what a system should be like is very different from that of users. Booth (1989) specified that this requires the establishment of users' needs and an understanding of their model of the task and system. Furthermore, the impact of new systems on people needs addressing, particularly how to reduce negative impact and put new technologies to best use.

A particular approach to usability testing is the user needs analysis. It sets out to gain an understanding of i) system users and their characteristics, ii) the task, including the users' goals, tools, and work environment, iii) the situation in which the task is embedded, and iv) the users' requirements and preferences (Booth, 1989). This knowledge facilitates the design of more usable systems, i.e. systems which are i) useful (i.e. help the user to achieve his/her goal), ii) effective (i.e. easy to use), iii) learnable, and iv) people hold positive attitudes towards them (i.e. like the system) (Booth, 1989). It seems fair to say that, increasingly, the

opinion prevails that usability testing (of hardware and software) is vital for a system's success. This is because of the link between perceived usability and usage: system usage is limited unless it is perceived to be useful, effective, learnable and satisfactory (Booth, 1989; Young & Stanton, 1999).

The user needs analysis of electronic marketplaces is set in the context of human delegation of the procurement task to a software agent. The phenomenon of delegation is of interest to psychologists insofar as it is closely interlinked with the concept of trust as will be shown in a moment.

Borrowing from the interpersonal context, delegation is a process of passing on responsibility for a task to another person (agent) and equipping him/her with the necessary authority to access the resources needed for task fulfilment. However, task accountability remains with the person delegating the task (principal) (Oates, 1993). This definition has two major implications. First, the principal runs a great risk in that the task may not be completed according to his/her standards and s/he will be personally held accountable for the outcome. Second, and related to the first point, this means that it is in the best interest of the principal to carefully choose the agent whom he believes is capable of successful task completion. This evokes the notion of trust which, according to Rousseau et al. (1998) is 'a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behaviour of another' (p.395).

The trust issues in task delegation to a software agent are two-fold. Firstly, Muir (1987) observed that humans display an initial tendency to distrust rather than trust technology, which is likely to extend to software agents. Secondly, and related to the first issue, the process of delegation involves an element of choice, which is based on trust. Choice insofar as trust impacts on making the decision about: whether or not to delegate in the first place, and if so, what part of the task to delegate, and to whom (Axley, 1992). Applied to the fully automated electronic marketplace proposed in this study, there is no such choice; this futuristic view of an electronic marketplace is based on the assumption that humans are happy to delegate the whole of the task to a software agent acting on their behalf in an autonomous manner. But is this so?

To summarise thus far, the theoretical rationale necessitating research into business-to-business (B2B) electronic marketplaces was as follows. There is a growing need for a more user-centred approach to system design in general, and system design relating to the sensitive issue of delegating all tasks to a software agent acting on the users' behalf (which evokes trust issues) in particular. Research in this area becomes even more important in light of the predicted exponential growth of electronic markets in the next few years.

On a practical level, finding an organisation that was in the early stages of developing a prototype of a fully automated electronic B2B marketplace provided the appropriate environment for conducting such research. A team of researchers within this organisation has developed a scenario depicting the intended use and functioning of software agents in electronic marketplaces.

The freight industry was chosen as one possible application area for the proposed new technology. This is in light of research to suggest that the increase in demand for and volume

of transport requires the adoption of a more efficient supply chain management and more competitive logistics system (Sorensen, 1997; Talbot, 1997). As Sorensen pointed out, the use of sophisticated electronic commerce technologies might help in due regard 'to streamline business processes and reduce cycle times' (p.9). The optimisation of the supply chain has become necessary due to the increasing outsourcing of transport and logistic services, the reduction in warehouses (which requires the shipment of greater volume), and a more centralised production and distribution that results in a larger market to be served.

In fact, attempts have already been made to set up electronic marketplaces to optimise the supply chain in the freight community. The US seems to be leading the way ahead in this development. What follows is a list of examples of existing marketplaces, which is far from being exhaustive. The National Transportation Exchange (NTE) is a US based 'B2B, e-commerce member-based trading exchange for shippers and carriers. NTE operates a dynamic, rule-based optimisation exchange used by shippers, third party logistics intermediaries and freight carriers. Using the Internet and customised integration, NTE's exchange is designed to seamlessly link all trading partners in a supply chain to optimise and automate the execution of trades between shippers and carriers.' FreightWise is another US exchange that was piloted in May 2000 with the aim of making 'transportation management easier, more profitable, and more reliable for participating buyers and sellers.' The online transactions include matching loads and capacity, tendering agreements, tracking and tracing and financial settlement. eFreightStation is the 'first provider of Internet-based logistics marketplace in Asia Pacific'. Launched in February 2000, it sets out to provide more efficient logistics solutions. eLogistics is a UK based trading community that 'has set up a marketplace to address the freight procurement market for companies requiring transport and hauliers with excess capacity. The company is using an auction platform to allow buyers of transport services to get lower logistics costs and sellers to drive up vehicle and driver utilisation'.

The marketplaces described above differ from the new technology suggested by the scenario used in the study in that none of them is yet fully automated from end-to-end. A fully automated electronic marketplace implies that: finding potential business partners, negotiating terms and conditions of the transaction, contract signing, contract monitoring, problem resolution and payment will all be done electronically by software agents. In theory, the only time humans become involved is in specifying their portfolio regarding the freight request.

1.4 Present Study

Given the theoretical and practical arguments presented above, this study aimed at exploring user needs and product requirements that will satisfy them (Booth, 1989) relating to fully automated B2B electronic marketplaces. The focus was on representatives from different elements of the supply chain in the freight industry and particular emphasis was placed on the issue of user trust in, and acceptance of, these technologies. The goal was to understand users' perspectives on trust, more precisely what aspects of the procurement task they would, and would not, be willing to delegate to an automatic system, and why. It was perceived that trust (or distrust) in fully automated computer systems would be an issue for the reasons outlined earlier, but this was the only assumption made a priori. The participants' responses were relied upon to shed light on any trust or trust-related issues in electronic marketplaces. In other words, a bottom-up rather than top-down approach was desirable. All of these imperatives (aiming for understanding of a process without making major a priori

assumptions and taking a bottom-up approach to the data) were fulfilled by qualitative research (Woods, 1999).

To this end, a two-stage interview approach was adopted. The first stage was used primarily as background research into the topic area. The main usability study involved conducting a structured interview with participants that was based on a scenario that depicted the stages and nature of a fully automated B2B electronic marketplace in the freight industry. The choice of both interview and scenario as a tool for usability assessment was made on the following grounds. The former was used as interviews possess high ecological validity (i.e. the closest one comes to assessing a person's inner life is by asking him/her about it), are flexible (i.e. can be adapted to follow up issues of interest), and represent a familiar research method (Young & Stanton, 1999). Familiarity is of particular importance when dealing with sensitive issues such as trust; besides, the face-to-face interaction is likely to yield more accurate information. In contrast, the choice of a scenario or a paper mock-up of the intended future system was made due to its low implementation costs and low level of complexity which facilitates understanding (Nielsen, 1993).

There are two other major reasons for conducting this study. First, usability information is particularly vital early on in the design process. This is because it is 'both simple and inexpensive to change a blueprint of a product, but this situation changes dramatically when the device goes into mass production' (Young & Stanton, 1999; p.228). Second, the fully automated nature of the new technology is a big change from how business is done at present, hence warrants further investigation. As Dickinson (1998) put it, 'human-agent interaction ... must be addressed before agents can meet the expectations that many commentators are setting for them' (p.1). He pointed to the need to assess users' perception of and reactions to agent technology. Elaborating on this, Milewski and Lewis (1998) referred to the lack of research in the topic of delegation to agents, which sharply contrasts with the wealth of research into delegation in an interpersonal context.

2. Method

2.1 Phase One

Design

An exploratory semi-structured interview approach was used to gain i) background knowledge of the operational nature of the different organizations and ii) facilitate understanding of communication in the second research phase. Interviews were conducted face-to-face where feasible (on the participants' premises), or via telephone otherwise. On average, interviews lasted about 45 minutes.

Participants

Seven participants were opportunistically recruited. The recruitment criteria were two-fold. One, to recruit at least two representatives of each element of the supply chain (i.e. corporate customer, supplier, transport provider) in order to gain a broader perspective on the issue of user needs. Two, ideally geographical proximity (greater Bristol area) so as to facilitate the conduct of the interviews. Multiple search methods were employed such as Internet search

(for freight transport, UK), organisational contacts, and yellow pages. Potentially interesting organisations were phoned up and asked if anyone was willing to give an operational account of their companies' dealing with freight transport. The following individuals approved and became participants in this study:

- A supply chain analyst of a large computer manufacturing company
(= big corporate customer)
- An export sales manager of a small plastic manufacturing company
(= small corporate customer)
- An account executive of a large express carrier service
(= big supplier)
- A managing director of a small company providing transport services
(= small supplier)
- A sales manager of a large air freight forwarding company
(= big air transport provider)
- A deep sea operations sales representative of a medium freight service provider
(= medium supplier)
- A unit load manager of a large haulage company
(= big road transport provider)

Materials

A semi-structured interview consisting of 9 basic questions and a subset of prompting questions was used. The main questions were derived from the stages of the Consumer Buying Behaviour Model proposed by Guttman et al. (1998). These related to merchant brokering (who to buy from), negotiation (how to determine the terms of the transaction), purchase and delivery, and service and evaluation (product / customer service), which were believed to reflect the main considerations in the trading process. The remainder was made up of questions relating to company and interviewee background information, as well as questions concerning the good and bad aspects of the traditional way of doing business and a prediction of future forms of trading. All interviews were audio taped and later transcribed to produce a written protocol.

Procedure

Participants were informed that this semi-structured interview set out to gain an insight into how the company they work for operates. They were told that they will be asked a set of questions referring to i) the company they work for and their role within it, ii) the operational side of freight transport, and iii) their perception of traditional and future ways of doing business. It was verbally stressed to the participants that the data will be treated with confidentiality and that they can withdraw their consent to participate at any time.

The interviews were conducted in a way that all questions were asked to all interviewees. Questions were followed up where and when it was perceived that interesting issues were not fully exploited yet, or that there was a communication problem, i.e. misunderstanding of the question.

Participants were debriefed and thanked for their participation. They were then asked whether they would be willing to take part in the second phase of this research, which was about

getting participants' view on new Internet-based technologies proposed to be of benefit to the freight industry.

Data reduction

The written protocols were analysed with a view to i) understand the terminology used and ii) gain a feel for the process of building an efficient and effective supply chain, as background information to the second research phase.

2.2 Phase Two

Design

A structured interview approach was used to elicit feedback on a research scenario. Interviews lasted on average 1 hour 45 minutes and were conducted face-to-face on the participants' premises.

Participants

With two exceptions (two participants discarded themselves from the study saying that they were not very technologically minded), the participants were the same as those in the first phase. Both the deep sea sales representative and the account executive of the express carrier service were substituted with colleagues recommended by themselves - with the deep sea operations manager and the e-commerce manager, respectively.

