

# Contractual Versatility in Software Business

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**Abstract.** This empirical study addresses the problem of how Commercial-off-the-Shelf (COTS), tailored, and Modified-off-the-Shelf (MOTS) software contracting has been approached, in practice. The focus of the study is on analyzing different contractual characterizations of the three models of software business. The empirical part of the study was completed by analyzing twelve software producing companies – eight were Finnish firms established in the Silicon Valley area in the USA and the rest were local Finnish firms with international operations. The research produced a number of practical insights for managing and developing the contracting process.

## 1 Introduction

The Intellectual Property Rights (IPR) with all its elements are one of the most critical issues for the development of the information technology (IT) industry. Especially now, when numerous software start-ups are entering the business as well as many established companies are forming innovative and varied kinds of research alliances and business cooperative networks, it is vital for the business to understand the assets and liabilities belonging not only to the software company itself, but to its business partners belonging to and operating in the network [1, 2]. This emphasizes the ability and knowledge to make agile and explicit use of networked software companies' proprietary rights in all situations. The IT business needs more experts that understand how to administer in concert not only the software technology issues and the application development processes, but also the legal aspects related to the whole business development.

The managing contractual issues is still more demanding when software companies enter international as well as the Internet based markets, where their main cooperative forms are resellers or agents, affiliates, selling of licenses, own

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marketing companies, joint ventures or franchising [3]. The growing and important open source software development and its multifaceted contracting environment is not discussed in this paper as the case companies did not make any extensive use of this new phenomenon. Software contracting forms an important subject that the software company must govern in order to succeed in international competition and collaboration. The overall business environment is in constant change as the companies form and reform alliances with other companies and networks. Fast development pace of new technologies also puts extra pressure on company's legal expertise. In particular, R&D co-operation, financing and acquisitions demand for exact knowledge of the ownership, i.e. the rights to knowledge, technologies, products and associate services [1]. These will have a growing importance as IPR are forming longer and complex chains and networks of contracts in which every participant should get its justified share of the whole profit.

This paper focuses on the software company's contracting process and how the company matches this process with its software development process and business relationships. The paper is structured as follows: first we give a general view of software contracting, after that we discuss the different software business models utilized in this study. This is followed by description of the empirical research setting. Based on this empirical case material we depict what we will call the Evolutionary software contracting process. In the discussion part we relate the contractual view to the software business perspective.

## 2 Software contracting

The reason why software contracting is considered as a difficult task is the complexity of the software [4, 5]. The software contracting process has not been addressed directly from the perspective described in this paper in the earlier software contracting literature. Marciniak and Reifer [6] have described one of the first published software contract models. However, this model depicts only the initial stages of the whole software contracting and development process. Besides, it emphasizes the procurer's view. Even though this study of the contract negotiation is completed from the supplier's side, there are always two parties present. For the supplier it is valuable to understand the customer's intentions and behaviour in the negotiation situation.

Griffel et al. [7] discuss the generic model of contracting fitted into the Internet environment using special contracting software. They define three main phases for contracting: information phase, negotiations phase and execution phase. "A contract represents gathered information, agreed terms and conditions and steps to fulfil mutual commitments in a formal way, combined into one structured document".

Elfatry and Layzell [8] have described a three-stage negotiation model for software services including pre-negotiation, negotiation and delivery phases where the contract is signed at the end of the negotiation phase. A more general negotiation model presented by Adair and Brett [9] contains four phases and it takes also culture into account that is notable when thinking international business operations.

### 3 Software business models

Building up the software company's contracting process should start from the business strategy and model that the company has selected for itself. The company has to know clearly in which business it is in, and how to run that type of business. The focal software business models relevant for this study are the Commercial-Off-The-Shelf (COTS), Tailored (bespoke) and Modified-Off-The-Shelf (MOTS) types of businesses. In all these segments customer needs are different, and thus contracts must have different contents and elements.

Rajala et al. [10] have come up with a framework for analyzing software business models that also include product development categorization. They have identified the following options for product development: project, product platform, parameterized product, core product and product family. The COTS business model corresponds with the product that is defined to focus on "the development of a single product or product family to be delivered to several customers as is" (ibid). The tailored approach again is equivalent to the project that focuses on the tailor-made software solution offered to customer's specific needs. Lastly, the MOTS business model is similar to the parameterized product with the definition of "customizable product that can be tailored to a degree". From the Williamson [12] point of view these three business models use classical contracting, relational contracting and both classical and relational contracting respectively. However, the categorization is a question of definition that is emphasized by the angle of approach used and needed in each separate study.

