

Business Models for Information Goods Electronic Commerce

Conceptual Framework and Analysis of Examples

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Abstract: Electronic commerce studies have created important models for the trade of physical goods via Internet. These models are not easily suitable for the trade of information goods. Lowly codified information goods are hard to represent unambiguously among trading partners, their property rights are hard to secure, and the determination of volume and price is difficult. Highly codified information goods are easier traded by markets but have different levels of abstraction, which leads to specific requirements for their business models. The article analyses several information goods trade models that are derived from the framework presented.

1. THE NATURE OF INFORMATION GOODS

In markets, the good traded must be comparable to a commodity, this means highly codified and non asset specific (of potential value for many buyers). The transactions are governed through classical contract law: sharp in by clear agreement; sharp out by clear performance- in which the identity of the parties is irrelevant (Williamson, 1991: 271). Information goods though often are less codified and thus require intense communications to be understood. Additionally, the information good may be more asset specific, implying that it is of use for only a limited group. These exchange and product uncertainties require more elastic contracting mechanisms. If the contracting parties maintain autonomy but are bilaterally dependent to a nontrivial degree, the contracts will not be complete, and “(1) contemplate unanticipated disturbance for which adaptation is needed, (2) provide a tolerance zone within which misalignment will be absorbed, (3) requires information disclosure and substantiation if adaptation is proposed, and (4) provides

for arbitration in the event voluntary agreement fails” (Williamson, 1991: 272). This is what Williamson calls hybrid transaction governance, and some other authors call clans (cf. Ciborra, 1987) or networks (cf. Liebeskind et al, 1996). High asset specific goods are infeasible to supply by hybrids, because their ownership conditions are such strict that the unspecificity of ownership common to hybrids have to be avoided even if the asset is highly codified. This thus requires the information exchange to be governed by hierarchy. Hierarchy has preference over markets and hybrids when many contract disturbances happen, and the principal is allowed to make the decision himself. Following Furubotn & Pejovich (1974) three types of property rights exist (1) the right of use, (2) the right of changing forms and structure of the transferred good, and (3) the right to reap the profits of the good. Picot, Bortenlanger, & Rohrl (1997) add a fourth property right essential for markets: (4) the right to sell the good. Because information exchanges implicate the transfer of information from a supplier to a buyer, the exchange partners arrange some kind of payment. This payment may result from the work of the invisible hand (the market), mutual understanding and networking (the handshaking in hybrids), and fiat in hierarchies. Because prices are hard to define in hybrids (Liebeskind et al, 1996), the payment for use mostly consists of invitations for collaboration on further development, and sharing profits when the information good can be sold or exploited. In the hierarchy, the most important ownership is the right to reap the profits exclusively.

Following Boisot (1998: 14) information (goods) may be classified along the dimensions of their level of codification and abstractness. Codification helps to give form to a knowledge asset, for instance by representing it in a language or mass-produced artefact. High codification implies that the representation is unambiguous for different receivers of the tokens. Abstraction refers to the level that information and knowledge can be applied more generally and is less restricted in scope.

Information goods are representations of events, objects, and ideas, which are codified such that they may be exchanged. Though the abstraction level may determine the level of control over processes (Bohn, 1994; Wijnhoven, 1999) and as such is basic for the business value of information goods, the codification level determines the efficiency of possible exchanges (Boisot, 1998). Low codification levels obstruct the market exchange of information goods, because it may be unclear for the buyer what actually will be sold. As such low codification goods are more effectively exchanged in networks, where reputation determines much of the expected value, and higher risks of poor value deliveries are acceptable. High codification, in return, enables to tag a price to the commodity and also enables others to deliver comparable products that create market competition. Consequently, markets only enable highly codified information products to be exchanged, though if they are highly asset specific, they will have to be exchanged via hierarchies for the sake of maximum exploitation of the property rights. Low codified information goods require a conversion process to make them suitable for market exchanges, if

they are not asset specific. Given the different levels of abstraction and codification, several information goods may be identified (see table 1).

Table.1 A classification and examples of information goods

Exchange governance	Market	Hybrid		Hierarchy	
Codification	High	Low	High	Low	High
Abstraction low	Data delivery services; News, journals; Infotainment	Qualitative observations & reports; Gossip	Data sets	Gossip; Business intelligence reports	Databases
Abstraction moderate	Magazines	Research in progress results; Ideas & notions	Shared resources for academic group	Organisation al routines & norms; Undocumented policies	Management reports; Documented business policies
Abstraction high	Professional services; Courseware; Scientific publishing; Patents; Insurances.	Theory ideas Paradigms	Scientific software; Models; Sponsored scientific books & CD-ROMs	Business and management consulting; Skills	Knowledge-based systems; ERP; Business models; R&D.