Materials

The scenario presented to the participants, comprising 13 laminated colour slides, was constructed on the basis of two criteria. First, to closely match the scenario previously developed by the researchers of the organization on whose behalf this project was carried out. This was in order to maximize the relevance and value of this study for the ongoing research. Second, to represent the process underlying the functioning of (futuristic) fully automated B2B electronic marketplaces as tailored to the freight domain. Process, in this context, referred to the: finding potential business partners (assuming a disaggregated freight company that has to subcontract all of its services); negotiating terms and conditions; contract signing; monitoring contract fulfillment; problem resolution, and payment, all of which are proposed to be carried out by software agents.

A standardized text was used to set the scene for the study and, more importantly, talk participants through the scenario. This is attached as Appendix 1.

A set of 65 standardized questions (with a varying number of questions per slide) was used to elicit participants' feedback on the scenario. The questions were largely driven by the organization's interest to explore user needs relating to the following areas: electronic trading, delegation to software agents, development and maintenance of the marketplace (i.e. vetting & governance function), user profiling, confirmation, and information. Furthermore, some general scenario questions were included. The questions were devised bearing in mind the issue of user acceptance of and trust in new technologies (such as this proposed fully automated B2B electronic marketplace). A copy of the slides plus accompanying questions is attached as Appendix 2. The interviews were tape recorded and transcribed to produce a written protocol.

Procedure

Participants were given a brief introduction to the vision underlying the notion of fully electronic marketplaces and the nature of the study. They were told that the technology is nearly there to fully automate the supply chain in order to increase its effectiveness and efficiency, and that this might happen in the near future. As to the nature of the study, participants were informed that they would be shown a scenario that illustrates the process underlying the anticipated fully electronic way of doing business in the freight industry. They were told that they would be taken through the scenario and asked specific questions along the way. It was verbally stressed to the participants that the data will be treated with confidentiality and that they can withdraw their consent to participate at any time during the study.

Prior to the scenario presentation, participants were asked a few background questions relating to their level of: usage of the Internet, familiarity with the notion of e-marketplaces, and experience with electronic transactions. This was done to be able to put their interview data into perspective.

Participants were talked through the scenario, starting with an overview illustrating the whole process underlying the functioning of this electronic market. Each of the remaining 12 slides (of which the last one, the wrap-up, was identical to the overview slide) was then taken in turn and accompanied by a brief verbal account of what is anticipated to happen at that particular stage in the process. This was followed by asking the participants specific question relating to each of the slides. Participants were debriefed and thanked for their participation.

Data reduction and analysis

The transcripts were subjected to pattern coding as an approach to data reduction (Miles & Huberman, 1994). Given the organisation's particular research interest in exploring user needs in terms of the following areas (electronic trading; delegation to software agents; development and maintenance of the marketplace, i.e. vetting & governance function; user profiling; confirmation, and information), it was perceived that these might serve as umbrella categories for exploring the data. This approach had an intuitive appeal too. To this end, the data were pre-organised before coding started in that interview questions relating to the same category (see above) were grouped together. Then participants' answers to those questions were cut from the transcripts and pasted in a way that each question was followed by the appropriate answers coming from the seven participants. All data were first-level coded (i.e. summarized) and treated as potential data. The second-level coding began with choosing one of the categories and approaching the data with a view to derive emerging patterns (across questions relating to that category). It was believed that this organization of the data (i.e. in direct comparison) would facilitate the derivation process and reduce researcher bias compared to analyzing the transcripts one-by-one.

However, problems were encountered using this approach. Participants' answers often went beyond the question, or did not answer the specific question, hence touching on different aspects covered in one or more of the other categories. In response to this finding, it was chosen to adopt a more suitable coding strategy to do justice to the data. The whole of the first-level coding (i.e. of all categories) was skim read to get a feel for potentially emerging patterns. A first, vague, impression of patterns (or clusters) was noted down. Taking one category at a time, data were analysed in a way so as to verify or falsify the initial clusters.

This process was dynamic in that new clusters and sub-clusters were added, or others dropped depending on the evidence from the data. It was determined that, for data to become a (sub-) cluster, at least three out of seven people had to independently talk about a similar thing.

The approach taken to data analysis in this study is known as grounded theory. That is, to develop 'progressively more abstract and conceptual categories to synthesise, to explain and to understand [the] data and to identify patterned relationships within it' (Charmaz, 1995; p.28). This is done by taking a bottom-up approach to data analysis and remain close with the data at all times (Charmaz, 1995). Despite this striving for objectivity, the analysis is inherently subjective as the researcher can only approximate an individual's perception of a phenomenon (i.e. acceptance of and trust in fully automated electronic marketplaces) by using his/her own judgment of what it means (Smith et al., 1997).

3. Discussion

It was chosen to adopt a slightly less conventional approach to this section in order to do justice to i) the richness of the data and ii) the interwoven nature of data analysis and interpretation in qualitative research. There are three parts to this discussion. Part one serves to set the scene and describes general concerns respondents have had about e-marketplaces. These were considered worthwhile mentioning but did not fit in the section on user needs. Part two represents the amalgamated presentation and discussion of specific user needs of e-marketplaces, i.e. needs that emerge as a result of task delegation to software agents. The focus of this part of the discussion is to i) ground the emerged needs in the trust literature with a view to explain where they are coming from and ii) what implications this might have for system design. Extracts of the interviews are used to illustrate the points made. It should be noted that the presented needs are a selection of the themes that emerged from the data but it was felt that they capture its gist rather well. Part three sets out to discuss the methodology used in this study and how this might have affected the findings of this research. This is an important issue to investigate given the highly interrelated nature of data collection, coding and analysis in qualitative research.

3.1 General Concerns

Despite acknowledging that the trend in the freight forwarding industry seems to go towards electronic trading with competitiveness being the driving force ('we are driven by what the market requires and try to be a little ahead of it'), people appeared to have several major concerns about this shift. One concern is that electronic marketplaces would be of benefit to larger players whilst excluding smaller ones 'being locked out by the automation of it ... because you cannot provide them with the service'. But some of the larger companies did not seem to think that marketplaces were something they would use. The main argument being that the freight industry is a service industry and hence a 'people's business', which is heavily reliant on non-mediated business relations (see also section on specific user needs). In addition, concerns were raised whether or not electronic marketplaces could accommodate the increasingly less experienced customers using them. Opinions were split and ranged from having to deal with little experienced customers in the traditional way ('good old Harry ... I would probably want that over the phone, because he probably does not know what he is doing, he probably does not know the questions he needs to ask') to more supportive systems

being able to cope with this ('give them as much choice as possible'). Another major concern related to the impact of the introduction of new technology on jobs. The opinion prevailed that although more cost effective from a business point of view, 'it would probably cause severe job losses throughout the industry'. As to the implementation side of e-marketplaces, concerns related to the initial programming ('the system will only through out what someone's put in and someone might not have a brighter idea than I have got') and then up dating of the system (who will update the system that 'changes all the time'?). Another big concern in this regard was the perceived difficulty of implementing the news aspect in the system. Respondents seemed to agree that for shipments to arrive at their destination in time, the exchange of news about external hindering factors (e.g., strikes, earthquakes) is vital. To continue the list of concerns, interviewees expressed worries relating to the credibility of the players and services provided in electronic markets ('that it is not going to go back and say "yes we can do it" and then suddenly find out we give them the business and they cannot do it'). Furthermore, interviewees expressed concern about potential violations of confidentiality and security of sensitive information (e.g., subcontractors used, rates and customer data). The overall tenor seemed to be that the electronic way of doing business would not be accepted unless 'we had guarantees that it was secure and confidential'. Currently, some customers or transport providers appear to go a long way in protecting this sort of information by, for example, 'sign[ing] a non-disclosure agreement'.

The concerns presented above seemed to far outweigh the potential benefits associated with the adoption of electronic marketplaces as perceived by the respondents. These included: increased effectiveness in terms of time / resources / productivity and profitability and providing more business opportunities. It seems fair to conclude by saying that respondents were rather sceptical of the idea of fully automated B2B electronic marketplaces. However the realisation is there that the electronic way of doing business seems to be the way forward in order to remain competitive.

3.2 Specific User Needs

| <i>Participant number</i> | <i>Supply chain element</i> |
|---------------------------|-----------------------------|
| <i>P 1</i> | Small corporate customer |
| <i>P 2</i> | Medium supplier |
| <i>P 3</i> | Big transport provider |
| <i>P 4</i> | Small supplier |
| <i>P 5</i> | Big transport provider |
| <i>P 6</i> | Big corporate customer |
| <i>P 7</i> | Big supplier |

Participant identification in text examples

3.2.1 Control as substitute for trust

As was pointed out earlier, delegation implies that the principal remains personally accountable for the task whilst task responsibility and authority (Oates, 1993) now rest with the agent. The key to successful delegation consists of closely checking on the agent's performance in order to ensure that both task approach and outcome closely match the principal's expectations. To this end, Jenks and Kelly (1985) proposed the following three

control mechanisms: i) pre-activity, ii) real-time, and iii) post-activity. In the pre-activity stage, the principal exerts control by setting and communicating performance criteria as well as methods for task completion to the agent. In real-time, by contrast, the principal is in control to the extent that s/he monitors the agent's performance and intervenes, if necessary, to correct an inappropriate or non-optimal task approach. Finally, on task completion, the principal's control relates to evaluating task performance and subsequently rewarding good performance and punishing bad achievement.

It seems reasonable to assume that control mechanisms play an even bigger role in the context of task delegation to a software (as opposed to a human) agent. This is in light of people's tendency to display distrust in machines (Muir, 1987) and Rousseau et al.'s (1998) claim that control can be a substitute in the absence of trust.

Indeed, the analysis of the transcripts revealed that respondents have a strong, three-fold, need for control. First, respondents seemed to agree that the ability to feed into the automatic system is vital. For example, they would like the opportunity to specify preferred and disliked i) trading partners, ii) services, and iii) modes of transport. Furthermore, it emerged that they would like to be able to choose what they think is the best option out of the choices provided by the agent, and exert control this way. Finally, respondents stressed that they would want to be the ultimate decision instance with a view to review, override, cancel, or else change any decisions made by the agent. These quests for control over the automatic system seem to correspond to the control mechanisms of pre-activity and real-time as proposed by Jenks and Kelly (1985) and are illustrated in figure 1.

Input

(P4) If I was allowed to set up the parameters then I would put in there what I would want to deal with ... what services I would rather be dealing with ... and the information about what my system likes.

(P6) I would be happy with the system making that choice as long as we had input in the modes and the organisations that went into the system.

(P1) You want to be able to say, for example, "suppliers to be contacted must include A,B,C and should not include D, E, and F".

(P2) The way I'd stop serving companies I would perhaps delete the companies I didn't want from the list rather than add the ones that I did want.

Choice

(P2) I'd perhaps want the option of putting two or three offers down that he could perhaps choose and make his mind up from that rather than just a single offer.

(P7) Give them ... more options than they need and then it's up to the customer to pick and choose.

