An Analysis of the Excess Electronic Components Market

Julie Parker, Chris Turgoose
Personal Systems Laboratory
HP Laboratories Bristol
HPL-1999-31
February, 1999

agent technology,
e-commerce,
electronic trading,
excess electronic components,
market,
negotiation

We report an investigation of the excess electronic components market, undertaken to assess its potential for the application of agent technology. Our analysis is based upon interviews with traders in this market. We describe the market's characteristics and explore the risks they create for traders. We then discuss the main strategies traders adopt to minimise these risks, and the effects of these strategies on their pricing, negotiation and trading behaviours.

A companion report HPL-1999-32 (HP Restricted) analyses the possibilities for agent technology in this market.

An Analysis of the Excess Electronic Components Market

Executive Summary

The excess electronic components market is complex. There is no authority which governs or regulates the market. It is characterised by secrecy, which obstructs the free flow of information. Some participants in the market benefit from this; it is at the expense of others.

Together these features create a market in which there are numerous risks associated with trading. Some of these risks can be contained by the high degree of competition faced by market participants, but only when they develop and employ risk reduction strategies. Handling trades through direct personal contact and developing relationships with parties who become regular and trusted trading partners are the main strategies used by traders to reduce these risks.

1 Introduction

1.1 The study's objectives and methodology

This report summarises the findings of a study in which we interviewed representatives from different organisations who all actively participate in the excess electronic components market. We describe the market and its participants, the participants' reasons for participating in excesses trading, their negotiation and pricing behaviours, and we explore the future of this market.

The study was carried out in order to:

- develop an understanding of an existing market;
- examine the ways in which its increasing use of e-commerce has and is changing its operation and characteristics;
- explore its potential as a domain suitable for the application of agent technology.

Potential applications of agent technology are explored in a companion report. [Note 1.]

This study took part as the result of an agreement between Hewlett-Packard's European Research Laboratory in Bristol and FastParts Inc. FastParts (http://www.FastParts.com/) is a Chicago-based organisation which provides a web-based service in which its members with component surpluses can anonymously and directly trade their surplus with members who have shortages. Please see the Appendix for more detail about FastParts. Those interviewed were FastParts' members who had volunteered to participate. One to four representatives at each organisation were interviewed for a total of between one and two and a half hours from July to September 1998.

For further detail about the study's methodology, please refer to the Appendix.

Note 1.

Preist C and Parker J 'Possibilities for Software Agents in the Excess Electronic Components Market' HPL-1999-32.

This report is classified as 'HP Restricted' and is not available to readers outside Hewlett Packard Co.

The sample consisted of:

- four original equipment manufacturers (OEMs);
- two contract manufacturers and contract assemblers;
- two franchised distributors;
- five brokers/ independent distributors.

The rôles of these organisations are described in section 2.2 below. Please also see the Glossary at the end of the report for definitions.

In this report, for convenience, when we refer to OEMs and contract manufacturers and assemblers without distinguishing between them we used the term *producers*. Brokers and independent distributors we collectively refer to as *intermediaries.* We also generally refer to the excess electronic components market simply as 'the market'.

Whilst the findings from this study are based upon the participation of a small number of organisations, each of them is an active participant in the market, and their views have provided valuable insight into how it operates.

1.2 Structure of this report

In section 2 which immediately follows, we introduce the excess electronic components market. We describe what the market is and why it exists. We then describe its main participants, and review their reasons for trading in it.

In section 3, we look in more detail at the characteristics of the market which are responsible for shaping the behaviours of those who trade in it.

In section 4, we take a detailed look at the activities of traders in the market and the effects of the market characteristics on those activities. We describe the factors that influence the ways in which market participants negotiate and agree trades, and some specific approaches towards profit making.

In Section 5, we look at the interviewees' beliefs about the future excess market, and their thoughts about the potential applications of software agent technology within the market.

2 An introduction to the excess electronic components market

In this section of the report we explain what the market is, and identify the main participants in it.

2.1 What is the excess electronic components market?

There are two markets in which electronic components are bought and sold:

- the primary market in which producers purchase components for their normal production needs through contracts with manufacturers or franchised distributors;
- the excess market (also known as the secondary or grey market) in which surplus components **-** those owned but no longer required by producers **-** are bought and sold through intermediaries.

A simple way of describing the difference between the two markets is as follows. Goods sold on the primary market have never been owned by anyone other than their manufacturer or the franchised distributor whom the manufacturer has agreed to supply for the purposes of sale to producers. Goods sold on the secondary, or excess market, have already been through the process of sale to producers, and are being resold by them because they are surplus to their requirements. Suppliers in the primary market do not, as a general rule, buy back surpluses; and so the excess market developed to mediate between those with surpluses and shortages. To be sold in this market, components are required to be unused and still in their original manufacturer's packaging. (This requirement is not always met: unscrupulous parties do tamper with secondary market goods in a variety of ways, in order to make them more saleable and/or manipulate their realisable price.)

Although the two markets are nominally separate and independent, in reality there is some blurring of the boundaries between them. For example, producers sometimes buy from the excess market to meet their normal production needs.

2.2 Who participates in the excess market and why?

The organisations which trade in this market are:

- OEMs;
- contract manufacturers and assemblers;
- franchised distributors;
- brokers and independent distributors.

2.2.1 OEMs and contract manufacturers and assemblers

OEMs manufacture, assemble and sell end products such as computers and their networking and peripheral products, cellular phones, leisure products (e.g. radios, televisions, CD players), other commercial and household products (photocopies, fax machines, washing machines) and countless other devices and machines which use electronic components.

Contract manufacturers and assemblers are contracted by OEMs to manufacture or assemble their products on their behalf.

OEMs and contract manufacturers and assemblers use the market both to sell surplus goods, and to resolve shortages when primary market sources have failed. They vary in size from small set-up companies to large multinational organisations.

2.2.2 Brokers and independent distributors

Brokers and independent distributors act as intermediaries between buyers and sellers (both producers and other intermediaries). They buy surplus from and re-sell it to producers and franchised distributors. They also buy from and sell to each other.

Brokers buy components only if they have already confirmed their immediate resale to a buyer. Independent distributors also buy goods for stocking in inventories, and sell them on to buyers at a time unrelated to that of their purchase.

Intermediaries vary in size from single person operations to large companies. There are thousands of intermediaries operating in the market.

In the primary market, franchised distributors are franchised by manufacturers to supply agreed components to producers. Many franchised distributors, particularly the medium and smaller ones, also operate as brokers and independent distributors in the market. (Unless stated otherwise, observations about intermediaries also apply to them.)

2.2.3 Other participants

In addition, there are a growing number of companies which provide information and support services to those who trade in the market. Some services are paper-based; others are Internet-based. Internet-based services include web sites which:

- provide market information;
- put buyers and sellers in touch with each other; and
- provide on-line ‘trading floors’.