This article focuses on the information markets and the related information goods. Section two analyses the problems of information goods trade by electronic commerce systems, and section three proposes a generic way of designing business models that cope with these problems. Sections four, five and six analyse business models that cope with low, moderate and high abstract information goods. Finally, section seven analyses and discusses the differences and generics of these models.

2. PROBLEMS OF INFORMATION GOODS TRADE VIA E-COMMERCE

Electronic commerce aims at “...the seamless application of information and communication technology from its point of origin to its endpoint along the entire value chain...” (Wigand, 1997: 5). Electronic commerce may reduce transaction and co-ordination costs, because (1) it allows more information to be communicated in the same unit of time, (2) it enables a tighter linkage between buyers and sellers, (3) it may create an electronic marketplace where buyers and sellers trade, and (4) it enables the strategic deployment of linkages and networks among co-operating firms. Electronic commerce systems enable the replacement of inefficient

intermediaries (Wigand, 1997: 4). The extent to which intermediaries can be replaced by electronic means is dependent on the level to which (lowly codified) pre-execution expertise is required. Picot et al (1997:114-115) therefore split consulting-driven from execution-driven transactions. An example of an execution-driven transaction is the booking of a flight, when the travel agency books the flight and provides no extra services. Consultant-driven transactions cannot be disintermediated because they rely on tacit knowledge. An example is the underwriting of a life insurance policy.

Kambil & Van Heck (1998) distinguish several trade processes and trade context processes. The trade processes involve the search and valuation of offers from suppliers and buyers, the logistics for transporting the goods, the payment and settlements, the verification of the quality and features of the product offered, the authentication of the trading partners, and the monitoring of conformance to the contract or agreement among the parties. The trade context processes may exist of communication and computer support, product representation, legitimisation for the validation of exchange agreements, influence structures and processes to enforce obligations or penalties to reduce opportunism risks, and a legal or institutional structure to resolve disputes.

All these trade activities have opportunities and specific problems when they want to trade information goods. These are listed below.

1. Search. Search engines, portals, and electronic agents may reduce the search costs for potential buyers. Sometimes the number of potential offers may be an overabundance, requiring evaluation methods like reputation indicators and certifying intermediaries (also see 2 and 5 below).
2. Valuation. A variety of new price discovery means (electronic auctions, bidding processes and negotiation via electronic agents) exist that differentially attribute costs to buyers, sellers and intermediaries. These may be applied to information goods as well, though the role of certification and reputation management may be more dominant.
3. Logistics. The logistic problems for the delivery of tangible goods via e-commerce may be huge. In contrast, information goods offer excellent opportunities for transaction costs reductions via Internet delivery. Divisibility of many information goods realises mass-customisation. Security problems (property rights theft) though are large.
4. Payment & settlements. Third parties may provide the infrastructures to reduce for exchange risks, consisting of banking and legal services. The divisibility of information goods enables to stop delivery when payment is not done (subscription principle), and thus the payment risk in information goods is probably easier controlled than in physical goods trade.
5. Authentication. The authenticity of the trading parties in electronic commerce is required. Third parties may monitor conformance to the contract or agreement among parties, so that dispute resolution can be based on agreed data. A special

problem for information goods is the ease of producing illegal copies, though this may be easily recognised.

6. Communications & computing. Improved processing, storage, input-output, and software technologies, transform the co-ordination capabilities of stakeholders in each process. This is especially true for information goods, where a strong merge of production, logistics and distribution may happen. Consequently, mass customisation is rather easily realised.
7. Product representation. Product representation determines how the product attributes are specified to the buyer or third parties. Too much representation, though, removes the trade value of information goods, but too less is insufficient for making buying decisions.
8. Legitimation of transaction. Trade and exchange agreement can be validated on-line, by connections with credit card firms (which guarantee payment), checking the authority for transactions by PIN codes and membership numbers. This is most useful for information goods.
9. Influence structures & processes. Explicit mentioning of the terms and conditions of the trade may reduce dispute problems, but only when existing relevant legal and transaction data is available, reliable, and is easily transferred to enforcement actors.
10. Dispute resolution. Probably legal institutes must be adjusted to settle legal problems in electronic commerce, but the law will need innovations and not much experience (jurisprudence) may exist yet. This problem may be larger with information goods, because the property rights of information goods are more difficult to describe and secure.