(P3) If we do it this way, it'll go direct from London to Bangkok and it'll take two days and this is what it'll cost you; alternatively, you can save X percent by sending it London-Hong Kong-Bangkok, transport time is four days.

Ultimate decision

(P1) You'd type in like "sign" or "not" [contract] ... because you want to be the final decision maker.

(P3) I'd like the ability to override it ... to actual review it [the agent's decision].
(P4) You want to be able to cancel all the way through because it may be the fact that you don't decide to send it, or you've found that something changes, or you you've found out there's something wrong with it.

Figure 1. Control mechanism required in the absence of trust

The data also yielded support for the notion of post-active control. Respondents talked about interacting with the software agent on a trial-and-error basis, in much the same way as they would with unfamiliar business partners. The information gained from within this interaction, i.e. about the agent's consistency, competence, and sense of obligation (Lee & Moray, 1992), is then evaluated on task completion and determines future usage of the system. For example, a negative outcome evaluation is likely to result in punishment, i.e. discontinued usage of the system, or an alteration of what aspects of the task the principal is willing to delegate to the agent in the future.

The interaction between principal and agent warrants a closer look as it constitutes the basis for the development of trust between both parties. As Boon and Holmes (1991) pointed out, trust is a history-based process. A process that operates on the basis of up-dating (either verifying or falsifying) a priori expectations about another party by interacting with it. Trust develops following a positive outcome evaluation of the interaction, even when the initial expectations about the other party's behaviour were negative. This is relevant to the present study as it suggests that a principal's initial distrust in software agents can be falsified as the result of a positive outcome evaluation when interacting with the agent. Hence, a priori distrust is not necessarily a barrier to developing trust in the software agent.

Relating this back to Rousseau et al.'s (1998) claim that 'control comes only into place when adequate trust is not present' (p.399), it can be inferred that the presence of trust reduces the level for control needed when interacting with the software agent. The importance of principal-agent interaction for the development of trust as well as the idea of trust reducing the need for control are supported by the respondents' utterances shown in figure 2.

(P3) If we tried the system and it came up with the right answers, say half a dozen cases or something, then we might become reliant on it and believe what it told us.
(P6) We'll try and if it works we'll try again and I suppose that is how we build up our confidence.
(P1) I would certainly check up on it the first couple of times and if you then find out that it does it correctly, then it's great; but if it doesn't, then you just cannot use it.
(P4) He may start with having it [comparison user/supplier profile] every day and then all of a sudden say "well, there's not really a problem, I'll have it weekly".

Figure 2. Trust mechanism reducing the requirement for control

3.2.2 Human intervention in non-routine situations

As was pointed out earlier, distrust in a software agent can be overcome if principal and agent interact and the former evaluates this experience in a positive light, hence falsifying his initial beliefs. However, there are circumstances when distrust in technology cannot be that easily changed. Interviewees seemingly unanimously expressed the need for human intervention in non-routine situations as opposed to task delegation to an agent. This is reflected in the selected quotes in figure 3.

(P3) If it all goes wrong, somebody to talk to.

(P4) It's when the system kicks up on regularity then there's a requirement for user intervention.

(P5) You're not totally dependent on that system, are you? No, you would go back to plan A ... you would always have human intervention.

Figure 3. Need for human intervention

One explanation for this reluctance to delegate the task to an agent is that unusual situations are characterised by higher risk and greater dependency on the agent for task achievement; hence increased vulnerability to violations of positive outcome expectancies (Rousseau et al., 1998). By carrying out the task himself/herself, the user can control this risk. Furthermore, it is a widely held belief that automation is not powerful enough to deal with non-routine situations (Norman, 1990), which is known as the irony of automation. Support for this claim comes from the analysis of the interview data. The majority of respondents expressed doubts about the system's competence to successfully deal with problems. The anticipated shortcomings of the system (or unique human problem-solving skills) included: the lack of understanding why things went wrong; limited learning from mistakes, and inability to make context-specific judgements to name but a few. To get a flavour of interviewees' utterances reflecting the idea of distrust in machines refer to figure 4.

The problem with the reluctance to delegate in non-routine situations is that if the system is not given the opportunity to prove its capabilities, respondents' initial negative outcome expectancies about system limitations cannot be re-evaluated (either verified or falsified). In the absence of interaction with the agent, 'distrust will be relatively more resistant to change because the allocation of function it demands severely restricts the opportunity for the user to gather further, possibly disconfirming evidence' (Muir, 1987; p.535).

(P6) I think you need to understand why it couldn't come back with a solution for you ... I don't know whether this is clever enough to tell us why it couldn't do it.

(P3) The system would probably choose that way every time that met the parameters. But someone would have to tell the system "hey, that doesn't work, you'd better change it".

(P5) I don't think a machine could resolve the problems ... it's pretty much like a human deciding factor what that particular person sees fit in that particular scenario which is you know you've got so many factors that play a part.

(P4) You wouldn't want the automatic mechanism making that decision for you [redress issues: compensation] because all of a sudden he's spending £200 and really your liability is next to nothing.

Figure 4. Rationale for need of human intervention: distrust in machines

3.2.3 Development of personal relationships

The distrust in software agents and resulting reluctance to delegate procurement tasks to them may be grounded in the fact that software agents are 'faceless strangers' (Shapiro, 1987). Shapiro argued that 'principals may limit their relationships to known agents, members of their social network, kinship or ethnic groups, or neighbourhoods. They entrust parties with whom they have ongoing relations, whose performance has been tested in the past and is readily subject to surveillance in the future' (p.631). None of this seems to apply to software agents. The analysis of the transcripts provided evidence for this claim. The majority of respondents emphasised the importance of developing a relationship with their suppliers/customers and becoming familiar with them in order to optimise the level of service received/provided. Although no direct mention of trust, it is implied in respondents' requirement for engaging in long-term interactions with the agent, which evokes the notion of history-based trust (e.g., Boon & Holmes, 1991). Further indirect support for Shapiro's claim that faceless strangers elicit distrust (from which can be inferred that known agents elicit trust) came from a respondent voicing that the ability to put a name to a face helps to improve personal and ultimately business relations. Figure 5 shows the respondents original utterances in due regard.

(P6) You spend probably the first six, nine month a year developing that relationship with that supplier to give us exactly what we need.

(P5) We wouldn't go to various suppliers all the time because you'd want to build up a relationship and get the service you know ultimately.

- *If people's business gets discussed and ... you go out for a meal and a drink sort of thing and that is because ... it just helps when you know people and when you can put a name to a face.*
- *Service is a personal thing ... service is how the person sells his company, service to me is how comfortable you'd feel with a company ... it's the way you persuade a customer to use your business.*

(P3) I think the feasibility of using a transport provider or a supplier when you aren't familiar with them I think that would be a major area to overcome because you'd like to know whom you're dealing with.

Figure 5. Requirement for personal relations

3.2.4 Impersonal trust as substitute for personal trust

Shapiro (1987) held that the development of personal trust (i.e. principal and agent interact directly and the information provided from within this relationship determines the principal's

level of trust in the agent) is often impossible due to situational constraints. In its absence, she suggested, impersonal trust mechanisms can act as a substitute. The notion of impersonal trust basically refers to the derivation of trust from information other than that gained by personal experience. Hence, there is a broad spectrum of trust-inducing processes that fall under this heading.

One of them is third-party trust. This view on trust refers to the reliance on another principal's trust in an agent, which is then adopted as one's own. As an example, say company A is involved in a business relationship with company B, whereas company C is an organisation in anticipation of doing business with company B. From its interaction history with company B, company A may perceive that company B has a financially sound background and is a reputable company. Third-party trust implies that, in absence of any personal history with company B, company C would adapt company A's experience of and trust in company B as its own. The rationale for this is that past behaviour is likely to be predictive of future action (Blois, 1999).

Extracts from the interview data that can be seen in figure 6 implied the respondents' need for third party trust in the absence of personal knowledge. Respondents voiced the need for unknown organisations to be members of their professional organisations or belong to an association before they would feel comfortable engaging in a business relation with them. As one respondent pointed out: 'although there's going to be a risk in the unknown provider, you would hope that to qualify as a provider the risks would be on pass' (P4). That is due to history-based third-party trust.

(P6) I'd want the governance function to ensure that the organisations that were assigned to it or are part of it [electronic marketplace] are ... professional organisations and the types of facilities that they've got. It's making sure we don't get disreputable organisations in this.

(P1) They [market players] 'd have to be a member of their respective organisations, like for the airlines it's IATA or something or ABATA whatever it is.

(P5) They'll all ideally belong to some sort of association that sets standards, which you could fall back in case people don't perform and also take responsibility as such.

Figure 6. Third party trust in other organisations

Another form of impersonal trust is rule-based trust (March & Olson, 1989). According to this concept, it is trust fostering to know that certain performance criteria and sanctions for non-conformance are in place, which all members (in this case of the marketplace) agreed to abide by when they first join. This is trust inducing insofar as 'shared understandings regarding the system of rules regarding the appropriate behaviour' develop over time (Kramer, 1999; p.579). Shared understanding, in this context, relates to the perception that behaviour which violates the criteria for good conduct is too costly to be desirable. This is indirectly supported by the data. Interviewees mentioned, for example, the need for sanctioning market players that failed to fulfil their obligations, or the need for knowing that sanctions are not only in place, but also adhered to. Refer to figure 7 for illustrations of the implied need for rule-based trust.

(P2) This party here [governance function] need to be able to keep a record because if one supplier is suddenly breaking contracts, they need to be disciplined, fined, struck off.

(P1) Because all the companies used are members of this organisation, and then you can say "well you cannot just pull out, you've signed this contract, so you're just going to have to either pay for it, or organise it".

(P6) It's understanding that they know the regulations that they should be adhering to and they're actually adhering to them.

Figure 7. Rule-based trust in market players

Although good in theory, one respondent remarked that there might be problems associated with rule-based trust. The problem is that companies 'all have different products and all work differently and they have different systems ... so if you've got a governing body, how would they compare if you're doing a good or bad job or the services were good or bad, who says?' In other words, relying on rule-based trust may not provide the user of marketplaces with the reassurance s/he is seeking.

3.2.5 System observability

Lee and Moray (1992) proposed that a person can be trusted to the extent that s/he displays i) consistency of behaviour, ii) competence, and iii) a sense of obligation. In other words, observability of behaviour is a central component in the trust-building process. According to Muir (1987), the same principles apply to machines.

In order to evaluate whether or not the software agent's behaviour is consistent, the user needs to see what the agent does in the first instance. The provision of progress reports on the agent's approach to task achievement will facilitate the necessary observability and knowledge of what goes on inside the 'black box'. Provided there is consistency over time, the principal is likely to regard the agent as predictable and trustworthy of future delegation. The analysis of the interview data did not explicitly reveal the link between observability and trust. However, respondents' answers implied that observability of the system is a psychological requirement insofar as it alleviates existing uncertainty (i.e. risk) about agent behaviour, which is relied upon for goal achievement (i.e. interdependence). Given that risk and interdependence are the two necessary conditions for trust to arise (Rousseau et al., 1998), it seems reasonable to assume that there is a link. Refer to figure 8 for the respondents' feelings regarding system observability.

