Business and Market Models of Brokerage in Network-Based Commerce

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Abstract

Enterprise models, based on the responsibilities and relationships underlying market activities, are used to provide a framework for representing and analysing the activity of brokerage in network-based commerce. Examples of models are presented that represent new configurations of systems, services and processes. Three distinct phases of brokerage are recognised: rendezvous, transaction and post-sales. The security requirements for transactions in broking are so much greater than those for information provision over the Internet that separate business cases can be made for each.

Introduction

The large, unstructured market place offered by the Internet is still in its infancy. Its ever-changing size and shape mean that the familiar relationships and operations of traditional commerce including traditional brokerage cannot simply be transferred to the electronic medium. Network-based commerce opens up major new business opportunities by offering new flexibilities on the one hand but imposing new constraints on the other. Brokerage over the network is one particular aspect of commerce that is likely to become more necessary and prevalent, at least in these early days of electronic commerce, because many suppliers and customers will need expert help in this new, unfamiliar environment until it is better understood and more stable (although whether this state will ever be reached is unforeseeable).

Just as network-based retailing is already recognised to be different in many respects from the traditional shop, brokerage on the network is also almost certainly going to be different from our familiar image based on stockbroking or insurance broking, and will undoubtedly provide new business opportunities for those organisations that are able to recognise and grasp them. The range of organisations that can potentially benefit is not restricted to the immediate participants in electronic commerce, i.e. the suppliers, customers and brokers, but also includes the providers of systems, of services and of the infrastructure needed to deliver and sustain them. These organisations need a means of exploring new business and market models so that they can identify the possibilities for and the consequences arising from participation in this arena.
The Cobra project, which is part of the ACTS programme, is aiming to develop a Common Open Brokerage Architecture through the development of business models of brokerage in network-based commerce. The project includes three pilots which are implementing brokerage systems in different contexts. As both modelling and pilots progress, the modelling advances are being fed into the pilots and the pilots’ field trials experience is informing the models.

**The Enterprise Modelling Approach**

Enterprise modelling is frequently used as a means of defining requirements on technical systems and services, but in the Cobra project we are using it for identifying new business models for electronic brokerage and for supporting the re-evaluation of traditional business models, by analysing the relationships underlying market activities.

The business models developed are the basis for the Cobra architecture, which is a problem architecture in that it is a description of the enterprise and instrumental elements from which the system is composed. (It is not a description of the solution in the way the term architecture is commonly used.)

The models are based on responsibilities and relationships and thus provide a means of looking behind the functions and roles defined in the system to the responsibilities and relationships that they implement. Because the models are based on a small set of generic concepts at a high level of abstraction they can represent all forms of brokerage including the three main categories: the sale of goods, the registration of services and the distribution of information.

**Brokerage**

The term brokerage encompasses a diverse range of activities both commercial and otherwise (for example the village matchmaker). We are using it in the sense of ‘mediation of market relationships’ in which the broker facilitates a one-to-one relationship between a specialist supplier and a particular customer. The network-based broker must therefore be able to support the navigation by the customer of offers from competing suppliers, the management of commercial transactions and possibly the provision of specialised assistance. All of these activities provide opportunities for value-adding, the last activity in particular offering an extra opportunity for capitalising on the broker's expertise.

In addition to supporting the customers' navigation of offers and transaction management, the broker must also support a third essential brokerage activity, the means of recourse should the customer have reason for complaint. These sets of responsibilities constitute three distinct phases of interaction: the rendezvous phase, the transaction phase and the post-transaction phase. During the *rendezvous phase*

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1 By instrument we mean a combination of some information and the medium - verbal, paper or electronic - by which the information is conveyed from one party to another.
market information regarding offers is provided by brokers and/or suppliers and is looked for by customers and/or by brokers on the customers' behalf. The outcome of this phase is either a transition to a transaction or a termination, for example if the customers cannot find what they want. The transaction phase consists firstly of the establishment of pre-conditions, such as the availability of the goods in the quantity required or the negotiation of discounts. This is followed by the exchange of commitments and finally a discharge to achieve a defined set of post-conditions such as payment and delivery arrangements. The broker must then support a post-transaction phase so that transactions can be traced and complaints passed to the appropriate body.

Each of these phases implies an investment in resources and management of risks. Although basically sequential they can be distributed in time and space and over enterprises. The recognition of these phases is important as it provides us with the elements from which business models may be constructed and previously unforeseen configurations explored.