Organisations which provide information about the market either offer their services free or charge a subscription fee. Electronic Buyers’ News is a free paper-based traders’ newspaper with general news about electronics industries and advertisements. The Electronic Resellers’ Association (ERA) is an Internet-based subscription service which provides information to its subscribers, including warnings about traders who have defaulted on their deals or who have otherwise behaved unethically.

Broker Forum (http://www.brokerforum.com/) is one example of a web-site for brokers and independent distributors only. In addition to enabling buyers and sellers to post their requirements, this and similar web sites act as sources of market intelligence: intermediaries can make inferences about the supply of and demand for particular components by perusing the buy and sell postings.

FastParts is an example of an organisation which offers a ‘trading floor’ for organisations to buy and sell components. Organisations post buy and sell offers anonymously on the FastParts ‘Trading Exchange’ and negotiate until they reach agreement. FastParts vets the participants, charges a commission and handles the administration of the trades in order to preserve participant anonymity.

The rise of Internet-based services is changing the market. In particular, it has prompted a growth in the number of intermediaries, who need little more than a base and Internet access capabilities to trade on a global basis. There can be little doubt that more dramatic changes lie ahead as the Internet continues to make its presence felt.

2.3 Why do producers sell their surplus in the excess market?

Producers have surplus for a variety of reasons, some of the most common of which include:

- Differences between forecast and actual production schedules;
- late cancellation of current product lines;
- end of production lines;
- errors in purchasing or inventory calculation systems.

While there are always exceptions, in general, it seems to be the case that:

- producers have not resourced the job of disposing of surplus, nor valued the returns made from selling surplus;
- producers do not deal with their surplus as it arises, but only when forced to do so.

Producers have not given priority to recouping money spent on goods that become surplus. It is not really clear why this is the case; speculatively, perhaps it is because the money, having already been spent and accounted for, is ‘old history’. However, generally, it seems that those who are given the job of dealing with surplus are given it as a secondary task, and are given scant recognition for doing the job at all, let alone well. Because buyers are informed about sourcing components, they are often given this job.

Producers generally deal with surplus when forced to do so, often because either:

- they are approaching the end of a financial quarter or year;
- the surplus is occupying space in the warehouse that is needed for useful components.

The consequences of the failure to deal with surplus as it arises can contribute to reducing the options that a producer has for disposing of it. As components age, they can become less saleable.

In combination, these factors – not valuing the returns from selling surplus and not dealing with surplus as it arises – contribute to leaving producers the options only of selling to intermediaries or of scrapping when they do get around to it.

To dispose of components that are no longer required for the purpose for which they were purchased, a producer has several options. These are as follows:

- check whether the components might have an alternative use within the company; if not:
- contact the original supplier to see whether the supplier will purchase back the goods; if not:
- declare the goods as surplus and either scrap them or sell them on the excess electronic components market.

Surplus is generally a problem of OEMs, whether or not they contract out the manufacture or assembly of their products. OEMs either provide the components to contract manufacturers and assemblers, or instruct them about the components to buy. Goods therefore remain the responsibility of the OEM, and there are three possibilities for surplus:

- the contract manufacturer/assembler may be able to agree a transfer of the goods between their OEM customers; if not:
- the goods are sold on the market on behalf of the OEM;
- the goods are returned to the OEM.

The exception to this general case is if the surplus has arisen as the result of an error made by the contract manufacturer or assembler. If the responsibility is the OEM's, then the transfer option represents a better outcome than the excess market for both OEMs, as the seller will realise more of the outlay back, and the purchaser will pay a reasonable amount for the acquired goods. When contract manufacturers or assemblers are responsible for the surplus or shortage, they trade in the market.

When OEMs manufacture their own products, it may sometimes be possible to find an alternative use for the components on a different production line. If not, then suppliers will sometimes take back the components. This seems to happen only for large and important customers, and even then only if:

- the components are still reasonably new (less than a year old); and
- the components are in pristine condition; and
- the supplier has a ready customer for them.

Suppliers might also 'do a favour' for very good customers by giving them back the full amount originally paid; but it is more common for a charge, of up to 30%, to be levied. Nonetheless, when goods cannot be found an alternative use within the company, this way of disposing of surplus yields the greatest returns for the producer.

Many goods end up being scrapped. Although this brings additional costs, such as transport and landfill charges, it seems this is an option that producers have commonly used.

It is known by all participants in the market that when producers sell (or buy) there, it means other options are not open. Intermediaries can therefore exploit this lack of choice. Knowing this, producers approach the transaction expecting low returns, typically of between 1-10% of their original cost, for their surplus.

2.4 Why do producers resolve their shortages in the excess market?

Producers also purchase goods from the market. While the market might be used to buy for normal production requirements if the goods thus obtained are cheaper than normal sources, this is not a common occurrence because:

- a regular supply cannot be guaranteed;
- there may be quality or delivery problems.

This use of the market is therefore not the norm. The principal reason a producer has for buying there is that an unpredicted shortage in one or more components has arisen that cannot be resolved through normal primary channels. Common reasons shortages occur include:

- manufacturers are unable to meet the market demand for components (the goods are then 'on allocation');
- demand for the final product exceeds forecasts and manufacturing must be stepped up;
- errors in producer purchasing or inventory control systems.

The reason the shortage exists is a strong contributor to the producer's negotiating power. If the shortage is a result of wider market conditions and therefore shared by many, the cost of buying from the market will be greater. If internal factors have caused the shortage, and if competition for the good is not strong, the producer may be able to bargain more effectively over the price paid.

2.5 Intermediaries

Since producers have neither prioritised effective management of their surplus, and, when they do deal with it generally prefer to do so anonymously, the conditions are created which permit intermediaries to operate.

Since buying and selling surplus components is the livelihood of the intermediary, their aim is to optimise their profits. In the case of the broker who acts as a conduit between seller and buyer, the goal is to maximise the difference between their prices. The independent distributor, who has paid for any goods in inventory, aims in general to maximise the profits made from those acquisitions by selling for the highest possible price.

Intermediaries can thrive in the environment of secrecy which characterises the excess electronic components market. (See section 3.1) producers do not have information about how desirable their surplus components are to others and what profits therefore intermediaries can make on them.

Intermediaries need to have large numbers of customers to prosper. They also need to trade in either high volumes, or smaller volumes of highly profitable components, or both. The market information they acquire is critical in guiding their choices of components in which to trade, the times to buy and sell, and the prices to aim for.

3 Analysis of the excess electronic components market

The market is extremely complex. The characteristics which create this complexity also create many uncertainties. These in turn create risks. These characteristics and the risks of trading in the market are explored below.