(P1) If you don't hear anything you just don't know. If you just hear "it's been received and it's been processed and it'll take two days" then at least you know.

(P6) So maybe not a great deal of information but "yes, request received by supplier and forwarded and received by the transport organisations dealing with it". So that as a customer you're sat there and you're actually seeing some activity even if it's just a line that something's happening before it comes back and says this is how they're going to do it.

(P4) I think it's a comfort blanket to know that it [freight request] is gone rather than any real requirement.

(P7) It's a key to provide tracking and tracing information, if nothing else just from a peace of mind standpoint you've got to.

Figure 8. Psychological need for observability

For the initial (low level) trust to grow, the principal must come to believe that the software agent is competent to deal with all stages of the task. One important proof of competency, according to the interviewees, is that the agent provides the principal with functional information thus avoiding information overload. This runs somewhat counter to the expressed psychological need for more information in order to know what the agent does at all stages, hence reducing uncertainty. Functionality of information refers to relevant feedback such as whether or not bids have been accepted, and information regarding the company's service levels that can be used for benchmarking. This aspect is illustrated by quotes in figure 9.

(P4) I think you end up with too much communication. I think you put the job in and the only time you really want to know [get feedback] is one when someone's accepted it, or when it hasn't been accepted.

(P5) You want to know when it's delivered. You aren't interested in all the things in between because you'd be there forever, wouldn't you? It's just not practical.

(P7) Otherwise we just think that if we don't get any answer back we're no wiser to think perhaps our price is too high, perhaps we're not offering a service that the customer wants, so it's all additional information.

(P2) I'd want to know if I was continuously losing business.

(P4) I suppose you want some statistics as to how many hits you'd had so you could see whether or not you're pricing yourself out of the market.

Figure 9. Practical need for (functional) observability

The final stage in the trust building process refers to the development of faith in the agent's sense of obligation. That is, the principal's knowledge that the agent can be trusted to act in the best of his interests to achieve optimal performance. The agent's sense of obligation is best put to the test in crunch situations, i.e. when problems arise. As emerged from the analysis of the transcripts, respondents have a strong need for the agent to admit to set backs on the way to task achievement with the agent's sense of obligation being reflected in the provision of pro-active problem notification. This goes beyond the pure provision of (functional) information that made up the psychological and practical need for observability outlined above. This is about the development of faith in the agent as the result of 'dependable goodwill as distinct from reliance on [the agent's] dependable habits' (Blois, 1999; p.200). Henceforth, this is referred to as the ultimate need for system observability. Extracts of the interview data relating to this part of the discussion can be found in figure 10.

(P1) You'd want it to tell you about it and say 'there's been an accident or derailment and this train can't go any further' ... then telling you what it's doing about it.

(P2) Tell me, that's the most important thing.

(P3) Tell me what it's doing about it, what the proposed course of action is and tell us why it went wrong.

(P6) What I want to know is the potential for it not arriving on time ... so that we can actually notify the customer that it's going to be late.

Figure 10. Ultimate need for system observability

3.3 Implications for design

Broadly speaking, what came out of this study is that there are ways to reduce distrust, hence enhance trust in software agents, by careful agent design. However, there are limits to what design can do, i.e. in some situations the distrust in the system represents what seems to be an insurmountable barrier to automation. What follows are suggestions for more user-centred design of software agents which are likely to make the agent more trustworthy in the principal's eyes. Moreover, circumstances are outlined in which design limitations are reached insofar as distrust is resistant to change.

One of the points made in the discussion was that control and trust seem to be two opposite sides of a coin. That is, user needs for control are high in the absence of trust and low in the presence of trust. In terms of design implications, it is suggested that software agents be adaptive to user needs. For example, in the early stages of the interaction between principal and agent, which is likely to be characterised by low level of trust in the agent, the system needs to have more in-built control mechanisms to compensate for this lack of trust. These relate to input, choice, and ultimate decision control. Less control mechanisms are needed over time with increasing interaction and the development of trust in the agent.

The following is an example of how control mechanisms (i.e. input control) can be put to best use, hence induce trust. The context is the respondents' need for the development of relationships in business-to-business trading. Respondents mentioned that they much prefer to deal with the same known suppliers rather than strangers in order to secure optimal service. This has important implications for system design. The need cannot be fulfilled unless the software agent is designed in a way so as to support the specification of preferred and disliked suppliers. This is where input control comes in. This might lead system designers to re-think one of their assumptions about the functioning of electronic marketplaces that each transaction is considered on a one-off basis. Or rephrased, that users of the marketplace are prepared to engage in trading with constantly changing business partners.

The personalisation of the principal-agent interaction is an important issue that keeps coming up in the literature, be it in the context of human or machine agents. This issue also emerged as an important user need from this study. Milewski and Lewis (1997) captured the gist of the argument by saying 'because delegation has been a fundamentally interpersonal activity, people may find it easier to delegate to, and work with, agents that are more, rather than less human like' (p.487). In terms of design implications, they suggested the adoption of a natural language interface and provision of agents with personality characteristics may be the way in the right direction.

Agent observability was another user need that emerged from this study. The link between observability and trust is three-fold. Firstly, observability reduces the users' uncertainty about what happens inside the black box. Secondly, it is of practical value in terms of providing system process as well as benchmarking information. Thirdly, and most importantly, observability reflects the extent to which the agent is willing to go beyond stated commitments. This is the ultimate proof of trust. In terms of design implications, it is vital to find the right balance between providing enough information to satisfy all three stages of the trust building process, whilst not overloading the user with dysfunctional information.

In recognition of the fact that personal trust building between principal and agent is not always possible, or compromised by technological mediation, the value of impersonal trust has been promoted as a substitute. Indeed, the interview data revealed that respondents are in need of either third-party provided information, or the existence of rules and regulations from which they derive trust in the unknown agents. The following tentative suggestions are made for system design. For example, the establishment of a 'chat room' (as one respondent suggested) or bulletin board could facilitate the passing on of interaction experiences made with software agents from experienced to novice users. Alternatively, the introduction of a star rating system for services offered in the marketplace could be a way for customers to indirectly develop trust in unknown providers. Regarding rule-based trust, the accreditation of on-line codes of practice by recognised regulatory bodies could be the way ahead to foster trust in agents.

The above recommendations pointed to the fact that careful design of software agents can enhance the principal's trust in the agent. But for trust to develop and build up, the principal needs to be willing to engage in this interaction in the first place. However, there are circumstances, namely non-routine events, when respondents clearly expressed their reluctance to delegate to an agent. The biggest problem in this regard is to overcome principals' preconceived ideas about agent incompetence. In the absence of any suggestions on how to resolve this problem, it may suffice to say that 'agents are more appropriate for some tasks than for others' hence 'users must have the option of delegating versus self-performing tasks' (Milewski & Lewis, 1997; p.491).

3.4 Methodological Issues

3.4.1 Data collection – Scenario

To briefly reiterate a point made earlier, the rationale for choosing a scenario to address the issue of user requirements of electronic marketplaces was both practically and: theoretically motivated. First, adopting a scenario to resemble that originally developed by the researchers in the organisation served to test out some of their ideas. Second, it was believed that a scenario would facilitate participants' understanding of a software agent mediated supply chain and keep the 'automation component' constantly in their mind. Third, to present participants with a part of the process at hand and asking them specific questions about it was anticipated to give interviewees some guidance and the interview the necessary structure to cover all areas that were of interest. A fourth advantage is the establishment of common ground between researcher and interviewees about the topic under investigation. Overall, it was perceived that this approach was superior to the alternative of adopting a more free-style approach to usability interviewing.

The fact that the scenario depicts something futuristic that participants have not had experience with might have had an impact on the quality of the data. Although participants were given an overview to get acquainted with the concept of fully automated B2B electronic marketplaces before the interview started, it could be argued that some people were better at thinking themselves into what the future world of trading might be like than others. However, this is not so much a problem of the methodology per se but rather the topic under investigation

3.4.2 Data Collection – Questions

It became apparent with hindsight that the number of questions was exceeding what was perceived to be an acceptable limit by some participants. The considerations to devise that many questions in the first place included the following. One, to cover the topic from end-to-end and start to finish. Two, some questions came up repeatedly although they were tagged as customer, supplier, or transport provider questions. This strategy was anticipated to yield richer data from a variety of perspectives. All participants were asked all questions, assuming that a supplier might still have an opinion on a customer tagged question from his experience in dealing with customers (and they were encouraged to say if they had no opinion on the question). The quantity of questions only became a problem when the participant answered every question going to great length up to a maximum interview length of 2.5 hours. As a comparison, most interviews lasted about 1 hour 45 minutes. With some participants getting tired and maybe bored particularly towards the end of the interview, this is likely to have had a negative impact on the quality of the data. On the positive side, two participants mentioned that it was great fun participating in the study, which might counteract the negative effects outlined above.

Alternatively, it could be argued that the large volume of questions asked was not a problem of the study per se, but due to its exploratory nature and the inherent lack of knowledge what areas to focus on. The positive value of this research is that it has highlighted (some) areas of user needs, which could be the basis for further, more focused, investigation.

Some of the questions asked during the interview might be subject to criticism for being leading questions. For example, the question ‘what vetting would you like for suppliers in this marketplace?’ assumes that customers do have a need for entry level vetting of suppliers. According to Pidgeon and Henwood (1996), leading questions are ideally avoided and substituted by more open ones. However, vetting is part of how the organisation (on whose behalf this research was carried out) proposes to set up the marketplace. So it was not ignorance of the present researcher of how to best word questions, but rather to be consistent with the organisation’s scenario and its underlying assumptions. Hence, it can be argued that this is a practical rather than methodological issue.

3.4.3 Data Collection – Participants

The recruitment of participants representing different elements of the supply chain aimed at getting a broader perspective on the issue of user needs of electronic marketplaces. In doing so, however, the quantity of participants in each category (i.e. customer, supplier, transport provider) was compromised. This could be a potential flaw, as differing user needs might not have emerged due to a too small sample size.

Compromises were also made when participants were opportunistically recruited without matching them in terms of experience with Internet-based technologies. For example, it is only to be expected that user needs vary widely between the export sales manager (representing a small customer), who does not use the Internet for procurement purposes, and the e-commerce manager (representing a large supplier) using Internet-based technologies on a daily basis. Hence this study is open to criticism that any differences found in terms of user needs could be artificial, i.e. resulting from the difference in exposure to and associated perception of the automated and electronic way of doing business.

3.4.4 Data coding and analysis – Derivation of Categories

As was pointed out earlier, this study is based on pattern coding (Miles & Huberman, 1994) as an approach to data reduction and analysis. The decision not to use one participant's transcript to derive the initial set of categories (which is then used as a template that is verified or refuted by the remaining data) was believed to have the advantage of reducing researcher bias. It was felt that analysing the data of all seven participants in direct comparison and topic-by-topic would yield more objective set of themes. The counter argument put forward by Miles and Huberman (1994) is that it is 'crucial to have understood the dynamics of each particular case *before* proceeding to cross-case explanations' (p.207). This is to avoid stripping the data from its social and psychological context (Mishler, 1986; as cited in Miles & Huberman, 1994). However, this argument can be – at least partially – rejected on the grounds that the interview followed a structured schedule, i.e. the prompting of participants was the same in each case.