**Broker-Customer Relationships**

![Diagram of Broker-Customer Relationships](image)

The responsibilities and relationships underlying the basic roles of broker, customer and supplier are shown in figure 1. The links represent the main conversations that occur. The three distinct sets of responsibilities that constitute the three phases of brokerage can be seen in the broker role. (We are using the term 'role' here for a major market 'actor' and the term 'agency' for a body that discharges one specific set of responsibilities.) We can see immediately that this analysis of the basic brokerage functions suggests that a brokerage business might evaluate whether it would be desirable to operate as a group of separate agencies or to outsource certain sets of responsibilities.
The responsibilities held by the customer that correspond to the three brokerage phases can be seen linked to the respective brokerage phase. These links represent channels of communication. Although we regard this configuration as the basic model for the broker-customer relationship, the model invites consideration of

**Figure 2. Brokerage scenario with specialised assistance**

**Figure 3. An information brokerage scenario**
whether the responsibilities could or should be distributed differently between the roles to create a new business configuration.

An example of an alternative configuration is illustrated by one of the Cobra pilots (figure 2) in which the broker provides extra (and, in this case, expert) assistance to the customer by undertaking the information gathering and selection responsibilities and giving assistance with payment and evaluation.

Another Cobra pilot (figure 3) provides yet another scenario where the broker is offering an information gathering and selection service, but in this case is not undertaking any of the publicity and dissemination responsibilities, which are dealt with by the suppliers themselves and by a separate part of the brokerage organisation.

**Alternative Market Scenarios**

What we have seen in these two examples, both of which are concerned with the brokering of on-line information, is a redistribution of responsibilities, but with the broker in the conventional role of a separate market actor. However, alternative market scenarios can be generated where, instead of having a 'neutral' broker as in the examples, we can combine the broker responsibilities with the supplier to create a 'push' broker, or the broker can be composed with the customer role to create a 'pull' broker (figure 4).

![Figure 4. Alternative market scenarios](image)

In the 'push' scenario the broker role would be seen as a way of promoting particular services, and the broker functionality would be located at the information server. In the 'pull' scenario the broker service would be incorporated in browser functionality. An example of the consequences of these different scenarios is provided by one of the basic objects in the Cobra prototype system, the evaluation record. These are
assessments of the effectiveness of particular information services in particular problem domains. In the case of the neutral broker they are used for sharing expertise between colleagues, but in the 'push' scenario they would represent advertisements for the products supplied, whereas in the 'pull' scenario they would form part of the customers' personal information space.

**Transaction and Post-transaction Management**

The basic roles and relationships for transaction management are shown in figure 5. As well as the broker, the supplier and the customer, other enterprises involved include financial organisations and a delivering enterprise. The broker's responsibilities include order processing, post-transaction management which includes all post-sales and 'customer care' activities, and possibly administration for tax and statistical purposes.

![Figure 5. Basic transaction management roles and relationships](image)

The value added by transaction management lies in the coordination of pre-conditions for all the parties, and the generation, communication and preservation of information amongst the participants. Pre-conditions, such as appropriate security, tradability and availability of the goods, and suitability and credit-worthiness of the purchaser, must be coordinated by the broker. A persistent record of interactions must be maintained, not only between the parties to the transaction, but also between the information provision and transaction management roles. This is an essential requirement for integrated brokerage so that activities, such as payment of appropriate commission to advertisers or dealing with complaints, can be supported.

Finally, the level of trust required of the actors within the network and service environment in which transactions are conducted implies that this environment is regulated and appropriately policed. This requirement is not compatible with the open, highly accessible and dynamic space appropriate for advertising and publicity.
that is provided by the World Wide Web but represents quite different sets of responsibilities and relationships. What is required is the means to move smoothly and efficiently from public web space to more regulated transaction spaces, and to have the corresponding contractual and commercial relationships to support the interworking between them.

This basic model can be configured in different ways depending on whether the brokerage is of goods, information or services and we will now examine each in turn.

**Transactions for Physical Goods Brokerage**

In the case of physical goods, supply involves the manufacturer and a stockholding enterprise while delivery involves a logistics enterprise. This model is based on the responsibilities of a traditional retailer, which is defined as a combination of stockholder and transaction manager, and is therefore not only a transaction processing manager but also a transaction participant.

![Figure 6. Transaction model for physical goods](image)

Our model (figure 6) does not commit solely to the concept of retailing although retailing may be expressed within it. In fact, having decomposed the basic responsibilities and value-adding relationships, we see that transaction processing management may be separated and offered as a service to the other market actors. The ability to make this separation is particularly important in network-based commerce where the cost and the level of trust required to operate a transaction management service may represent a barrier to market participation particularly for smaller stockholding enterprises.

A further consequence of the decomposition of responsibilities and value-adding in this model is the possibility of separating the offers of stockholders from the
logistics responsibilities, allowing the logistics undertaking to operate as a separate brokered market but delivering an appropriate level of coherence and integration for the purchaser.