3.1 The characteristics of the excess electronic components market

The main characteristics of the market include:

- its large scale;
- a high degree of competition;
- volatility;
- the absence of a free flow of information;
- producers who require anonymity when trading;
- the lack of standardised descriptions and specification of many components;
- the importance of up-to-date knowledge of market conditions;
- the variable speed with which participants are embracing new technology;
- an absence of controls or regulations to govern activities in the market.

Its large scale
Hundreds of thousands of different components are traded in the market. Similarly there are many thousands of participants with different rôles who take part in it.

A high degree of competition
The market is very competitive. Deals can be lost to competitors in the time it takes to make a telephone call. This means for many trades that intermediaries have to make very speedy decisions, sometimes without the benefit of doing a bit more research.

Volatility
Some components have extremely volatile supply and demand characteristics, and hence also prices.

The absence of a free flow of information
The producers' preference for anonymity prevents a free and open flow of information which is ultimately to their cost. It is also responsible for some of the risks of trading in the market. Chief among these are the danger of exploitation and associations with unethical trading partners.

However, intermediaries also obstruct the free flow of information, as they increase their competitive advantages over their peers by being better informed.

Producers who require anonymity when trading
The secrecy with which OEMs wish to dispose of their surplus components is a critical factor in shaping the structure and dynamics of the current excess electronic components market. The belief that knowledge about surplus is potentially valuable to competitors is not shared by franchised distributors or contract manufacturers and assemblers, whose surpluses are often caused by OEMs, and so anonymity is primarily an OEM requirement. Without the perceived need for anonymity, OEMs could advertise and sell their surplus components directly. As it is, they create the opportunity for brokers and independent distributors to thrive. Intermediaries protect the anonymity of those who sell to them, thus meeting OEMs' needs for secrecy. Intermediaries also trade with each other, but do not require anonymity.

The absence of standardised descriptions and specification of many components
The market covers trading in thousands of different parts, both memory and non-memory. In the non-memory sector of the market there is little standardisation of parts: similar parts from different manufacturers may differ in minute ways, not immediately apparent in the specification. Part numbering systems are also peculiar to the manufacturer. This means that when seeking to buy goods, although requirements can be very specific, it can be difficult to determine whether or not alternative components are truly substitutable, when the required good is unavailable.

Substitution of a 'similar' good from a different manufacturer is sometimes possible, but the parts generally have to be tested by the purchaser's product engineers before their substitutability can be confirmed. Substitutions, however, first have to be identified, and there is no single authoritative and comprehensive source for this information. (Indeed, as there are many thousands of components, and as almost every day some are made obsolete and new components become available, it would be extremely challenging to maintain such a comprehensive and up-to-date database.)

The importance of up-to-date knowledge of market conditions
Maintaining current knowledge about market conditions is vital to people who make a living on this market and effective application of this intelligence can give one person a competitive edge over another. Those who do not actively maintain their market knowledge leave themselves open to exploitation. Brokers are quick to take advantage of their competitors. As was indicated earlier, there is often not the time to research a deal while it is being conducted.

Producers have a problem here. While the availability and suppliers' catalogue prices of components on the primary market is publicly and freely available information, the same is not true of the excess market. There may be little correspondence between the pricing in the two markets. Producers' only access to information about pricing and availability of goods within the market comes from intermediaries with whom they may potentially trade, who are of course, generally seeking to maximise their profits.

The variable speed at which participants are embracing new technology
Some participants in the market are embracing future technology by employing Internet-based information and trading systems. These systems enhance the opportunities for trading and are being increasingly used by intermediaries and others as their value becomes apparent and they become easier to use. Other participants still operate with older technologies. For example, some producers still use non–Windows based Manufacturing Resource Planning (MRP) systems; and most contact with intermediaries is still through telephone and fax rather than Internet-based communications.

An absence of controls or regulations to govern activities in the market
The market is unregulated, so dealing with an unknown contact carries with it the risks of trading with a fraudulent or dishonest trader, or with traders who do not meet their commitments. These risks are explored below.

3.2 The risks of trading in the excess electronic components market

The principal risks include:

- engaging in bad trades;
- being financially exploited.

All traders can be at risk of the trade going wrong through non-completion of the trade, or inappropriate completion. For example, the purchaser may find that the agreed goods have not arrived on time or at all; or when they arrive, they might not be the right goods or in the right packaging, or they may be damaged due to inadequate storage. Those selling goods can find that the goods may be taken but not paid for, or the money may arrive later than agreed. This can be particularly likely when the trader deals with an unknown party.

Similarly, producers and intermediaries may be exploited by being paid far too little for components they sell, or by being overcharged for their purchases. This can happen when they are ignorant of a high demand for the components they have. This can be difficult for producers to find out, and can happen to intermediaries who have not done their homework, or those who are dealing outside their domains of expertise.

For intermediaries, if a trading partner (either another intermediary or a producer) defaults on a deal by not producing the agreed goods, the consequences can be serious. An intermediary may let down a producer to whom goods have been sold, because the intermediary's supplier defaulted on the deal. It is the intermediary, and not the supplier, whose reputation and business may suffer.

If producers do not receive the goods they have paid for, they can be at risk of having to stop their production lines, possibly the worst consequence of all.

Consequently, producers and intermediaries prefer to trade with people whom they know and trust, and will modify their behaviour to build and maintain these relationships. These relationships form their personal networks, which are an important characteristic of this market.

3.3 Reducing the risks of trading in the excess electronic components market

Some of the main ways in which the complexities and risks of the market are managed are discussed below.

3.3.1 The development of trusted trading relationships

The formation of trusted relationships is one of the primary strategies adopted by participants in the market to reduce the risks of trading in it.

Relationships are person-to-person, rather than organisation-to-organisation. This means that if an OEM's buyer leaves the organisation, an intermediary has to build a new relationship with the buyer's replacement. If the replacement already has a set of trusted intermediaries, then the intermediary will probably have lost that company's business.

Intermediaries and producers build up relationships by completing trades exactly as agreed. Trust is built up over repeatedly successful trades, often starting with very small 'trial' trades. A good service means not only agreeing a reasonable price, but also delivering exactly what was agreed and doing so on time.

Intermediaries demonstrate to producers that they value the company by:

- keeping the company informed of the status of the trade;
- delivering the right goods in the right condition at the agreed time;
- avoiding exploiting the producer with unreasonable purchase or sale prices.

Delivery of a good service is at the heart of the relationship. Also, producers appreciate being kept informed of the progress of a trade, since shortages are potentially so damaging, and they need to avoid wasting any time on potential deals that do not complete. Since producers sell their surplus to achieve some return on it, and already pay premiums for buying on the market, then a trusting relationship cannot be built up if the producer suspects the intermediary of price exploitation. This applies also to relationships between intermediaries.