Several principles of trade mentioned by Kambill & Van Heck are hard to apply in the context of information goods because of the codification (representation), property rights, and pricing problems involved.

3. CONCEPTS FOR THE ANALYSIS OF INFORMATION GOODS TRADE PROCESSES

Because information goods are easily and cheaply produced and distributed to clients, the actual process of information goods creation for many information goods can be done in close interaction with the end consumers. This means that information goods creation processes should be included in the information goods business models. The information goods creation management process helps to make the good to a commodity that can be easily sold to generate the highest revenues. Some of the most important subprocesses of this activity are to help clients find the product (search), to realise the authenticity of the product (through e.g. copyrights), and to make attractive product representations that help clients to make buying decisions. Also after-sales services may be developed to increase the

client's expected future product value. The actual production of the information good is an important part of the business model, because it will enable more or less mass-customisation. As stated before, information goods may theoretically have nearly unlimited opportunities of mass-customisation, and the production facility is thus an important part of the model, which requires specific communication and computing facilities, influence structures and processes. Finally, information goods require a retail and distribution facility, which is able to value the product, logistically deliver, settles payments, legitimise the transactions and efficiently treat disputes. This results in the classification of activities and processes for information goods trade as listed below (Clemons et al, 2001).

- Information goods creation process, by e.g. artist, writer, reporter, researcher, photographer.
- Information goods creation management: selection of content, promotion, contract writers and creators, edit, generate sponsorship, certify correctness, accuracy, timeliness and suitability
- Information goods production: bundle data to packs, combine it for cross-selling (e.g. advertisements), print, distribute to subscribers and retailers
- Information goods retail and distribution: by subscription services, news agencies, news stands, convenience stores and other outlets

We describe some of the market trade examples of table 1 following the processes and activities listed here. The resulting models are analysed in section seven with respect to their similarities and differences among the three levels of abstraction of information goods.

4. BUSINESS MODELS FOR LOW ABSTRACT INFORMATION GOODS

Table 1 mentioned the following low abstraction information goods: data delivery services, news services, and infotainment (popular music and books). Because news service is a specific example of data delivery services, only the data delivery services and the infotainment examples will be discussed in this section.

4.1 Data delivery service

The information supplier delivers elementary data to the acquisition activity of the service, and helps to fill the structure and content of the product platform. Next these data may be analysed, integrated, synthesised, added and standardised, and consequently stored and made easily available to clients to facilitate customised client needs. These acquisition, refinement, and storage and retrieval facilitations are the information goods creation process. The distribution process is similar to the

retail process and thus also includes the contracting and product presentation. The buyer receives information packages, and submits information needs specifications to the access tools and information product family resource. These data delivery services thus deliver customised information packs and access to large data resources. These services are also called information refineries (Meyer & Zack, 1996). See figure 1 for a model of the data delivery service.

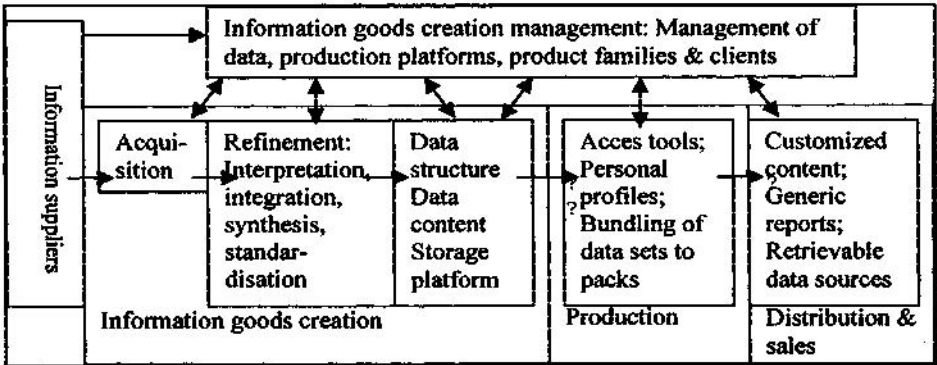


Figure 1. Data delivery services trade model

Modern new services can be organised as data delivery services, while improving the customisation and topicality (real time news), and reducing the production and delivery costs. As addition though, they need a certification process to manage the quality of the supplied data and maintain the reputation of the service.

