

# A Framework for Analyzing Software Business Models

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## Abstract

*In this study we explore the concept of business model and its essential elements in software business. There are no rigorous previous definitions or descriptions of the term business model in the context of software businesses in existing academic literature. Hence, a conceptual definition was found essential. Furthermore, there is a clear managerial need for constructs that help understanding and managing the bounded variations of different aspects of software businesses. We believe that decomposition of the business model concept is of help on that score, too.*

*Based on cases representing different businesses in software industry, we explore business models for creating of a holistic view of business options based on schemes of things that the managers of our case companies found essential when describing their businesses. As a result of our study, we combine product development, marketing, sales, revenue logic, services and implementation into a cohesive framework describing the generic elements of business models in the software industry.*

## Keywords

Business model, software business

## Introduction

Ever since the explosive growth in the number of software- and Internet related start-up companies there has been a lot discussion about the business models of these companies. During the period from mid-1999 to mid-2000, to get investors interested it seemed to be enough to say that a company had a business model that had something to do with Internet or software services. Today, when many of the companies with “new” and “innovative” business models have failed to grow into viable businesses and many of them are facing immediate bankruptcy it is worth taking a closer look at the viable business models for software companies. In the fiercely competitive and fluid environment of international software business the companies and their partners need tools that can be used to analyse their situation and possible future strategies.

## Objectives and Motivation of Study

The purpose of this study is to develop a framework for analysing the business models of software companies. Our framework is intended to help both future research in the field and business practitioners to understand the notion of business model in the software business context. Our primary goal is to present a balanced model of the essential parts of a software product and service proposition and its practical manifestation in different software businesses.

One aspect of studying business models in software business is the extensive and ever increasing cooperation of software businesses in different business networks. In the networked economies of this kind, a single business is intertwined with other businesses across company boundaries. We believe that a clear notion of a business model may, in part, help to understand this cooperation, and, to improve abilities of business actors to cooperate within their business networks.

Recent public and academic discussion about business models contains few feasible and exact definitions of the term. This seems to be true in both academic and public discussions (Eisenmann, 2002). In this study, we will define the concept of business model for the purposes of our study, which are, to understand the essential elements of business models, and, to serve as a basis for analyzing, e.g., the bounded variations between these elements in software businesses.

## Research Questions and Research Method

In this study, our aim is to develop a framework for analyzing business models of software businesses. To find out a suitable level of abstraction for the analysis of business models, the research question of this study is formulated as follows:

*What are the generic elements of business models in software businesses?*

This exploratory qualitative study was carried out using the case study methodology (Yin, 1994) for comprising interviews and observations to collect primary data, and a grounded theory approach (Strauss and Corbin, 1998, Glaser and Strauss, 1967) for analysis and theory building. As our research question does not imply a clear testable hypothesis, an inductive approach was essential in most parts of the research. The research design framework can be described as a multiple case study, composed according to the theory building structure, as described by Yin (1994). This method is seen justifiable, because the context consists of

concepts that are non-quantifiable. Especially the concept 'business model' in itself needs to be constructed from understandable elements prior further analysis.

Strauss (1987) emphasizes the usefulness of the case study approach when used together with grounded theory. Grounded theory seeks to generate theoretical statements and, ultimately, theories based on empirical evidence. In this study, the grounded theory method of qualitative data analysis was used to identify the elements forming our framework.

In the empirical setting we selected six software businesses to be analyzed in a multiple case study. The cases were selected on the basis that they were thought to be different from each other regarding the appearance of their business model. After six cases the same key issues started to come up in the interviews, and these six were considered to be sufficient. Later one of these cases was rejected from the analysis as it did not incorporate an identifiable business model. As a matter of fact, that company went bankrupt later during the research project.

The data collection started with two expert interviews to define the problem domain and continued with interviews with the management of selected case companies. The intensive interviews were tape-recorded and transcribed on parts that concerned the business models.