In some cases, producers may develop exclusive relationships with intermediaries. That is, they give them first refusal on the disposal of all their surplus and buy only through them if possible. Many intermediaries seem to have one or two such relationships, and they are of course, extremely important to them and no risks are taken to jeopardise their status.

Intermediaries depend upon producers to choose them as purchasers – to give them opportunities for selling and making profits – and similarly the intermediary also needs to be able to trust the producer, who can demonstrate trustworthiness by:

- not defaulting on a trade;
- accurately describing the surplus and delivering it as agreed.

If a producer promises surplus to an intermediary but then sells to another intermediary for a better price, a trade that the first intermediary had set up is lost, whose consequences include threatening the intermediary's relationship with his or her purchaser. Producers can be vague or inaccurate about the exact characteristics of their surplus (quantity, condition, packaging) which can also threaten a trade.

Each party can penalise the other for betraying trust. For example:

- since there are so many intermediaries competing for business, producers can transfer their business to new intermediaries;
- intermediaries may not try very hard to locate components for the producer.

If a producer senses that an intermediary is not putting enough effort into locating a component, this will be construed as a failure to value the company, and the producer will not give the intermediary further business. Intermediaries may lack interest in a trade because:

- the component is too difficult to find;
- the profitability of the trade is not substantial; and
- the producer is not rated as a significant enough force to cultivate.

Producers and intermediaries also reinforce relationships by doing each other favours. For example:

- an intermediary may relieve the producer of a surplus component that is difficult to sell;
- the producer may promise an intermediary first refusal on desirable surplus;
- intermediaries may trade market knowledge with each other, or share information about brokers and independent distributors who should be avoided.

Favours may also take a more unusual form. For example, a producer may sell surplus to an independent distributor, and then discover the components were in fact still required. In a good relationship, the independent distributor may well sell the goods back to the producer at their sale value minus shipping costs. Without this relationship, the independent distributor is likely to demand the price that any other purchaser would be charged.

In addition, relationships act to:

- reduce the risks inherent in the market;
- enable more effective management of surpluses and shortages, and of the trading process;
- procure more favourable deals;
- ensure future business.

For brokers and independent distributors, a good relationship with a producer means they will have sources for and buyers of components with less effort. It also reduces the amount of effort that has to be put into creating opportunities for future trading.

For the producer, a manageable number of good relationships also reduces the effort they have to put into the disposal of surplus and the resolving of shortages. It maximises the chances that they will get products for their shortages that are what they want, and that have not been tampered with, and get them on time.

This is also a very powerful reason for intermediaries to develop trusting relationships with each other.

For both parties, an understanding of each other's requirements means that a business deal can be conducted more efficiently: some of the routine information they need to collect for a trade, from credit-worthiness to specific components requirements, they already possess.

3.3.2 Handling trades through direct personal contact

Generally all traders, producers and intermediaries alike, prefer to negotiate and complete a deal on the telephone. Producers feel this to be less risky. Intermediaries see it as an opportunity to influence the outcome of a deal using their negotiating skills, judgement and knowledge, and a minute-by-minute assessment of the trading partner's goals and constraints. There is not yet a new and ubiquitous communications technology which can compete with the telephone as a suitable medium for negotiating and securing a deal.

While the early stages of a negotiation may be handled quite adequately by fax or email, personal contact becomes important in the later stages of negotiation, and generally essential when closing the deal.

Once trust is established, producers' need for personal contact during the trading process may reduce because each party is familiar with the other's needs. Without this relationship, a higher degree of personal contact becomes as important as it is for the intermediary.

Personal contact has the following additional benefits:

- speed and certainty;
- it enables better assessment of the other party;
- it enables more influence over the outcome of a trade to be exerted;
- it helps intermediaries 'market' themselves and may win them serendipitous deals;
- it maintains the relationship.

Negotiations carried out over the telephone are quicker and easier than email or fax. It is a more effective medium for confirming factual information and clearing up ambiguities and uncertainties. Using the alternatives – email and fax - brings with it a loss of ability to control the pace at which negotiations proceed, and uncertainty: has the recipient received and seen the communication? In a highly competitive market, speed is of the essence, and there is no medium which allows speedier conclusions than does the telephone.

If an established relationship does not exist, personal contact allows each party to 'get to know' each other and to make judgements about the trustworthiness of the other. People trust their judgement more having spoken to someone. This is especially important when buying goods from an unknown trader. It also boosts traders' confidence in the inferences they make about the motivations of their trading partners.

Personal contact enables skilled negotiators more opportunity to influence the outcome of the negotiations by the use of persuasion, adding additional information to the exchange, or making spontaneous offers and promises.

Intermediaries use the telephone to make cold calls and market themselves. Cold calls can sometimes result in opportunistic deals being made. For example, an intermediary may be lucky enough to make a call at just the right moment: when a producer has surplus to dispose of.

When there is a relationship, intermediaries use personal contact to maintain links with producers and to remind them that they are there. In a fiercely competitive market, this can help to raise the intermediary's profile, although it can be very intrusive for the producer.

3.3.3 The importance of market knowledge

To enable them to trade as effectively as possible, intermediaries need to be informed about both the primary and excess markets. For example, they need to be aware of:

- the manufacture and sale statistics for the goods in which they deal;
- who has relationships with whom;
- any recent or pending changes in the production and/or use of goods (i.e. their supply and demand). This includes not only fluctuations is supply and demand, but changes to the goods themselves, as when a manufacturer changes a component's specification;
- activities in the market: who is looking to buy or sell what goods, who is trading what and with whom, what prices are being asked and achieved; what things are changing and how; and much more.

The depth, breadth and organisation of the information that intermediaries possess and their use of information vary greatly depending on individual and organisational factors such as:

- the individual's interest in and energy for developing and maintaining their own databases;
- what systems exist within the organisation for collecting, maintaining and retrieving data and how readily available they are to those who need to use (add to, refer to, modify) them.

Sources of information are very varied and the content of the information ranges from factual to highly speculative. Sources include:

- 'formal' information made available by the trade;
- 'formal' information provided by other traders and customers;
- information services;
- 'informal' information provided through personal networks.

Formal trade sources include trade news magazines, web pages, manufacturing and franchised distribution catalogues, and other advertising material. Formal information from traders and customers is generally factual, such as who is trading in what with whom: this allows intermediaries to make inferences about what goods are 'hot' and what are not. Information services such as the Electronic Resellers' Association inform intermediaries about unethical dealers. Informal sources include person-to-person contact in which 'the stories behind the stories', tips and opinions are exchanged.

Some intermediaries rely on others to give them information they do not have, rather than choosing to research and, if necessary make extrapolations when data are inconclusive. For example, some may:

- ask trusted peers for indications of current market pricing;
- ask producers to give them indications of their target prices, perhaps based upon their experiences in the primary market.