3.4.5 Data Coding – Application of categories

Ideally, the categories derived from the data would have subsequently been applied to it by means of using a second coder (Miles & Huberman, 1994). This is to increase the explanatory power of this study (provided that inter-coder agreement is high). However, time constraints precluded this from happening. Hence, the findings of this study should be treated with care till confirmed or rejected by follow-up research.

3.4.6 Data Coding – Approach to data analysis

Although this study fell short of 'build[ing] comprehensive theoretical systems from purposively sampled sets of relevant cases' (Henwood & Pidgeon, 1995; p.116) due to the limitations outlined above, it is valuable in its own right. Henwood and Pidgeon pointed out that i) developing a basic taxonomy that captures the gist of the data and ii) focusing on a limited number of conceptual aspects which are explored more fully are equally valid reasons for conducting qualitative research. Particularly in light of time constraints as experienced in this project.

3.5 Suggestions for further research

Given certain doubts about the soundness of the presented theoretical argument as a result of these limitations, one suggestion for future research is to take this study as the basis for repeated research cycles. The advantage of this approach is that more research will lead to

more precise coding and ultimately theory refinement as long-term goal (Henwood & Pidgeon, 1995).

4. Conclusion

This study set out to conduct a user needs analysis of a (futuristic) fully automated business-to-business electronic marketplace, as tailored to the freight industry. More specifically, the topic of delegating the whole procurement task to a software agent was explored in light of emerging trust issues. The bottom-up analysis of the interview data yielded a selected number of user needs which include: control as substitute for trust, human intervention in non-routine situations, development of personal relationships, impersonal trust as substitute for personal trust, and system observability. Each of these needs was taken in turn and grounded in the trust literature in an attempt to understand where it is coming from. On the basis of this, recommendations were made for more user-centred software agent design. Potential methodological flaws in data collection, coding and analysis were discussed with a view to assess their impact on the emerged user needs. As 'the appropriate strategy ... for designers of intelligent agents is to understand the potential pitfalls of delegation and to design around them' (Milewski & Lewis, 1997; p.489), this study can be considered as a first step in the right direction.

Acknowledgements

Thanks to the following people for their support during this study. Jeroen Bijsmans, Barry Brown, Janet Bruten, Rachel Murphy, and Abi Sellen for feedback at all stages of this project. Erik Geelhoed for taking much time to bounce off ideas and share his expertise. Claudio Bartolini, Abdel Boulmakoul, Michal Morciniec, and Giacomo Piccinelli for providing the basis for this research by developing the scenario. Ian Dickinson for a thought provoking discussion on agents and agent technology. Stephen Payne for his comments from an academic perspective and feedback on an early version of this report. All participants, whom want to remain anonymous, for their co-operation.

References

- Ariba (2000). *B2B Marketplaces in the New Economy*. [No further reference details available].
- Axley, S.R. (1992). Delegate: why we should, why we don't and how we can. *Industrial Management*, 16-19.
- Blois, K.J. (1999). Trust in business-to-business relationships: an evaluation of its status. *Journal of Management Studies*, 36 (2), 197-212.
- Booth, P. (1989). *An Introduction to Human-Computer Interaction*. Lawrence Erlbaum: Hove.

- Carroll, J.M. (1997). Human-computer interaction: psychology as a science of design. *International Journal of Human-Computer Studies*, 46, 501-522.
- Charmaz, K. (1995). Grounded theory. In J.A. Smith, R. Harré, & L. Van Langenhove (Eds.), *Rethinking Methods in Psychology* (pp.27-49). Sage Publications: London.
- Dickinson, I. (1998). Human-agent communication. *Technical Report, HPL-98-130*.
- Durante, A., Bell, D., Goldstein, L., Gustafson, J., & Kuno, H. (2000). A model for the E-service marketplace. *Technical Report, HPL-2000-17*.
- eCommerce Innovation Centre (2000). What is Electronic Commerce? Available online at <http://www.cf.ac.uk/uwcc/masts/ecic/ecicr1.html> [Accessed 01/02/2000].
- eFreightStation. Available online at <http://www.efreightstation.com> [Accessed 18/07/2000].
- eLogistics. Available online at <http://www.elogisticsglobal.com> [Accessed 18/07/2000].
- FreightWise. Available online at <http://www.freightwise.com> [Accessed 18/07/2000].
- Guttman, R.H., Moukas, A.G., & Maes, P. (1998). Agent-mediated electronic commerce: a survey. Available online at <http://ecommerce.media.mit.edu/papers/ker.98.pdf> [Accessed 1 May, 2000].
- Henwood, K., & Pidgeon, M. (1995). Grounded theory and psychological research. *The Psychologist, March*, 115-118.
- Jenks, J.M., & Kelly, J.M. (1985). *Don't Do, Delegate!* Franklin Watts: New York.
- Kramer, R.M. (1999). Trust and distrust in organisations: emerging perspectives, enduring questions. *Annual Review of Psychology*, 50, 569-598.
- Lee, J., & Moray, N. (1992). Trust, control strategies, and allocation of function in human-machine systems. *Ergonomics*, 35 (10), 1243-1270.
- Miles, M.B., & Huberman, A.M. (1994). *Qualitative Data Analysis (2nd Ed.)* Sage: London.
- Milewski, A.E., & Lewis, S.H. (1997). Delegation to software agents. *International Journal of Human-Computer Studies*, 46, 485-500.
- Muir, B.M. (1987). Trust between humans and machines, and the design of decision aids. *International Journal of Man-Machine Studies*, 27, 527-539.
- Nielsen, J. (1993). *Usability Engineering*. Academic Press: London.
- Norman, D.A. (1990). The 'problem' with automation: inappropriate feedback and interaction, not 'over-automation'. In D. Broadbent, J. Reason and A. Baddeley (Eds.), *Human Factors in Hazardous Situations* (pp.137-145). Clarendon Press.

- Oates, D. (1993). *Leadership: The Art of Delegation*. Century Business: London.
- Rousseau, D.M., Sitkin, S.B., Burt, R.S., & Camerer, C. (1998). Introduction to special topic forum – Not so different after all: a cross-discipline view of trust. *Academy of Management Review*, 23 (3), 393-404.
- Pidgeon, N., & Henwood, K. (1996). Grounded theory: practical implementation. In J.T. Richardson (Ed.), *Handbook of Qualitative Research Methods for Psychology and the Social Sciences* (pp.86-101). BPS Books: Leicester.
- PIU Report 1 (2000). E-commerce@its.best.uk. Available online at <http://www.cabinet-office.gov.uk/e-envoy/2000/strategy/piureport/01.htm> [Accessed 14/02/2000].
- PIU Report 3 (2000). E-commerce@its.best.uk. Available online at <http://www.cabinet-office.gov.uk/e-envoy/2000/strategy/piureport/03.htm> [Accessed 14/02/2000].
- PIU Report 10 (2000). E-commerce@its.best.uk. Available online at: <http://www.cabinet-office.gov.uk/e-envoy/2000/strategy/piureport/10.htm> [Accessed 14/02/2000].
- Sculley, A.B., & Woods, W.W. (1999). *B2B Exchanges: The Killer Application in the Business-to-Business Internet Revolution*. ISI Publications: US.
- Shapiro, S.P. (1987). The social control of impersonal trust. *American Journal of Sociology*, 93 (3), 623-658.
- Shaw, M.J. (2000). Electronic commerce: state of the art. In M. Shaw, R. Blanning, T. Strader & A. Whinston (Eds.), *International Handbooks on Information Systems: Handbook on Electronic Commerce* (pp. 3-24). Springer: Berlin.
- Skinner, S. (1999). Business-to-business e-commerce: Investment perspective. Durlacher Research. Available online at <http://www.networking.ibm.com/iag/wp1.html> [Accessed 25/05/2000].
- Smith, J.A., Osborn, M., & Jarman, M. (1997). Doing interpretative phenomenological analysis. In M. Murray and K. Chamberlain (Eds.), *Qualitative Health Psychology: Theories and Methods*. Sage: London.
- Sorensen, H. (Ed.) (1997). New logistics and production systems in relation to the working cultures and organisational / managerial structures. *WORKFRET Project (DG VII / ST-96-AM-1012): Working Cultures in the Face of Intermodal Freight Transport Systems*. European Commission Transport Programme.
- Talbot, S. (Ed.) (1997). Definition of the various working cultures and organisational / managerial structures in the European freight transport system. *WORKFRET Project (DG VII / ST-96-AM-1012): Working Cultures in the Face of Intermodal Freight Transport Systems*. European Commission Transport Programme.
- The National Transportation Exchange. Available online at <http://www.nte.net> [Accessed 18/07/2000].

Weller, T.C. (2000). *B2B eCommerce: The Rise of eMarketplaces*. Equity Research.

Woods, P. (1999). *Successful writing for qualitative researchers*. Routledge: London.

Young, M. S., & Stanton, N. A. (1999). The interview as usability tool. In A.Memon and R.Bull (Eds.), *Handbook of the Psychology of Interviewing* (pp.227-238). Wiley: London.

Appendix 1

Standardised run-through the scenario

INTRODUCTION

Vision

We have the vision in the Labs that future business-to-business trading can benefit from the use of electronic marketplaces. The added value of electronic marketplaces being that everything from identifying business partners, negotiating the contract to payment and monitoring of contract fulfilment can be automated. We believe that the freight industry could benefit from such technology. Our vision is that as much as possible of this business will be automated.

Study

What I will present to you in a moment is a scenario (tailored to freight transport) depicting the process underlying the electronic way of doing business. I will talk you through this scenario, step-by-step, and then ask you specific questions relating to each step. Some of the questions are tagged (i.e. customer, supplier, transport provider), according to whom we think is in the best position to answer them. However, I will ask you all questions, as you might have an opinion on them anyway. If they do not apply to you, just say so.

ETHICS: I would like to stress that the data gathered will be treated with confidentiality. You can withdraw your consent to participate at any time of the study.

Have you got any questions before we start?

I have a few questions up front which serve as background information:

1. To what extent do you use the Internet for carrying out your job?
2. What exactly do you use the Internet for?
3. Have you ever come across the notion of e-marketplaces?
 - (If yes) What do you know about e-marketplaces?
 - (If yes) Have you ever used an e-marketplace?
 - (If so) How many times?
 - (If so) Which one(s)?
 - (If no) What do you imagine e-marketplaces to be like?
4. Have you ever engaged in an electronic transaction?
 - (If yes) How many times?
 - (If yes) What was the nature of this transaction?
 - (If yes) What was the scale of this transaction?
 - (If no) Are there any particular reasons for not engaging in electronic transactions?