To make sense out of the data, we organized it according to a classificatory scheme developed on the basis of the interviews. In the process, items were identified from the data and defined according to their general properties and dimensions. A brief introduction to the cases is presented in a summary table in the Appendix 1.

The interviews included open questions, like "describe your business model [in words]". The data from these interviews was used in the open coding where we tried to identify concepts the managers<sup>1</sup> of our case companies used when describing their business models. The open coding resulted in four root categories introduced later in this paper. In the process, items were identified from the data and defined according to their general properties and dimensions (Strauss and Corbin, 1998).

## Business Models in the Literature

Previous research on software business has focused, inter alia, software product development, finance and publication cycles, or, the industry as a whole. In this study, we will address the concept of business model, and decompose it into essential elements. There is no consistent or rigorous definition of a **business model**, neither in the e-commerce nor in the software business context. The current semantic confusion is further complicated by consultants and practitioners that often resort to using the term "business model" to describe any unique aspect of a particular business venture.

To summarize, the main elements of a business model defined by a number of researchers (Whittingham, 2000, Timmers, 1998, Rappa, 2000, Chesbrough and Rosenbloom, 2000, Mahadevan, 2000, Betz, 2002, Amit and Zott, 2000, Afuah and Tucci, 2001) in different words include *value creation processes* and *capturing the opportunities in the market into revenue through sets of activities, processes and transactions*. Common to all of these definitions is that they emphasize the *procedural nature* of a business model. Value creation processes describe the value proposition and its accomplishment, and value collection processes describe the sources of revenue and the roles of various business actors in the business. It must be noted, however, that value creation can be accomplished both by the

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<sup>1</sup> Interviewees in this part of study included five CEO's or Managing directors, two Directors of Business Development, two Sales Directors and one Director of Technology from the selected case companies.

business model and the product and service offering of a firm (Amit and Zott, 2000). Part of the value added in software industry is in the product or service (software, consulting, etc.) instead of a specific method of conducting transactions.

For the purposes of this study, we see that a business model refers to a single company, and that it describes only a single product at a time. We understand the business model as an appearance or manifestation of business strategy, or, as an action designed to fit into a specific market situation in order to execute strategic plans. Thus, the questions of product (What?), market (To Whom?) and the structure or nature of operations (How?) as a part of the business idea must have been answered - at least to a certain degree - before the business model best suited to the situation at hand can be formulated.

## Factors Affecting Software Businesses

A number of factors affect the selection and suitability of a particular business model for a given enterprise. Different business models can be viable for situations within the constraints set by the competing environment, customers, resource environment, financing environment, corporate and business strategies, and the characteristics of the product and service offering. Although most of these factors are external market conditions, some of them may be embedded in the business model. In this study we assume most of the above-mentioned factors as given variables facilitating or restricting the implementation of various business models.

The concept and meaning of *corporate strategy* has been discussed extensively in the management literature for decades (Drucker, 1954, Ansoff, 1965, Andrews et al., 1965, Hofer and Schendel, 1978, Porter, 1980, Minzberg and Quinn, 1991). Whereas the corporate strategy deals with the scope, businesses and resource deployments of the whole corporation, the *strategy at the business level* focuses on how to compete in a particular industry or product/market segment. For software businesses the major business strategy decisions include issues such as product development choices, design of product line (product families), the level of product vs. service orientation of the offering, market development, distribution, financial, personnel arrangements and R&D policies. The implication of corporate and business strategies to software vendor's applied business model is a relevant issue if we consider business model as a practical manifestation to follow the goal setting and design of both corporate and business strategies.

## Environmental factors

The roles and utilities of different actors engaged in any businesses can be thought as one perspective in understanding the business model. Räsänen (1996) has summarized this as follows "When examining a business from the perspectives of various actors, we could say that a good business model interconnects both profitable investment for owners, a beneficial service for customers, a rewarding and knowhow-favourable work organization for employees, and, a competitive business strategy compared to competitors."