The use that intermediaries make of the information available to them relies very much upon their prior knowledge, their intuitions and their abilities to make sense of incomplete, varied and sometimes contradictory data.

They assimilate this information according to their priorities, perceptions and prejudices, holding a lot of it in their heads and/or in custom built and personal or company-wide databases, and using it as and when required to inform pricing and negotiation strategies and decisions. Because they often have to react immediately to an offer or risk losing it, they need to have immediate access to their information.

Producers have a great deal of market knowledge about the primary market, but as was discussed in section 3.1, they are dependent upon those with whom they trade – who have vested interests – for information about the market. This usually means that they operate in the excess market at a disadvantage. This is explored more fully in section 4.

Some traders consider industry and technical knowledge to be imperative for trading in the market. They consider that traders who do not at least have some understanding of the electronic components industry and some technical understanding of the parts in which they trade lack credibility.

Others disagree. With the increase in Internet-based systems, more people are starting up as intermediaries with no technical knowledge about the parts in which they trade. These intermediaries deal only with part numbers. Technical knowledge does allow some value added services to be offered, such as successfully assisting a producer find a substitutable good for an unavailable part, but it would not seem to be necessary knowledge for the basic service of locating and selling a good.

4 Trading in the excess market

First, we outline the manner in which straightforward transactions occur in the market. Following that, transactions are explored in more detail, looking at the traders' motivations, their expectations, and the factors that influence their negotiation and pricing strategies.

4.1 The processes of trading in the excess market

Resolving shortages

- The producer's buyer collects all the relevant information about the purchase (including quantity required, purchase deadline, required date code, and packaging and preparation of the components). The buyer will, from previous purchases on the primary market and using general knowledge, also have an approximate target purchase price.
- The buyer requests at least one intermediary to either search for the good or determine whether it can be supplied from inventory. The buyer provides all the relevant factual information the intermediary needs to locate the good; in some cases this includes the target purchase price.
- The intermediary either already knows or needs to find out various bits of market information that will enable the goods to be located speedily. This knowledge includes known probable sources of the goods or contacts to ask if sources are unknown, what prices the goods are currently being sold at by franchised distributors and other intermediaries, the current supply and demand characteristics of the goods, and so on.
- Once the intermediary has located the good, the purchase price can be agreed if the intermediary is working to a producer's target price. If there is not a target price, the intermediary embarks upon a series of calls between the vendor and purchaser negotiating both prices so as to ensure the best possible profit within the constraints possible. Speed is essential, as the degree of competition faced isn't known.
- When the prices are agreed, aspects of the administration must be done before the trade is completed. intermediaries will generally not purchase goods without having first received (faxed) purchase orders from their purchasers. Moneys need to be wired to vendors' banks.
- If the producer, (or another intermediary) contacts an independent distributor who is able to supply the goods from inventory, many complexities and uncertainties are avoided. Having already purchased the goods, the independent distributor knows their costs, and therefore has only to agree a sale price that optimises the trade's profitability.

Disposing of surplus

- Having decided to sell surplus components, a producer's buyer finds out as much about the state of the goods in the warehouse (for example: quantity, packaging, date codes, status) and offers the goods with their available details to at least one intermediary, again having some idea of a target price for them. Deadlines for sales are given.
- The intermediaries either attempt to find an immediate purchaser for the goods (or may already know of one), or in the case of independent distributors (see below) buy for stocking. Again, intermediaries rely upon their knowledge of the market to locate probable purchasers and to determine purchase and sale prices. Again, the

degree of competition faced is unknown. They negotiate alternately with the seller and buyer until agreements are reached.

- Purchase orders are faxed and moneys wired prior to the transfer of the goods.
- If the intermediary is an independent distributor buying for inventory, the price the independent distributor aims to buy for will take into account factors such as the estimated price paid by the producer in the primary market, prices that the good is currently being sold for on both primary and excess markets, its current supply and demand characteristics and the independent distributor's evaluations of its potential worth in the short and mid term future.

4.2 What factors affect the producer's negotiations when selling surplus?

Because it is often buyers who are charged with the job of surplus disposal, they already know what the original purchase costs of the components were. They also generally know the current primary market costs of the components. However, they are unlikely to have good or up-to-date information about excess market prices. There may not always be a direct relationship between them. Excess market prices can only be had directly from individual brokers. Because they wish their surplus and shortage situations to remain company confidential, producers do not trade information about components, and hence cannot learn what the value is of their surplus is to others.

Producers' negotiating capability is already limited by virtue of trading in the market. Nonetheless, there are steps that can be taken to reduce the weakening effects of being in this market, for goods which are in demand. These include:

- management of surplus as it occurs, enabling the time of sale to be chosen;
- requesting competing intermediaries to improve the prices they are offering for components they wish to purchase.

If producers manage their surpluses when they occur rather than waiting for a deadline such as the end of an accounting period, they can gain flexibility on the timing of their sale. Buyers can use their primary market knowledge to assess a probable good time to sell on the market in order to optimise their returns, rather than being forced to sell irrespective of supply and demand conditions.

If there is some time to play with, it also becomes possible to make brokers actively bidding for the surplus to compete by asking them to improve upon the best received bid.

Some of the negotiation that takes place is not based directly upon price. For example producers can:

- accept a low price for selling a desirable component if another less desirable one is also purchased;
- promise the intermediary future business on the strength of a good purchase price.

Packages

Companies which manage their surplus at the last moment are perhaps also the companies who are most likely to want to get rid of their surplus in 'packages' or 'lots'. Motivations for the producer's seller bundling together many items together for sale as a job lot include:

- minimising the effort of selling many items;
- coming up against a financial or storage deadline.

With packages, brokers are invited to make a single offer for all the goods. From the producer's perspective, this is one of the approaches most likely to yield poor returns, and correspondingly, for the independent distributor it can offer good opportunities for profit. See sections 4.8 and 4.9 below.

4.3 What factors affect producers' negotiations when buying from the excess market?

When producers buy from the market, their need for the components is generally immediate. The priority is therefore to secure components as soon as possible. In a market where brokers vigorously try to find buyers for goods they have available to them or in their inventories, the producer places a premium upon agreeing a transaction rather than upon shopping around and risking the loss of a potential agreement. This often means that securing the purchase takes priority over the price that is paid.

Because producers have generally established relationships with a small number of intermediaries who have earned their trust through consistently good service, the amount of work required to resolve a shortage can be kept to a minimum. intermediaries continue to prove their worth to their long term customers by putting the effort that is required to locate and purchase goods (if not already in inventory) for producers who urgently need to buy.