SCENARIO

Slide 1

This first slide is an overview of how we envisage the electronic supply chain operating in the freight transport context.

- Imagine there is a corporate customer, John Donovan from Organisation X, who wants to send some goods from A to B. First of all, he fills in an electronic freight request form [this icon standing for an automatic process]. This request then goes into an electronic marketplace for freight companies to respond to. In theory, this is the only time there is human interaction with the system.
- There may be many types of freight suppliers. This scenario focuses on a disaggregated freight company who subcontracts all their services.
- The disaggregated freight company operates by its know how of the different transport markets and the providers within them. Based on this knowledge, it sends out transport requests to the most suitable marketplaces (i.e. plane, rail, haulage, or shipping companies). Or rather, the automatic system acting on behalf of the disaggregated freight company does so.
- The transport providers within the targeted marketplaces will then respond to the requests. Again, this is done via automatic systems acting on behalf of the transport providers.
- The automatic system of the disaggregated freight company (supplier) collects the offers, possibly does some negotiation and ultimately chooses the one it has calculated is the best match with John Donovan's requirements.
- This choice is communicated back to John Donovan, or more precisely the automatic system representing him. If the offer is accepted, the automatic systems involved will sort out the signing of the various contracts (i.e. between customer & supplier and supplier & transport providers).
- It is important to note that the smooth functioning of all marketplaces and their interaction is overlooked by a governance function. This governance function monitors the negotiations taking place and reinforces contract fulfilment. To this end, all transactions and contracts are being lodged by this function.

[Question]

Now where you have got an overview of what I will be talking about, let us take a step back and look at each part of the process in isolation

Slide 2

The trading process is initiated by the customer stating his freight request. In this example, John Donovan tells the system the pick up and delivery address, description of the goods to be transported and any additional requirements he has.

[Questions]

Slide 3

Once the customer has completed his electronic freight request, it is posted to the electronic freight market, which is monitored by a governance function. The receivers are freight

suppliers of various kinds. One of the receivers is the automatic monitoring system of a disaggregated freight company.

[Questions]

Slide 4*

Given the nature of the disaggregated freight company, it has to subcontract all legs of the transport. In order to do so, the first step is to screen all possible routes in terms of their economic viability bearing the customer's requests in mind. This is done by an automatic system on behalf of the freight company and it is based on the history, and forecast, of routes; price; availability of space etc.

Slide 5*

This viability assessment involves the automatic system working across multiple transport marketplaces simultaneously. That is, transport requests are being sent to various marketplaces in parallel with the purpose of eliciting updated quotes on the different legs of the distinct options. In other words, the automatic system of the disaggregated freight company is involved in multiple potential deals and negotiations before committing to one route only.

[Questions 4]

[Questions 5]

Slide 6**

The responses of the transport companies to the received requests (from the disaggregated freight company) are also transmitted via automatic systems. All responses are collected by the automatic system representing the disaggregated freight company.

Slide 7**

This system then determines the most viable route from these offers. The best route being the one which most closely matches the customer's requirements.

[Questions 6]

Slide 8

Now that the disaggregated freight company has found its subcontractors, it responds to the initial request with its offer, and so will the other freight companies. All of these automatic responses are collected by the automatic system representing the customer, John Donovan. Let us assume this system decides that the best available offer is that of the disaggregated freight company as it most closely matches the customer request.

[Questions]

Slide 9

Once this decision has been made, the next step is signing the contract(s). Contract signing is done electronically, and there are 3 parties involved. The customer signs a contract with the disaggregated freight company, which signs individual contracts with the transport providers. More precisely, this is done by the automatic systems acting on behalf of them. The order of

contract signing could be either way. All of the contracts are electronically lodged by the governance function.

[Questions]

Slide 10

Not only does the governance function automatically lodge the contracts, it also monitors their fulfilment . Say the transport provider of the first leg has fulfilled his part of the contract. This information is then automatically communicated to the governance function.

[Questions]

Slide 11

Assume there is a problem with the second leg of the route. For example, the transport provider pulled out in the last minute. In this case, the automatic system acting on behalf of the supplier communicates to the system of the governance function that there has been a breach of contract. In order to guarantee the connection to the third leg, an alternative transport provider has to be found. This is being dealt with by the automatic system acting on behalf of the supplier. The resulting redress issues are being handled by the automated governance function.

[Questions]

Slide 12

Payment for the transport of the goods is done electronically. The automatic system representing the customer, John Donovan, pays the supplier (the disaggregated freight company), and the supplier pays the individual transport providers according to the conditions agreed on in the contract. The surveillance of payment lies with the automated governance function.

[Questions]

Slide 13

To wrap-up, there are some more general questions, which I would like to ask you having gone through the scenario.

[Questions]

DEBRIEFING

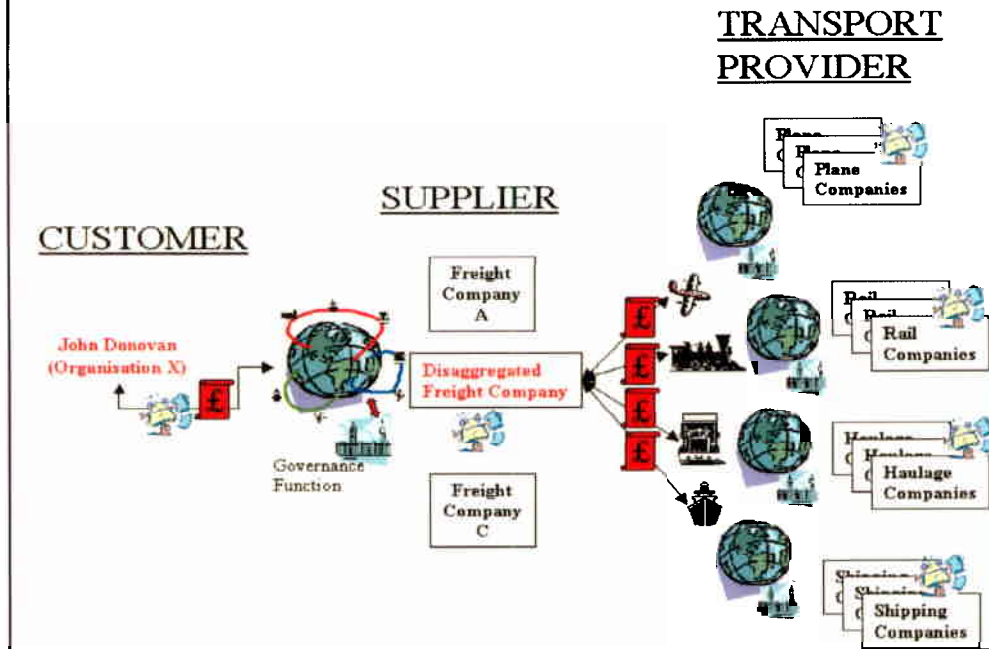
Basically, the technology is available to fully automate business trading as outlined in this scenario. But technology is only one side - whether humans are actually willing to accept it is another. One important issue in this respect is the extent to which people trust the systems they are interacting with. Or why they distrust them. And this is where my study comes in. Given my background in psychology, I am particularly keen on the issue of user needs when interacting with technology. For example, what kind of information (i.e. content) do users require in order to trust the process driving electronic marketplaces; what are the issues which people would be reluctant to delegate to an automatic system etc.

THANK YOU FOR YOUR PARTICIPATION IN THIS STUDY!

Appendix 2

Research scenario and accompanying questions

Scenario Overview



Questions

1. Where do you think your organisation might fit into this scenario?

Customer Request

FROM: John Donovan (Organisation X)
Stoke Gifford
BRISTOL, (UK)
BS34 8QZ

TO: Max Kost (Organisation X)
395 Page Mill Road
Palo Alto, CA
USA

Description of the goods:

- 20 cardboard boxes (0.6 x 0.6 x 0.8 m)
- approximate weight per box 20 kg
- fragile content
- not perishable goods

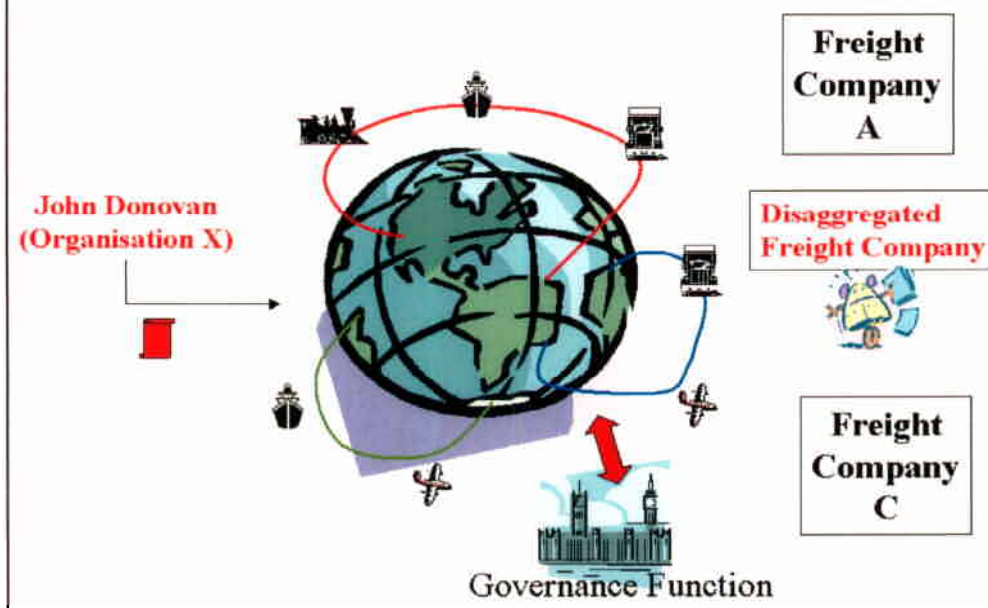
Additional requirements:

- within maximum 10 days (non-negotiable)
- with notification of receipt (non negotiable)
- payment in arrears on receipt of invoice (non negotiable)
- pricing model based on speed of delivery (negotiable)

Questions

1. (CUSTOMER) What extra information would you want to put in an electronic freight request?
2. (SUPPLIER) What (extra) information would you need to gather from the customer electronically?
3. Would you, or your organisation, have any issues about sending or receiving this sort of information online?