From the supplier's point of view it is valuable to understand the customer's environment and especially the economical valuation of the problem in the tendering and in the actual contracting situation. The procurement means a choice among several software suppliers – company's own IT department, outside experts and consultants, MOTS or COTS software suppliers – and several contracting forms. This includes the manifold field of IPR; copyrights, patents, license, etc.

### 4 The case and methodology

The empirical research data of this study consists of interviews of employees working in twelve SME companies developing software, addressing their experiences in different kinds of software businesses. The material gathered is mainly company managers' descriptions about the actual contracting processes and of how they see the process unfolding over time in relation to business development and different stages of customer relationships, Table 1.

This provides a picture of how the software contracting process unfolds, behaves, what contextual elements affect it, and how the whole process is being managed. Totally the empirical material comprised over 16 hours of interviews. Each of the business categories includes several companies, in order to give more reliability and material to compare the contracting processes from different types of software companies. The multiple-case approach was selected to strengthen the research base

and validity of the results as the business line in focus is characterized by companies whose business situation varies [11].

**Table 1.** List of software companies interviewed.

Interviewee(s)	Line of business	Business mode	Employees	Founded (year)	Location, established in the USA (year)
CEO	Communications solutions software	COTS MOTS	11 - 50	1992	FIN
CEO (Co-owner), Contracts and Logistics Manager	Telecommunications software for the Internet	COTS Tailored MOTS	11 - 50	1997	FIN
Technology development director, Software development manager	Internet portal division	COTS	11 - 50	1998	USA 1998
VP of sales and marketing, COO	Internet tools and platform software	MOTS	11 - 50	1994	USA 1998/1999
CEO	Business intelligence software	COTS	51 - 100	1991	USA 1998
CEO	Mobile Internet platform	Tailored	11 - 50	1982	USA 1999
VP of Global Business Operations	Security solutions	COTS	51 - 100	1988	USA 1994
CEO and COO	Virtual communities	COTS MOTS	1 - 10	1997	FIN
CEO	Wireless Internet	Tailored	11 - 50	1997	USA 1999
COO	Data management solutions	COTS	101 - 200	1992	USA 1994
VP of R&D (Co-owner)	Engineering software	COTS MOTS	11 - 50	1989	USA 1990
CEO	Systems house	Tailored	11 - 50	1989	FIN

However, all the firms are small and fast developing, and operate in one or several business models and in a mixture of different cultures and contexts, e.g. Internet. The data was collected from small and medium size software companies in Finland, and from Finnish companies that have operations in the USA.

### 5 Evolutionary software contracting process

Next, most common contract forms used in the interviewed companies are briefly scrutinized. The analysis is focused on the contracting process, i.e. how and in which stage the different contracts are negotiated and what their implications for the software development and governance process are. The observed contractual structure included contracts:

1. To relieve and enable trusty *information exchange* institutions with the non-disclosure-agreements type of contracts,
2. To lay the foundation for future lasting and viable *relationship building and securing* with the framework type of contracts,
3. To secure the transfer of the *intellectual property rights* as well as other rights for the application and related material, i.e. to explicitly agree on the ownership and utilization of the software, with the license type of contracts,

4. To define the *work on specific software assignment* in detail with work-orders, project contracts and assignment contracts and lastly

5. To *maintain software*; especially in tailored and MOTS business the software companies were disposed to sign maintenance or congruent contracts to bind the customer and to secure constant and predictable future cash-flow.

The three business models have similarities as well as dissimilarities, regarding applying the software contracting processes. These divergences are further discussed and analyzed subsequently. Summing up the findings: the COTS business relied firmly on multiform licensing practices, whereas the tailored business saw the framework contract as the main contractual tool and interestingly the MOTS business employed combinations of these two previous forms, i.e. both licensing and framework contracts, Table 2. From the present study the different business models could be characterized as follows:

**Table 2.** The contractual elements in different business models.

Item	COTS	Tailored	MOTS
Model of business	Transaction	Relationship	Relationship
Duration of business	Short	Long	Long
Number of customers	Numerous	Few	Many
Relationship governance	Contracts	Cooperation	Cooperation with contracts
Relevance of contracts	Essential	Necessary evil	Necessary
Main contract type	License	Framework	Framework with license
Contract characteristics	Tight and gapless	Relevant	Relevant
	Fixed templates	Negotiable templates	Negotiable templates
	Few contract types	Several contract types	Several contract types
Software specifications	Own specifications	Customer's specifications	Own and customer's specifications
Software ownership	Supplier's proprietary	Customer's proprietary	Supplier's and customer's proprietary
Customer space	Global	Local	Global with partners
Marketing mode	Channel	Own efforts	Own efforts and channel
Main communication mode	Internet and channel	Face to face	Face to face, channel and Internet

- The COTS business contracts of sale resemble the Williamson type of market transactions [12]. This holds up especially with the pure COTS business, though the situation is different when business is exercised through channels with the reseller or integrator partnership.

- The tailored and MOTS business again is relationship bounded as in both cases exist or at least there is an aspiration to establish, a relationship as the joint cooperative software development process requires this in alternating density.

- The channel and other joint efforts, i.e. alliances, always require a working relationship to be viable in supplying software to the end-users. Even in some cases the MOTS type of business can be pure channel operations compared to the COTS business as the level of the tailoring and customization part of the software may vary

extensively between the applications and even between the end-user's needs and requirements. Thus many times the line between COTS and MOTS business is fine and vague, as found in the analysis of data.

On the other hand, in the tailored software business the customer and the supplier are close to each other and they also strive for a long-standing relationship. In this model of business relationship it is more important to have a close working relationship and the contracts need not to be as tight as the partners (have to) depend on each other. However, this type of business is not the moneymaker - as the scaling up the business volume depends directly on the number of the employees and it is more or less culture as well as legislation dependent - compared to the possibilities of the COTS business as well as MOTS business.

The middle ground between these two business models is the MOTS business that tries to combine both advantages of the COTS and tailored businesses. Fewer contracts (i.e. customers) than in the COTS business, though more contracts than in the tailored business. Customers are better known than in the COTS business, however not so well as in the tailored business.

## 6 Conclusions

The software company should define from the beginning the so-called *legal plan* that it is analogous to and is included in the general *business plan*. Herein the company's contracting process, used contract templates, IPR strategy and the contract portfolio could be described. The *contracting process description* should include the issues of defined and planned processes with set owners who maintain and develop the process according to the emerging needs. Also the actors, activities as well as the resources belonging to the defined processes are clearly described.

The process plans are put in a written form so everyone in the company has the possibility to become acquainted with them and start to use and work according to these guidelines. The *IPR strategy* issue is broad and it must be done and implemented for the financier, insurance company, customer and possible acquisition perspective in mind. Further it includes issues attached to company's business operations, technology, expertise, competing technologies and competitors. The *contract portfolio* includes all the company's different contracts completed and maintained. There must be someone in charge of this portfolio and to take care of its constant follow-up. From this portfolio the different contracts can easily and clearly been found, and their interdependencies and influence on each other.

In small software companies the three basic and central issues are the price fixing, discount policy and the *utility value* of the software. The managers should understand that the *price of the application is based on the customer's value of the application, not on the production costs*. Thus the pricing starts from the customer's perspective.

When the COTS licensing is done with the end-user then it represents a pure Williamson's type of market transaction [12]. The software companies try to enter into long standing relationships with their customers making different kinds of yearly service contracts with which they bind the customer also in future. The COTS and

MOTS development, marketing, sales as well as the contracting resemble in many ways each other, as commonly the COTS application is delivered as a basis without any changes or modifications to the software itself.

The situation is the same again when the MOTS and tailored software production, delivery and marketing are compared. It depends on the MOTS software itself and its status, how large the part of the software is that the company has managed and succeeded to develop to have the common features in the fixed part of the software and what the part that the company must always customize for and after each specific customer is. This enhancement also depends on how the software developers are able to understand the problem better in order to modify and augment the application software with new features that make it easier to make the implementation project in a shorter time in the future.