4.2 Infotainment service

Infotainment is a broad term for software for fun. Basically an artist or group of artists produce a piece of art, like a movie, a piece of music, or a game. The artist(s) first create a composition, arrangement, script or initial game design and tries to convince a recording company to arrange the facilities to produce the idea, and sell and distribute it. There is a tendency for music groups and game developers to create the products on their own, which means that the artist (group) and the product creation management firm are the same people, but often the investments and the commercial expertises needed are insufficient for this unity (cf. Clemons & Lang, 2000). The information goods creation manager also facilitates the bundling of pieces of the art product to optimally suit specific market groups and so to make the product more attractive. Information goods of this kind can be delivered in hardcopy and digital form. The digital form, though more sensitive for violations of copyrights, enable more flexibility in the delivery and customisation of the good. Also the distribution and production cost are less. See figure 2 for a model of the Infotainment trade.

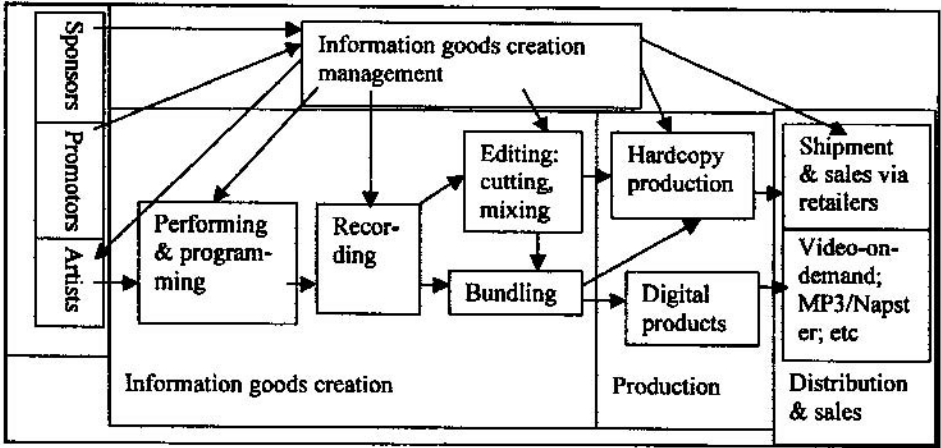


Figure 2. Model of infotainment

Many infotainment services require a continuous development, while users/players and designers discover new opportunities or generate new ideas related to the basic product. After some time the many new ideas may be combined to a new release, which may be supplied via shops as CD-Roms or via the Internet-based product supply site. Consequently, the management of the exchanges of users and designers is a most important part of product management, and the information goods creation management.

5. BUSINESS MODEL FOR MODERATE ABSTRACT INFORMATION GOODS: MAGAZINES

Magazines publish articles with a higher level of abstraction than news services. This implies that more content expertise has to be added. Consequently, the information goods creation process is more intense and takes more time. Additionally, magazines have to hire external expertise to check the quality of the product or to add to it when the editors have insufficient depth of knowledge. Some information goods buyers may be expected to be more knowledgeable and can add sometimes by delivering their comments. The readers may want more resources and may be interested to reuse articles, though they do not know which and when. The most important additions to the news services thus are (1) the research process, (2) acquiring external expertise for additions and review, and (3) resources for readers. See figure 3 for a model of a magazine.

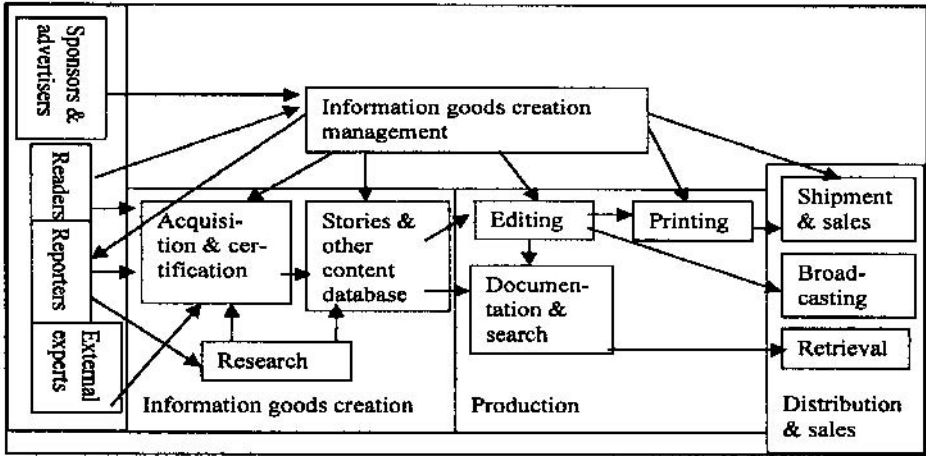


Figure 3. A model of a magazine-like information trade

6. BUSINESS MODELS FOR HIGHLY ABSTRACT INFORMATION GOODS

Table 1 mentioned five examples of high abstract information goods: professional services, courseware, scientific publications, patents, and insurances. Lack of space reduces this discussion to professional services and patent trade here.