Depending on the urgency attached to the purchase producers either:

- accept the first price returned to them from the intermediaries contacted; or
- wait for a few quotations to be returned and then select the best of these; or
- negotiate with the intermediaries to see if any price improvement can be achieved on the existing offers.

4.4 What factors influence intermediaries' negotiations when buying and selling?

Before a negotiation is begun, the intermediary's capacity for manoeuvre is shaped by organisational characteristics:

Is the intermediary:

- a small, medium or large organisation?
- able to stock goods or not?
- currently experiencing a good volume of business?
- knowledgeable about the good being traded?

If the intermediary is an independent distributor, these factors combine to affect the organisation's cash flow and hence the availability of money to enter into purchases. Brokers generally aim to receive the purchaser's money before they pay the vendor so that their own cash is not involved.

The degree to which the intermediary possesses a wide and current degree of market knowledge is important (see section 3.3.3) as that informs him or her of the demand, and hence the pricing possibilities, for components.

Intermediaries would seem to have a great deal of power because producers operate with secrecy and are known to only trade in the market as a last resort. However, as discussed above, the market is fiercely competitive and also full of risks, and a key way of managing these characteristics is the development of trusted relationships. These relationships set the context for the negotiation and pricing behaviours with which intermediaries handle their trades. First:

Is the customer:

- a known and trusted purchaser (and optionally maybe vendor as well)?
- a new customer who seems to offer prospects of good future business?
- probably a one-off purchaser or vendor who seems desperate?

To maintain good relationships, brokers and independent distributors must treat their long term relationships differently from their one-off or infrequent customers. They must avoid letting down their good relationships by reliably locating and delivering what the OEM wants, and they must avoid irritating the organisation by exploiting them with unreasonable prices. This means, for regular customers, that they sacrifice large profits in favour of long term business.

It is from their infrequent customers that they seek large profits: when their expectations of establishing a long term relationship are low, then they can maximally exploit the producer with extreme prices, particularly if it is discovered that the producer's need is desperate.

Some intermediaries operate a more 'cautious' approach to these customer factors. For example, while a very large company seeking to buy from an intermediary is probably desperate (that is, their normal channels are unable to help them) and can therefore be exploited (they are unlikely to become regular customers), it is not sensible to assume that a small company will always be so.

Intermediaries seem in general to adopt tougher negotiating stances when trading with other intermediaries than when trading with producers. Intermediaries also form relationships with each other, and avoid exploiting these trusting relationships, but still negotiate hard. However, a great deal of the inter-intermediary activity is conducted between parties who do not know each other, and then there is a greater readiness to be ruthless with these competitors, and particularly to exploit any lack of market knowledge that is discovered.

There are a range of purchase 'types' which affect pricing goals.

Is the product bought:

- for immediate sale to a known customer?
- speculatively, for stocking in inventory?
- separately or as part of a package or 'lot' of different goods?
- for a customer's scheduled purchases?

Irrespective of the price for which components are bought, independent distributors generally charge more for their goods than do brokers as they have overheads and take risks which do not apply to brokers. The purchase price of the goods is far less important than the price for which they can be sold. An independent distributor who in principal has the freedom to buy and sell when the time is judged right may have been able to purchase components for much less than a broker, but can sell at the same or a greater price. The producer may be willing to accept this premium because there are fewer risks in buying from someone who already owns the goods.

An independent distributor may find it very attractive to buy goods for customers' scheduled purchases. These goods can be bought at any favourable time with the certainty of selling them, usually at an agreed price. When the goods are niche or obsolete products, the premiums can be very high.

When a independent distributor has purchased a 'lot' of different goods, it will often be on the basis that the lot contains at least one type of component that is known in advance to sell for a good profit. The independent distributor will often be able to recoup the lot's entire purchase cost and make a profit based on the sale of this component. This then means that the remaining goods can be sold off cheaply (if quick disposal is the goal), also sold as high as possible or just scrapped. The goal pursued is dependent upon the financial health and carrying capacity of the company, as well as upon individual approaches to profit making (see section 4.5 below).

Market characteristics of the good are, of course, very important for both buying and selling. They include whether the good is:

- in low supply relative to demand for it, or in oversupply;
- about to become or already obsolete;
- 'on allocation';
- a niche component or one in widespread use;
- a newly released and highly sought-after good.

To some intermediaries the key is to buy as cheaply as is possible. Others say that the purchase price is not as important as the selling price. The component's supply and demand characteristics and the current market price (within both primary and secondary markets) must therefore be known when purchasing surplus. This will give the intermediary a good idea of the flexibility that exists for negotiating the purchase of the producer's surplus.

When purchasing, many intermediaries avoid goods which are in oversupply, as their profit margins on them will be very low. Goods which are about to become obsolete (no longer manufactured) are likely to command high prices in the future. Goods on allocation in the primary market (in short supply, and therefore allocated to the best customers by manufacturers) command very high prices.

Niche products can be unattractive purchases for an intermediary unless there is a relationship with a known user of them. They may therefore be bought at very low prices, but sold at premiums.

Newly released goods may enter the market when a producer has a change of product specification or of production plans. A small producer may not be able to return goods to the original supplier. These goods can be very profitable for the intermediary.

4.5 What approaches to profit making do intermediaries have?

As already indicated, individual intermediaries can have very different approaches to profit-making that affect the way in which they deal with the factors discussed in the previous section.

Some of the approaches identified include:

- the use of general heuristics;
- working to the producer's target price;
- comparisons with the current market price;
- profit maximisation;
- exceptions for special circumstances.

Some intermediaries have heuristics: minimum and maximum mark-ups on the purchase price or standard percentage profits. These general goals can be modified by factors such as the organisation's current financial state or the degree of competition faced. The profit may be greatly exceeded if a desperate one-off customer is found, or smaller, if selling to a trusted trading partner.

Producers may sometimes volunteer target prices, and trusted intermediaries will often aim to meet those. Intermediaries may request target prices if trying to deal in an unfamiliar component, but will generally also attempt to pick up quickly some market information. If the deal is small and easy to conclude, it may be a more effective use of the intermediary's time to settle near the producer's target price.

Some intermediaries use the current primary market price as a guide. This has many advantages. Given that intermediaries generally buy for very low prices, they can still make a good profit by selling at this price, with the benefit that producers also pay their usual prices. This keeps relationships on good terms, and can establish the intermediary a good reputation amongst networks of traders who share information. It is an approach which may also be used when an intermediary is considering trading in an unfamiliar component.

Some intermediaries simply aim to maximise their profits as much as possible without concessions or compromises. This can mean selling for the highest price they can get away with, taking the relationship into account. It often means finding out how much 'pain' the producer can bear.