Here it could be emphasized again the situation that the MOTS business combines both the COTS and tailored model resource issues. This makes the MOTS business demanding from the management point of view as in the best case the company should have *control over the tailored type of software development process as well over the COTS type of software selling process and to be able to combine these into the contracting process.*

The interviews brought up the following elements that were found to be important to be understood for a successful contracting process:

1. The line of business must be well understood.
2. The specific subject of the focal contract must be known.
3. Definition of the proprietary technology to be transferred must be done well.
4. Rights of use given to the customer or partner, including the definitions of where to use and how to use, as well as the possible rights to transfer the object of contract must be done clearly.

Other central issues are to understand what the supplier company is transferring, with what price, what are the liabilities (on both sides), what if there are delays in payments, what happens if the other party is sold, goes bankrupt or some other unexpected and undesirable events occur. The fundamental question is how in a contracting process do the business, technology and juridical issues interplay successfully. Wholly understanding and respecting each other's professionalism equally and considering the company's business success as the ultimate joint target should be the main priority. Though, this may be difficult as the experts from different disciplines easily emphasize the importance of their own domain. Even though, the importance of contracts were not unanimously acknowledged among the interviewed company managers as many times the contract drafting was seen as a nuisance delaying the business operations.

Still, clear opinions understanding and favouring were expressed that already now the business environment is changing into a more contractual direction – most of the supporting views came from companies operating in the USA – thus raising the meaning of good and effective contracts. For a software company to be competitive in global business it must have the understanding of the contractual network, i.e. what contracts to use and when. Secondly the company must also have a well-defined and smoothly operating contracting process supporting the company's other business and software development processes.

The companies should understand the importance of the relational contracting with a processual-view combined with the framework contracting with the supplement contracts that cover the life cycle of the whole contracting process that the partners live through during their cooperative business relationship.

In every case be it COTS, tailored, or MOTS business, the companies have the ambition to move from single transactions to long lasting and recurrent transactions. This is enhanced by learning, adaptation and cooperation. The companies strive to lessen needless (transaction) costs and among these, contractual issues can be found that are developed to work as smoothly and effectively as possible.

The study disclosed the concerning situation that prevails in software companies, i.e. the software companies do not have explicitly defined contracting processes even though the managers are aware of the need and importance of the fact. As already discussed the managers explained the reason; they did not have enough time to correct the situation even though it would pay back in the long run. This is especially the case among SME software companies when the companies start to move their operations abroad into a new and unknown business culture context.

## References

1. H. Hertzfeld, A. Link, and N. Vonortas, "Intellectual property protection mechanisms in research partnerships". *Research Policy*, 2006. 35: p. 825 - 838.
2. R. Kemp, and C. Gibbons, "IPR indemnities in the open source and proprietary software worlds". *Computer Law & Security Report*, 2005. 21: p. 420 - 422.
3. M. Berrell, and J. Wrathall, "Between Chinese culture and the rule of law, What foreign managers in China should know about intellectual property rights", *Management Research News*, 2007. 30(1): p. 57 -76.
4. J. Bessen, "Open Source Software: Free Provision of Complex Public Goods", 2005, *Boston University School of Law and Research on Innovation*: Harpswell, ME.
5. S. Whang, "Contracting for Software Development", *Management Science*, 1992. 38(3).
6. J. Marciniak, and D. Reifer, "Software Acquisition Management", *Industrial Software Engineering Practice*, ed. F. Buckley. 1990, New York: John Wiley & Sons. 290.
7. F. Griffel, et al., "Electronic Contracting with COSMOS - How to Establish, Negotiate and Execute Electronic Contracts on the Internet". *IEEE*, 1998.
8. A. Elfatraty, and P. Layzell, "Negotiating in Service-Oriented Environments", *Communications of the ACM*, 2004. 47(8): p. 103 - 108.
9. W. Adair, and J. Brett, "The Negotiation Dance: Time, Culture, and Behavioral Sequences in Negotiation", *Organization Science*, 2005. 16(1): p. 33 - 51.
10. R. Rajala, et al., *Software Business Models, A Framework for Analyzing Software Industry*. 2001, *TEKES*: Helsinki. p. 76.
11. R. Yin, "Case Study Research Design and Methods", 2 ed. Applied Social Research Methods Series, Vol. 5. 1994, *Thousand Oaks: SAGE Publications*. 171.
12. O. Williamson, *The Economic Institutions of Capitalism*. 1985, New York: The Free Press. 450.
13. T. Roxenhall and P. Ghauri, "Use of the written contract in long-lasting business relationships". *Industrial Marketing Management*, 2004. 33: p. 261 - 268