6.1 Professional services marketing

Professional services have a high level of abstraction and consequently it may be difficult to codify them fully. As far as they are not fully codifiable, other trade mechanisms than markets are more useful (Liebeskind et al, 1996; Williamson, 1991). Most hospitals, organisation consultants and educational institutes have websites, which help clients to make an initial diagnosis, an initial analysis, or give information concerning research results and courses. Many of these sites are free of charge, because they help to develop a need among prospects for more profitable services, which are difficult to codify. To understand the typicalities of such professional services marketing, let's analyse the case of CapGeminiErnst&Young's Dutch operational benchmark service. CGEY clients can fill in a form consisting of benchmark items. The data submitted are compared to data from other firms, and some diagnosis and advice is given. Via the system, clients receive a well-grounded advice, combining theoretic insights, expertise and data. They pay a small fee for the service. Sometimes they will be able to solve the detected problems themselves, but they may also hire the professionals from CGEY or another organisation

consultancy firms. At least two different types of products may be delivered: (1) the electronic advice via the website, and (2) professional skills. The information goods production thus has two production lanes, and these lanes built on data, expertise (case experiences), and theoretical insights, that are modified to the consultancy systems and the consultancy method. See figure 4 for a model of professional service trade.

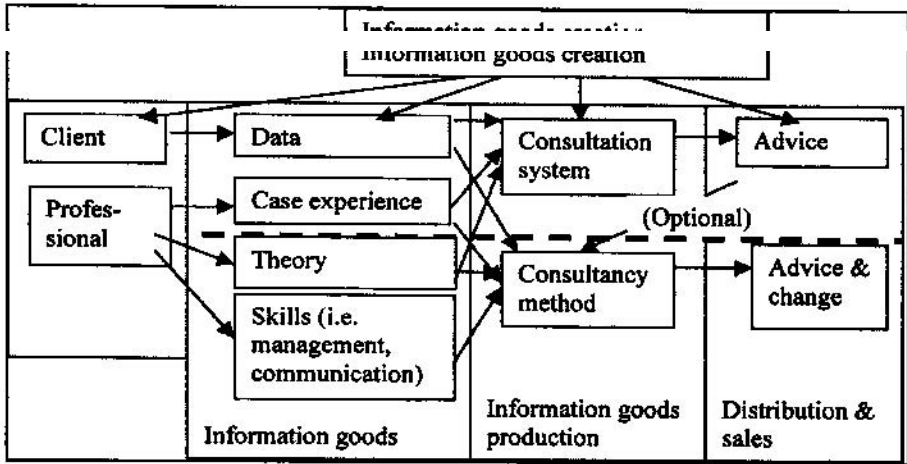


Figure 4. Professional service marketing-like information goods trade

Typical for this information trade process is that some of the information goods are hard to codify, and thus are difficult to trade via markets (this is represented as everything below the dashed line in the figure 4), and are certainly not to be traded by electronic commerce. These low codification goods though are important complements to the codified goods.

6.2 Patent trade

Though patents are representations of highly abstract knowledge, they are suitable for codification. This means that they are described such that other people can use them in a profitable way when they pay for its use. This makes patents as information goods, particularly suitable for market trade.

Because using a patent is only possible through coming to an agreement with a patent owner, the actual production requires the public publication of the patent, a valuation of the patent and the negotiation and contracting. These production processes are combined within the Yet2.com site. Yet2.com wants to be a global patent marketplace, by giving clients (searchers and potential buyers of patent licenses) access to owners of advanced technologies. Several leading technological

firms are sponsors of Yet2.com, and they share their patents via Yet2.com with the market. The Yet2.com site gives information for valuation and pricing of patents, via its “done deals database”, assists in structuring a deal by providing past deals as a frame of reference, and helps to learn about royalty rates in similar transactions. Yet2.com also gives assistance in legal services like patent prosecution, trainee programs, setting up legal protection. The site gives multiple references to other firms that can help by providing their professional services, and as such is a professional services marketing site as well. The information good is created via the review of a patent submitted for publication and the actual delivery of it as an information good via publication (hardcopy or on-line). This review (the job of patent and trademark offices and authorities) focuses on removing ambiguity in the patent description, and checking the novelty of the invention. The results of these reviews are processed by specialised publishers like Derwent via hardcopy prints and on-line databases. See figure 5 for a model of patent trade.