These different attitudes can have very different consequences for some sales. The sale of package items is an example. Having sold the prime components at a price which exceeds the package purchase price, the independent distributor's attitude will determine whether the remaining goods (all of which now represent pure profit) are sold off almost at any price, or at about the price other independent distributors are offering. Some might use these goods to sell very cheaply to new producer customers in order to initiate a new relationship.

Many intermediaries also have policies for specific occasions. For example they may:

- forego a profit in order to establish a new relationship;
- sell at a very favourable price to reinforce a good relationship.

The 'current market price' of a good in the market is therefore only a guideline to the price at which it might be traded. The price that will be achieved cannot be gauged until the negotiation is in progress, and it may bear little, if any relationship to the 'current market price'.

5 Interviewees' views of possible futures

5.1 The future of the excess market

Most participants felt that the Internet was changing the way in which the market operates. Already, the Internet has made it possible for intermediaries to set up as traders with little prior knowledge and few overheads. The Internet has increased the likelihood that trades will be done with strangers in different parts of the world – thus increasing the risks. However, the increasing use of email has made it easier to give news to many quickly and cheaply: for example, the Electronic Resellers' Association emails its members with bulletins about intermediaries who have behaved unethically, thus performing the service, in the absence of an industry regulator, of helping its members to avoid specific risks. Already, however, there is more information than can be easily absorbed and managed.

Intermediaries did not anticipate that regulation of the independent broker sector would come soon; past efforts had failed to be successful.

The most significant prediction from intermediaries was that it would become more difficult for the sole trader to exist as the market continues to expand. Smaller brokers would need to join forces, resulting in a smaller number of large brokering and inventory holding organisations. These organisations would be able to offer an expanded range of services to their clients, and there are examples of this happening already.

Intermediaries also perceived potential threats to their rôles. With new and evolving communications capabilities available to all, their grip on the market could be severely, and perhaps fatally challenged. In particular, if producers' requirements for anonymity were to change, and they were to begin to use the Internet to directly handle their surpluses and shortages, then intermediaries could be squeezed out of the market.

Those who made use of web sites such as Broker Forum and FastParts to trade valued the concept of web-based trading, while often not using the services in the ways that were intended by the service providers. In particular, intermediaries still prefer to negotiate and complete trades by talking directly, not by using email. However, they expected that such sites would increase in number and become more popular as technology and usability improved.

5.2 Rôles in the excess market for software agents

Participants were asked to consider whether or not trading agents would help them. In addition, they identified several other potential rôles for agents:

- Finding information;
- Finding and assessing component substitutions;
- Integrating with the organisation's own MRP system and providing advance warning of surplus and shortages.

5.2.1 Trading

Most producers welcomed the principal of software that would help them to do an unrewarding job.

Most felt that their use of a trading agent would evolve with their trust of it. In their early stages of use, they would want a high degree of control over and feedback from the agent, to reassure them that it was doing what they wanted. After successful trades, they felt it would in general be possible to devolve more responsibility to the agent, without continuous feedback from it.

It was thought likely that there would always be specific situations when they would want to check or override the agent's actions, and therefore they would need to be able to specify those occasions to the agent.

Concerns that producers had included:

- when should the agent override its owner's instructions, and how might this be communicated?
- anonymity;
- security.

Most felt it would not be possible to instruct the agent to buy or sell at a specific price, but would like to be able to give the agent lower and upper prices within which it should confine its negotiation. However, this also is not straightforward. Since all the information a trader needs is not available at the outset of a trade, the trader might want to change some aspects of the negotiation, particularly price, as it progresses. Most people identified the problem: 'I want to give the agent upper and lower prices to work with, but I'd also want it to know when it could go outside those limits.'

While many producers still want to preserve their anonymity, they also wanted to know the identity of the parties with whom their agents are negotiating, in order to feel confident about the trade. They might also want to be able to give abiding instructions to the agent, such as 'do not have anything to do with agent X again' after a bad experience with it.

Intermediaries were less convinced of the value of agents for trading for themselves, although could see how it might help producers. Intermediaries rely on their own experience and perceptions to develop understandings of the market. Most also have highly developed negotiating and sales skills. Trading agents could take away from them the tasks that they enjoy and are good at doing.

5.2.2 Other rôles for software agents

Just about everyone saw a very helpful rôle for agents in locating information for them. This might mean searching the web pages of manufacturers and finding out what products are made and their costs. It could mean querying suppliers' public databases and finding out the availability of goods. It could also mean finding out what components are substitutable with each other. Many of these 'wants' also require changes to be made in the provision of and access to proprietary information.

Producers also saw a contribution that agents could make to helping them deal more assertively with surpluses and shortages. If software agents were able to liaise with their MRP systems, then, appropriately instructed, agents could notify the relevant people of impending shortages and surpluses.

In both cases, concerns were expressed about the comprehensiveness and accuracy of the information replied by these agents. These depend in part, of course, upon the fidelity of their sources.

Glossary of Terms

Allocation; on allocation	Components are 'on allocation' when, for whatever reason, manufacturers are unable to supply as many components as are demanded. They then 'allocate' the components that they do manufacture to their customers; generally, customers are only allocated a percentage of what they have ordered. When goods are 'on allocation', generally it is the smaller and medium companies who suffer most, as manufacturers give greater percentages of the original orders to their most significant customers.
Broker	A 3rd party, non-franchised intermediary between buyers and sellers of goods who does not stock goods in inventory and who purchases goods for immediate resale to an identified purchaser.
Brokering	The process of locating a good for a known customer where the broker does not take ownership of the good. Goods are usually bought on cash on delivery terms, and the broker generally requires a purchase order from the customer before proceeding with the purchase. When the broker receives the goods, they are forwarded to the customer after their conformity to description has been approved, a process described as usually taking two or fewer hours.
Components	The items used in production to make up end products. Also referred to as 'parts' and 'goods'.
Contract Manufacturer/ Contract Assembler	Organisations which are contracted to manufacture or assemble goods on another company's behalf e.g. assembling circuit boards for a computer manufacturer
Date codes	Components carry a four digit code which defines the month and year of their manufacture. Manufacturers guarantee the components (subject to appropriate conditions) for a period, usually one or two years, after manufacture. Generally, therefore, the closer a component is to the expiry of its date code, the more its value on the excess market reduces.
Excess (goods)	There are two uses of this term: the narrow and the broad! In the narrow sense, an excess is an oversupply of goods which the owner cannot use for their original purpose, but for which there may be an alternative use within the company. In the broad sense, excess is used to describe all types of oversupply.
Excess market	The resale market: non-authorised or approved channels in which excess, surplus, obsolete and other goods are traded. The excess market is also known as the secondary market, and the grey market.
Franchised Distributor	A franchised distributor is an organisation which establishes agreements with manufacturers to buy specific components from them for the purpose of selling to organisations which the manufacturer is not interested in selling directly to. These are generally medium and small OEMs and contract manufacturers and assemblers.
Goods	In this context, an approximate synonym for 'components'. However, not all entities that are traded in the excess market are components such as memory chips or resistors and capacitors. Sometimes the things that are traded are composites – motherboards, for example, or whole PCs.