The model indicates a policy that transaction management, which is undertaken by a transaction processing enterprise, may not be separated from post-sales responsibility. This represents the interests of the credit provider who may provide certain insurance benefits but who will not undertake to handle goods that have been rejected.

Transactions for Information and Content Brokerage

The market for information and content has been seen as one of the most important potential developments in network-based commerce, because the means of advertising and the means of delivery is the network itself. On the supply side, we must distinguish between publishing enterprises, the developers and authors of content and, in some cases, the subjects of content. On the delivery side, responsibility for server administration and for network provision are represented separately (figure 7).

Figure 7. Transaction model for content provision

The transaction of content over the network provides an intermediate case between the goods relationship, where availability is a stock control issue, and service provisioning, where availability is a capacity issue. Responsibilities for capacity and quality of delivery rest with the server and network enterprises. The quality of content and presentation lies with the developers and publishers.

Not only is the structure of rights over content complex, but the value and price may be highly structured and dependent on time and customer identity. This introduces a number of complications into content transaction management.
The application of content broking to entertainment and broadcasting exemplifies one of the areas of profound change which new network technologies and enterprise are creating. The tradition in the entertainment sector is for content owners also to own and control channels of distribution in order to maximise the revenue which may be extracted from content. It is not clear that a technical, business and contractual case can yet be made which convinces the traditional actors in this sector that an open, brokered network would provide a business environment which is acceptable to them and, as a consequence, standards which embody a highly integrated view of the market are being developed. Meanwhile, alternative technical solutions are being developed, explored and launched without a clear concept of a coherent contractual and commercial market framework.

**Transactions for Service Brokerage**

When the subject of a transaction is a registration to use a service, a complex set of rights and responsibilities is generated for the service providing enterprise. The role of broker has been split up into agencies each dealing with a specific set of responsibilities thereby distributing the brokerage functionality between them (figure 8). This figure emphasises how channels of communication between these agencies are essential.

![Figure 8. Transaction model for service provision](image)

The offer of service is generated by a marketing agent in an interaction where the concept of a service is user-oriented and defines capability, quality and cost. Provisioning responsibility is concerned with the economic maintenance of sufficient service-delivering capacity to meet service obligations, while operating responsibility must ensure that the capacity which has been deployed continues to deliver the expected level of service. Registering responsibility ensures that only registered customers can consume capacity, and accounting responsibility meters use in order to inform billing and also to monitor demand.
An example of a specific transaction model is provided by our pilot in Helsinki, which is a brokerage service across a complex value chain of products and services for marketing multimedia services (figure 9). There are two scenarios of use: firstly to provide one-stop multimedia service access for the telephone company’s customers, and secondly to explore the technical and commercial aspects of providing a complex set of services and facilities to impresarios for planning, publicising and delivering exhibitions, concerts and conferences in the context of Helsinki 2000. There are therefore many different sorts of offers with mutual interdependency and complex interactions originating from a possibly complex chain of suppliers and other brokers. The broker provides a comprehensive offer to the customer that maintains the advantages of integration while preserving choice. The broker must also offer a fair and effective market place for suppliers.

![Diagram of a specific transaction model](image_url)

**Figure 9. An example of a specific transaction model**

A significant feature of this pilot is that the transaction stage is concerned not only with discrete transactions but also with persistent registration of customers and protracted, multiple transactions. The broker has responsibility for registering customers, operating the service supporting search, access and use of the brokered services, accounting and billing and after-sales customer care. These responsibilities are shown in figure 9. It can be seen that this model mirrors exactly the generic transaction model for service provision (figure 8) but includes another level of brokering representing an extended value chain in the pilot.
Conclusions

We have shown how enterprise models of the type presented here can be used to identify the new configurations of brokerage systems, services and processes that can be developed by the relocation, redistribution and re-partitioning of market operation and value-adding. The basic concepts of responsibilities and relationships provide not only the means to explore and evaluate new mappings of market operation and value-adding, but also provide a conceptual framework in which policies may be framed.

By regarding brokerage in terms of three distinct phases we have been able to analyse the specific requirements of each phase, and have recognised that the high level of security needed for transactions involving financial organisations and money, is far greater than that required for services providing information over the Internet, and would be inappropriate and inhibiting for such a service. Separate business cases may thus be made for the information provision side of broking and for transaction management.

The impact of models such as these is however greater than the commercially-motivated demands for a means of identifying and evaluating new business opportunities. Such models are also needed to provide a basis for regulation and standardisation of the new systems and services for all aspects of electronic commerce that are developing today. The economic consequences of developing standards and regulations that do not fit the emerging and potential patterns of electronic commerce are unpredictable, but would undoubtedly be detrimental to the development of all the potential participants: businesses, systems and services, in the electronic market place.

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