Freight Marketplace

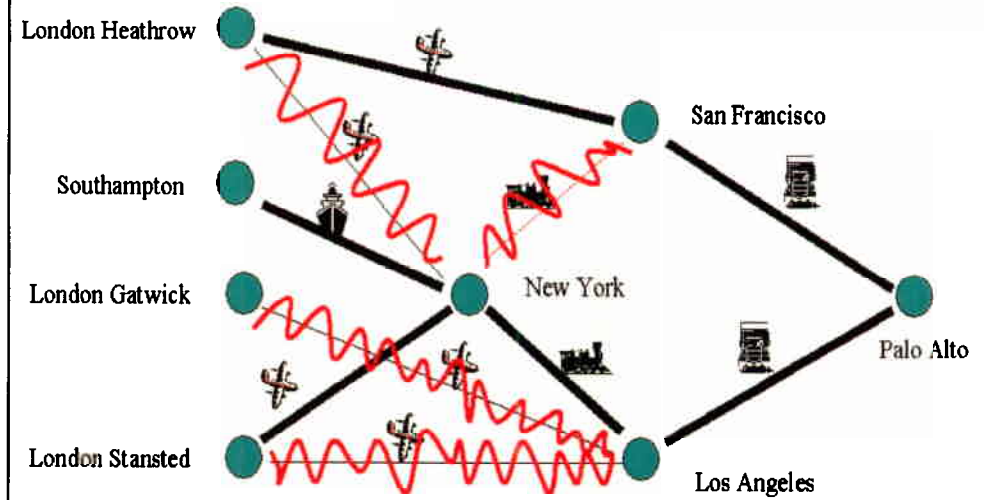


Questions

1. (CUSTOMER) How would you, or your organisation, feel about placing your orders in an electronic marketplace?
2. (SUPPLIER) How would you, or your organisation, feel about receiving your orders from an electronic marketplace?
3. (CUSTOMER) Would you require confirmation that your requests have been received by the marketplace?
4. (CUSTOMER) Would you like the ability to only send your request to particular suppliers?
5. (SUPPLIER) Would you like NOT to be able to receive requests from certain customers?
6. What sort of vetting would you like for suppliers in this marketplace?
7. What sort of vetting would you like for customers of this marketplace?
8. (CUSTOMER) What sort of information would you like about suppliers in this marketplace?
9. What sort of governance/rules and regulations would you like for this marketplace?

Route Screening

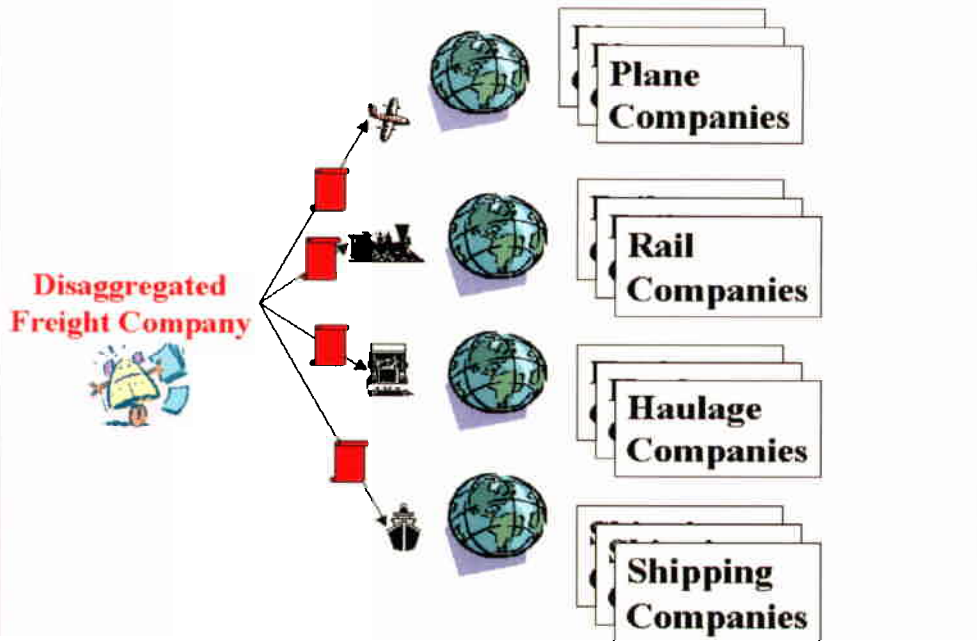
Disaggregated
Freight Company



Questions

1. Would you like to be able to specify, or block, certain routes or transport types at this stage?
2. (SUPPLIER) Would you like third-party provided information on possible routes in helping to determine the best possible route?
3. Would you trust an automatic system to successfully negotiate one route from multiple possibilities?
4. How would you, or your organisation, feel about this route screening being done automatically?

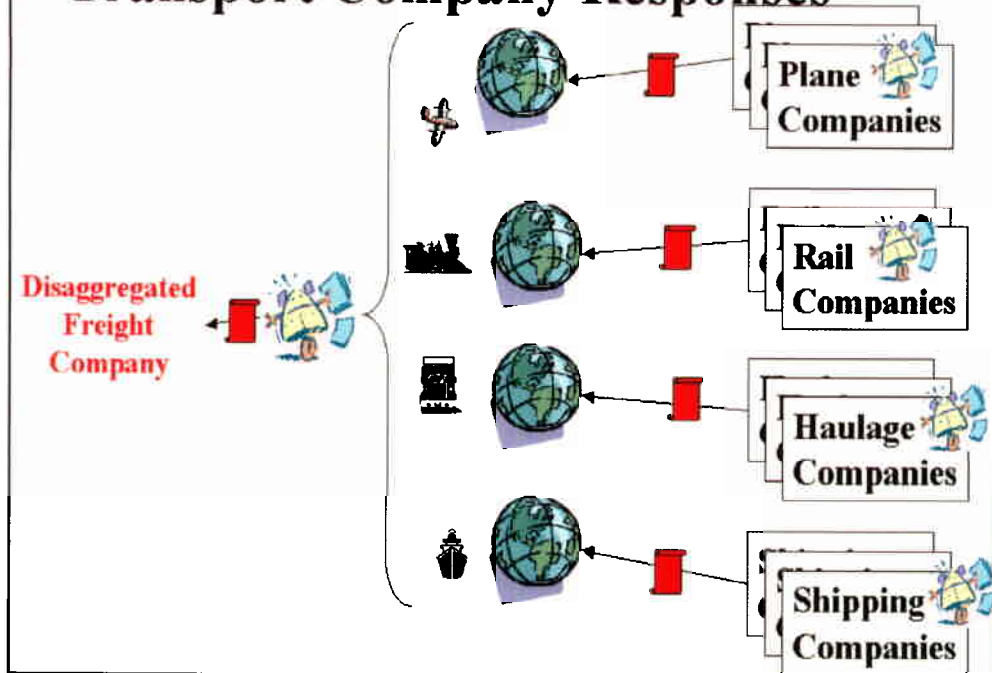
Transport Marketplace Selection



Questions

1. Would you like to be able to specify and/or block certain transport providers at this stage?
2. (SUPPLIER) How would you, or your organisation, feel about placing your orders in an electronic marketplace?
3. (TRANSPORT PROVIDER) How would you, or your organisation, feel about receiving your orders from an electronic marketplace?
4. (SUPPLIER) Would you require confirmation that your requests have been received by the marketplace?
5. (CUSTOMER/SUPPLIER) Would you like the ability to only send your request to particular suppliers?
6. (TRANSPORT PROVIDER) Would you like NOT to be able to receive requests from certain customers?
7. What sort of vetting would you like for transport providers in this marketplace?
8. What sort of vetting would you like for suppliers of this marketplace?
9. (SUPPLIER) What sort of information would you like about transport providers in these marketplaces?
10. What sort of governance/rule and regulations would you like for these marketplaces?
11. How would you, or your organisation, feel about particular transport markets being chosen automatically?

Transport Company Responses

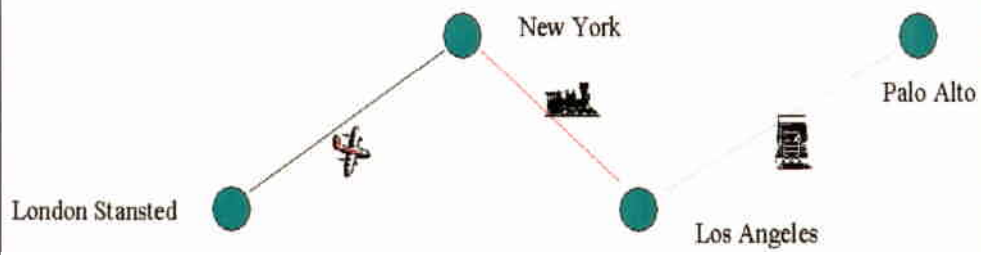


Questions

1. (SUPPLIER) What would you like the system to do if it doesn't come up with a satisfactory solution?
2. (CUSTOMER/SUPPLIER) How would you feel about the choice being made on your behalf?
3. If required would you be prepared for the system to negotiate on your behalf?
4. (TRANSPORT PROVIDERS) How would you feel about an automatic system acting on your behalf?
5. (TRANSPORT PROVIDERS) Would you require confirmation that your responses have been received by the supplier?

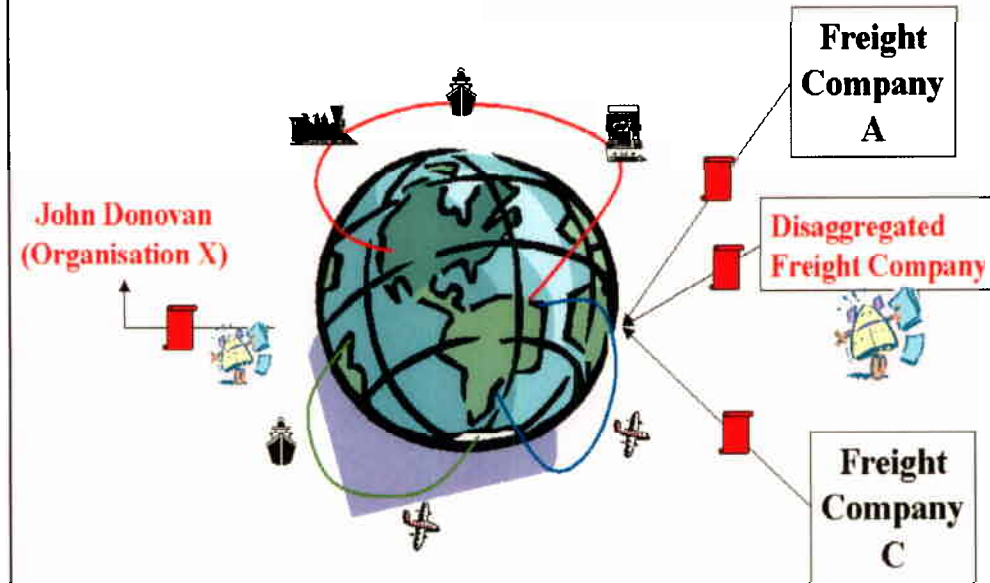
Chosen Route

Disaggregated
Freight Company



NO QUESTIONS!