Independent Distributor	A 3rd party, non-franchised intermediary between buyers and sellers of goods who purchases goods for stocking in an inventory prior to selling them on. An independent distributor is also likely to operate as a broker. (i.e. to purchase goods for immediate resale to an identified customer).
Intermediary	The term adopted in this report to refer collectively to brokers and independent distributors; that is, when it is not necessary to draw a distinction between them.
Obsolete(d) goods	Goods which are no longer manufactured. They may, however, still be in use by OEMs and contract manufacturers and assemblers.
OEM	An organisation which produces goods for sale to end users (be they consumers, or business, research, industrial, military or other organisations). The OEM does not necessarily manufacture or assemble its products. It does design and specify its products, but may contract out their manufacture or the assembly of their parts to contract manufacturers and assemblers.
Primary market	OEMs and contract manufacturers and assemblers buy new components for their production lines from component manufacturers and from franchised distributors. In general, components manufacturers sell directly to large producers. They establish agreements with franchised distributors to sell specific components to medium and small producers.
Producer	The term adopted in this report to collectively refer to OEMs and contract manufacturers and assemblers; that is, when it is not necessary to distinguish between them.
Scheduled Purchase	A commitment between a supplier and a customer to the regular purchase of a particular good or goods for a specified period of time.
Surplus (goods)	An oversupply of goods for which the owner has no further use.

Appendix

FastParts

FastParts, based near Chicago in Illinois, USA, is an organisation which provides an Internet-based spot market (the 'Trading Exchange') modelled upon NASDAQ for buyers and sellers of electronic components.

The founder of the Trading Exchange observed that organisations which use electronic components often have purchased components that are, or become surplus to their requirements. The most common ways of disposing of those unwanted parts have been either to sell them to independent electronic components brokers at a fraction of their cost and/or current value, or to scrap them. Other users have shortages in components they require for production or for sale to their regular customers, and are often forced to buy them from these independent brokers, sometimes at very inflated prices. The Trading Exchange was set up to allow such organisations to trade components. By dispensing with intermediaries, and allowing buyers and sellers to negotiate directly with each other, prices should be achieved which are fair for both parties. All goods traded must be new and unused, and still in their original manufacturer's packaging.

Organisations which can have surpluses include OEMs, contract manufacturers/assemblers, and franchised distributors. Organisations which buy surplus components for resale are known as 'brokers' and 'independent distributors'. Please refer to the glossary for definitions of all these terms.

Many organisations regard the situation of having surpluses, or shortages, as commercially sensitive, and do not wish their competitors to be aware of these facts. Trading through brokers and independent distributors has helped them to maintain anonymity. The FastParts Trading Exchange is also set up to preserve the anonymity of its participants. A member who wishes to sell a quantity of a surplus component posts an 'offer to sell' by entering the details (part number, part description, quantity and target price) on the Trading Exchange. Potential buyers make bids and other sellers may enter the negotiation with better offers to sell the same product. Buyers and sellers negotiate on price (and quantity) by entering revised bids and offers, until a price is agreed between a buyer and a seller. Anonymity of both parties is preserved as FastParts handles the administration of the transaction: the exchange of money, and the checking and shipment of the goods. Members of staff, called component specialists, are available to help with members with the process of trading.

FastParts does not take a position on a trade, but acts as a neutral intermediary. FastParts also ensures the authenticity of those selling goods on the Trading Exchange, who must be in good standing with one of the industry standards bodies. Those who do not have this status are allowed only to buy from the Trading Exchange. This latter category includes most independent brokers.

There is no membership fee: FastParts charges commission on all goods traded. A 'three strikes and you're out' policy is applied to those who violate the organisation's rules of conduct. Failure to supply promised goods, supplying goods that deviate from their posted description, or failure to pay would all constitute examples of violations.

Setting up the study

160 organisations were short-listed for participation. They were selected from the total FastParts membership. With the help of FastParts staff, a cross section of different types of FastParts member was selected, representing different types of organisation (OEM, contract manufacturer/assembler, franchised distributor, and independent brokers), of different sizes.

The FastParts contact in each organisation received an e-mail sent to them by FastParts. It consisted of a cover letter from FastParts, and a letter from the Agent Technology Group explaining the purposes and scope of the study and requesting their participation.

Those who were interested in participating returned an electronic form to FastParts, giving their contact details (preferred medium of contact – email , telephone or fax; and suitable times to call if the telephone was their preferred medium]. All volunteers were contacted through the medium of their choice. Their questions were answered and arrangements for the interviews were discussed. These were finalised over several contacts. Many interviewees also spoke with FastParts staff as well. Participants were offered copies of the reports which resulted from the study in recognition of their participation.

Thirteen organisations participated. Ten of these were visited and interviews were held on their premises. One to four people participated at each site, and interviews lasted between one and a half and two hours. The other three interviewees were interviewed over the telephone. Those interviews also lasted up to two hours, and one interview was conducted on two separate occasions. Telephone interviews involved only one respondent per site. Respondents worked in organisations in North America, Canada and Europe.

Representatives from two organisations (both independent distributors) who had originally agreed to participate had to withdraw from the study before being interviewed as a result of time pressures. Representatives from five organisations wrote back to FastParts declining to participate.

Type of organisation participating	**Number**
OEM	4
Contract manufacturer/assembler	2
Franchised distributor	2
Independent distributor	5

Interview content

The interviews were loosely structured as essentially they were exploratory in nature, and required maximum flexibility. They were intended both to cover a core set of topics that were known in advance to be important, and to freely explore novel topics introduced by interviewees. Since different types and sizes of organisation were interviewed, the topics covered, the order of questions, the amount of time spent, and the nature and content of exploratory topics all varied.

The interviews all covered the following core topics.

All participants

A general introduction to the company, and its business.
The types of goods used or traded by the company.
How the relevant people keep up to date with market conditions and component prices and what sources of information are used for this purpose.
Perceptions of and experiences in the excess electronic components market .
How traders go about establishing their target purchase and sale prices.
Reactions to the concept of agent based trading.
Views of the concept and service offered by FastParts .

In addition, OEMs and contract manufacturers, and brokers and independent distributors were asked questions specific to their different roles in the marketplace:

OEMs and contract manufacturers.
The reasons surpluses and shortages exist.
The processes followed for disposing of surplus goods.
The processes followed for buying in goods at a time of shortage.

Brokers and independent distributors, and franchised distributors

The processes by which they acquire and sell goods.
Inventory management (independent distributors only).