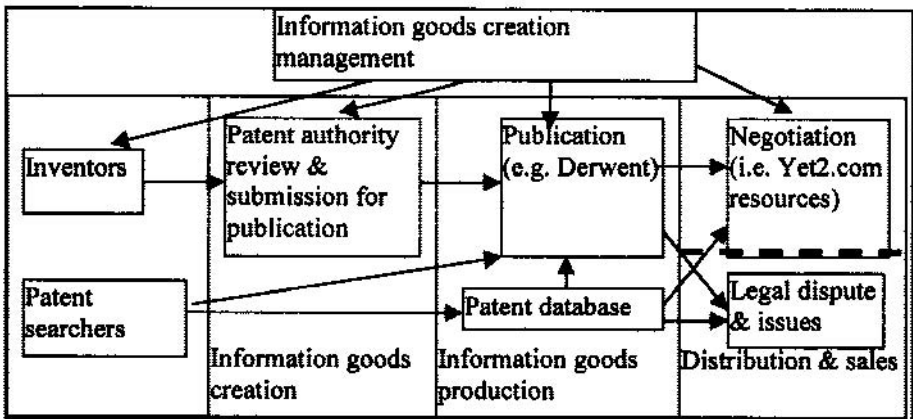


Figure 5. A model of patent trade

The elements below the dashed line have low levels of codification and are hard to trade via electronic commerce systems.

7. CONCLUSIONS AND DISCUSSION

Although this study does not pretend to be complete on all possible information good trade models -the cases have been selected as examples within a framework- several conclusions for theory and practice can be drawn. These conclusions result from a comparison of the models among different information goods abstraction levels, and within similar abstraction levels.

Trade models for moderate abstract goods require the addition of more expertise than for the low abstract good trade process. This expertise often has to be insourced, and requires review and commenting activities of (external) experts. High abstract goods can hardly be traded completely by electronic means, and requires supplementary human commercial interactions to deliver the information goods completely. Electronic commerce systems for high abstract goods thus need a human expertise supplement in its production and delivery processes for clients who want more.

Within the low abstract information goods group, the models differ on:

The level of human interaction needed. With some goods an execution-driven process may satisfy, whereas with other goods clients need access tools to create their own end product.

The level of bundling and customisation of the information good. For instance books are completely bundled information goods, whereas data delivery services may supply unbundled data.

The virtual or physical nature of the supplied good. Most low abstraction information goods models enable virtual as well as physical deliveries.

Within the moderately abstract group the most important difference may be the level of user/reader/consumer interaction in the information goods creation process. Electronic reader platforms may facilitate discussions and facilitate further critical explorations by the reader. This may be extended to reader involvement in magazine production activities.

With high abstract information goods the major differences are:

The level of completeness of the product codification. High abstract information goods mostly have a codifiable and noncodifiable part. The noncodifiable part also requires a consultant-driven trade process.

The leading actor in the market. In some cases the product creator owns the trade system (i.e. insurance firms), whereas in other cases the product creator and buyer community may own the trade system (e.g. some scientific communities).

The inter-organisational nature of the trade system. Some information goods require the collaboration of several specialised information good creators (i.e. the patent trade market of Yet2.com).

Sections 2 and 3 mentioned that information goods trade has specific complications because of its goods representation, property rights, and pricing problems. But at the same time, information goods can profit more from electronic media for reducing transaction costs, and improving producer-buyer interactions. Electronic media also enable more integration in the value chain and opportunities of exploiting this. All the information goods trade models have high opportunities of customisation and intense user/client involvement in product creation and production. The access tools, though important for customisation, make information good trade systems very sensitive for property rights violations.

Information goods business models at a meta-level share actor roles, information goods creation activities, information goods production activities, distribution and sales activities, and the co-ordinating tasks of information goods creation management. Further analysis and design of the models architectures require considering several organisational and information technological decisions. Though some significant insights are accomplished on concepts and models of information goods trade, this article is just a start to further systematic exploration of information goods electronic commerce. Much more practice has to be documented and analysed, resulting in the development of management instruments.

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