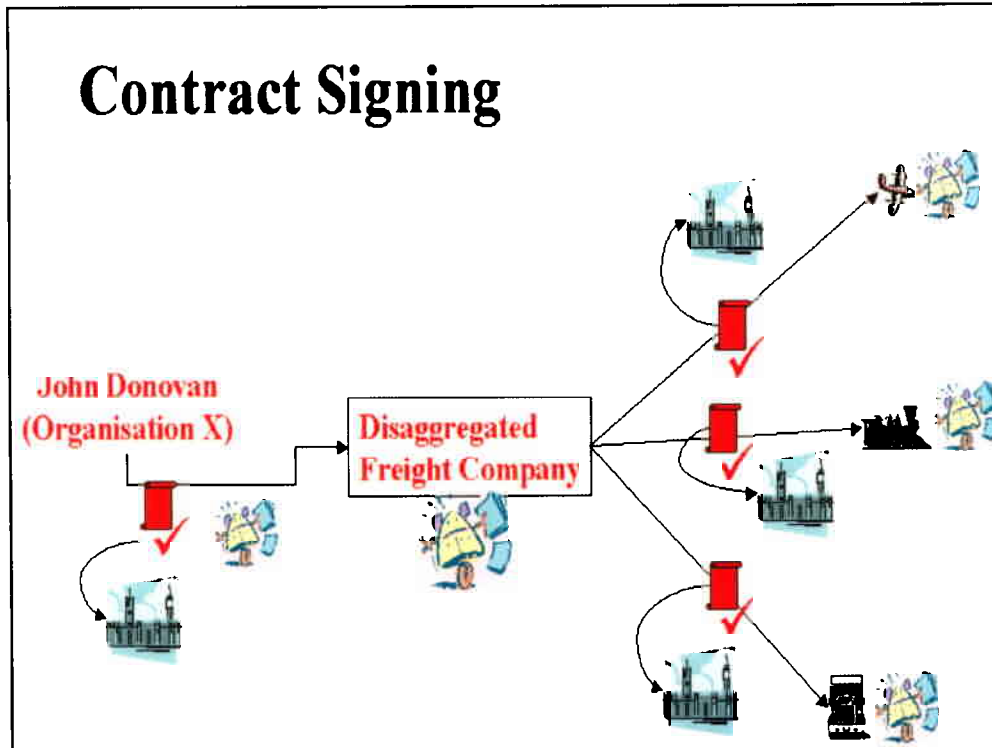
Freight Company Responses



Questions

1. (CUSTOMER) What would you like the system to do if it doesn't come up with a satisfactory solution?
2. (CUSTOMER) How would you feel about the choice being made on your behalf?
3. If required would you be prepared for the system to negotiate on your behalf?
4. (SUPPLIER) Would you require confirmation that your responses have been received by the customer?

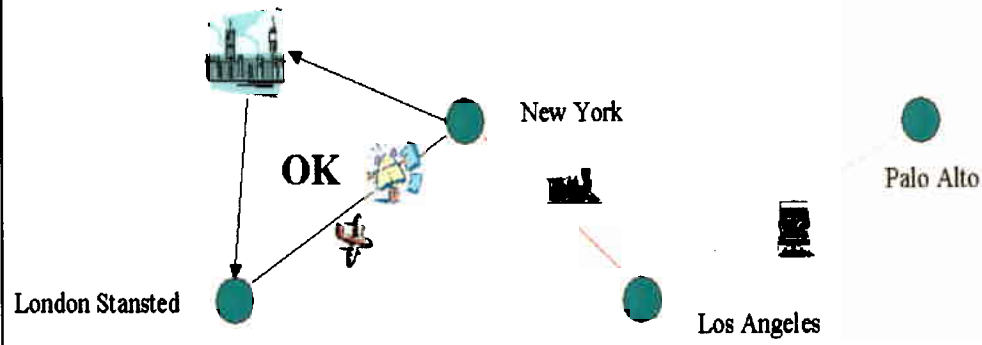
Contract Signing



Questions

1. How would you feel about the possibility of the contract, or contracts, being awarded to firms you have never dealt with before?
2. (CUSTOMER) Would you prefer to have one contract with the freight company or multiple contracts with the transport providers?
3. Would you have any concerns about the fact that multiple contracts are involved?
4. How would you feel about standardised contracts being used and extra requirements being negotiated by the automatic systems representing customer, supplier, and transport provider?
5. Would you, or your organisation, have any concerns about electronic contract signing?
6. How do you feel about the contracts being electronically lodged (and monitored) by the governance function?

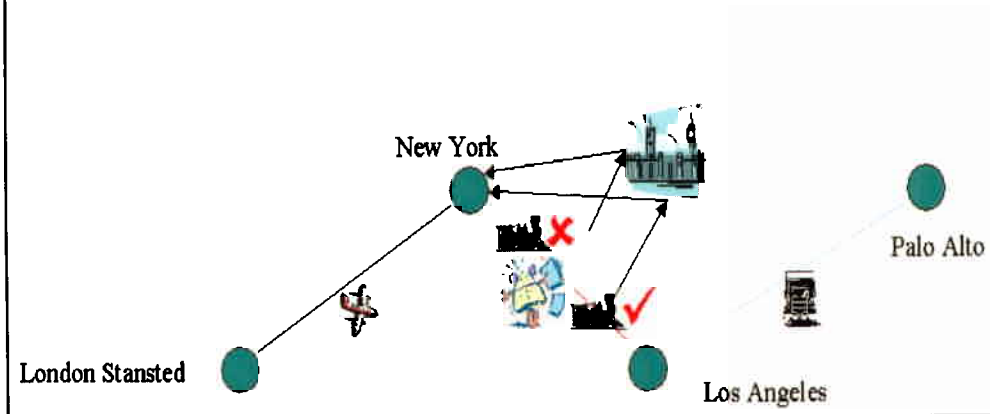
Monitoring of Contract Fulfillment



Questions

1. Would you like to be able to track a shipment en route?
2. Would you like to receive notification once a leg has been successfully completed?
3. Would you be happy for the governance function to mediate messages between you and your supplier/transport provider?
4. What technology/processes/methods are you aware of by which notification could be done more automatically?

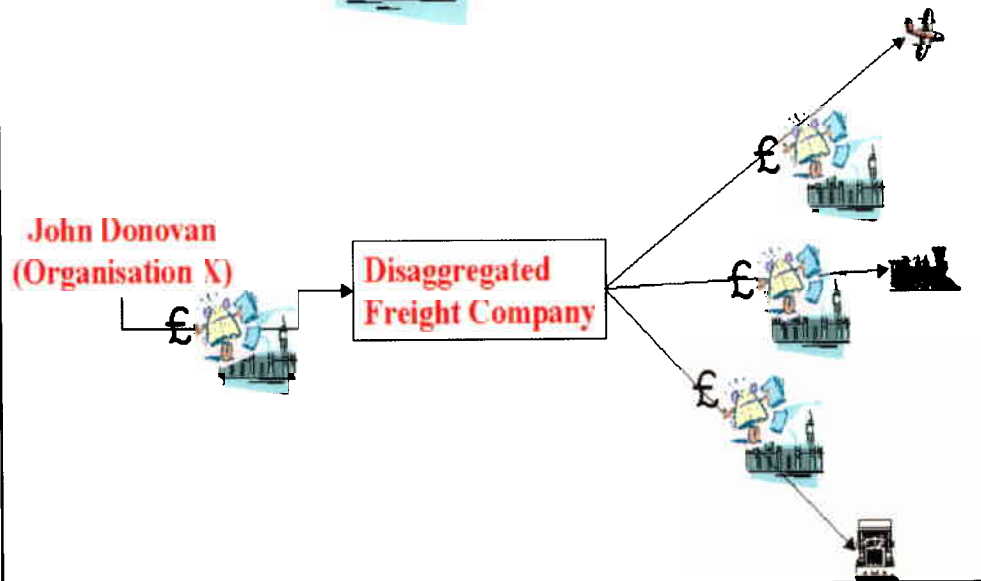
Problem Resolution



Questions

1. What would you like the automated system to do when a problem arises?
2. How do you feel about the automated system resolving problems without referring back to you?
3. How would you feel about the governance function sorting out redress issues (e.g. compensation) on your behalf?
4. What sort of information do you think the governance function will require in order to make its decisions?
5. What sort of information would you like to receive about dispute decisions?

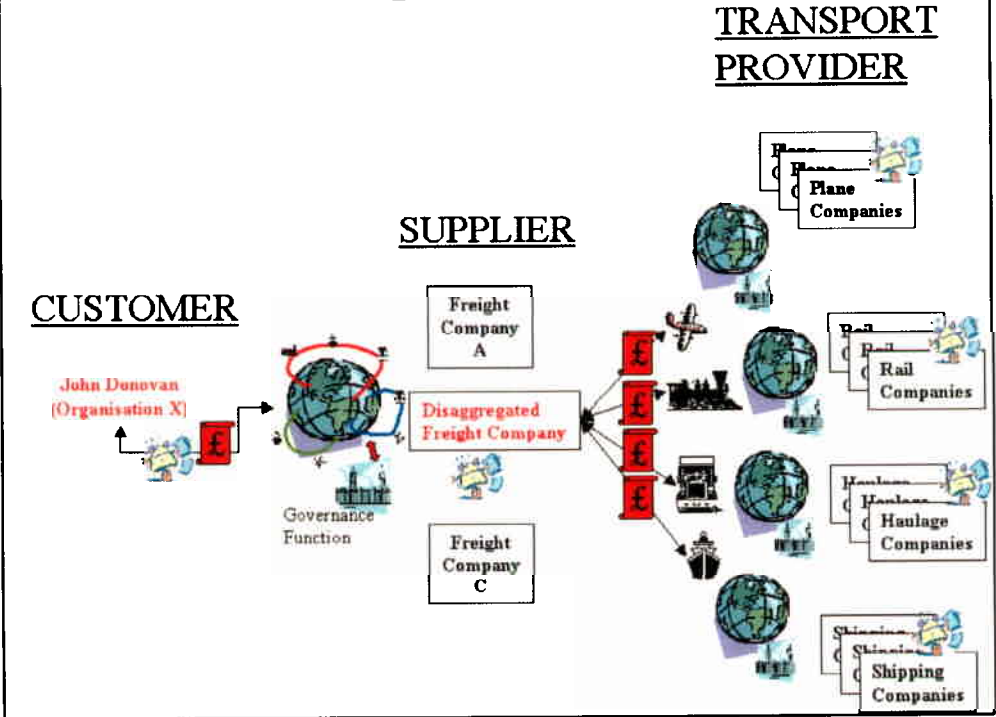
Payment



Questions

1. At what stage in the process would you expect to be billed for the transport of the goods (i.e. after fulfilment of each leg, after end-to-end delivery)?
2. How would you feel about the governance function mediating payment?
3. How would you feel about the system making payments on your behalf?
4. Do you, or your organisation, have any concerns about electronic payment?

Scenario Wrap-up



Questions

1. How would you feel about automatic systems negotiating or interacting with other automatic systems?
2. How would you feel about being monitored by a governance function?
3. Would you prefer the governance function to be part of the marketplace or some form of separate entity?
4. In order to be effective how long would this process need to take?
5. How would this scenario make your, or your organisations job easier?
6. How would this scenario make your, or your organisations job harder?
7. How realistic do you think this scenario is?
8. In your opinion, in what time scale could you see this scenario happening?
9. Are there any particular areas outlined in the scenario which you feel represent barriers to automation? If so, why?
10. Have you got any issues which you would like to bring up which were not covered elsewhere?