There are several noteworthy issues in this. Firstly, the market environment (including competitors, dominant platforms and standards, legal aspects, political values of customers, etc.) has a major impact on the business models of a software venture. The unique features of digital products have implications for market structure also in software business: as the prices cannot be based on production costs, the markets of an information-intensive product cannot be perfectly competitive. (Shapiro and Varian, 1999).

Secondly, customers' utilities are considered as one of the key factors shaping a business model. Raymond (1999) has pointed out the need to recognize that computer programs, like all other kinds of tools or capital goods, have two distinct kinds of economic value. They have *use value* and *sales value*: The *use value* of a program is its economic value as a tool, and, the *sales value* of a program is its value as a sellable commodity. In order to build a sustainable value proposition, software vendor must understand the *use* value of the software. For example, business users are generally most interested in the business value of software, whereas users playing computerized games are interested in the entertainment value of that game software. In both cases, we see that understanding of customers' needs and preferences is a key issue in the development of a business model.

Furthermore, the management and coordination of knowledge work has been a subject for research at least from the beginning of the 2000th century (e.g. Fayol, 1918). Since then, the resources of an organization are recognized as a key factor shaping the business of any enterprise. A foremost factor to be considered shaping the business models, especially in small businesses, is the knowledge and skills of the management team.

Finally, we see the financing environment of a software business as a combination of the utility functions of its various stakeholders, which may include shareholders, financiers, management, employees, development partners, distributors, subcontractors, and suppliers. This factor embodies the balancing of risks and expected revenues from different stakeholders' perspectives. Freeman (1984) has argued that organizations also face pressure on their value from a range of stakeholders, including customers, unions, governments, and the general community.

## Characteristics of Software as a Product

A defining characteristic of software is that it is an information-intensive product, having cost characteristics typical to other information products: it is expensive to produce, but very cheap to reproduce (Shapiro and Varian, 1999). The whole product concept of Kotler (1991) addresses the product-related services as indistinguishable part of the product offering. Without the essential services, the use value and maybe even the sale value of the product would be close to zero (if not even negative).

These characteristics of software as a product have an impact on most of the business model elements. For instance, they affect on the sales and marketing activities. Low price and short sales cycle enable the company to use low cost sales channels, whereas such characteristics of the product offering as immature technology, complicated functionality and big organizational impact imply more interaction with the potential customer, which drives up the cost of sales (McHugh, 1999). These factors also affect the possibilities to benefit from positive network effects and to extend the business outside the primary product/market segment.

## Central Issues in Analysing Software Business Models

A software company has multiple options to structure its product and service proposition, manage its customer relationships and conduct the business as a whole. In our data analysis, the options were found to be subject to several dimensions that were summed up to four categories including "Product Strategy", "Distribution Strategy", "Revenue Logic" and "Services and Implementation". It should be noted, that with these categories we did not try to address the origins of business models, i.e. the questions why and how businesses have

been formed into what they are. Instead, these categories were summed up in order to identify the key characteristics of software businesses that can be of help in distinguishing different business models from each other.

## Product Strategy

Our first root category describes the product development focus and product development approach of a software business. With this category, we try to describe the product strategy particular to a business model. This dimension, ranging from customer or project orientation to product or service orientation, illustrates the way of composing the product and service proposition. Hence, the product strategy describes both the focus of product development and the way the development work is organized.

Already at the analysis of the very first transcribed interviews of the managers of Cases 1 and 2, we identified the first dimension that proved later to be one of the keys to address one of the key factors of business models. That was the dimension of tailor-made solution orientation versus commercialized product- and service orientation of the value proposition. Items in this dimension were considered to relate to other dimensions such as growth opportunities and risk. For example, the director of products and technology of the Case 1 told that:

*“The idea of developing a uniform product was clear from the beginning and has not been questioned seriously during the entire history---. Otherwise it would not have been interesting because we opted for growth.”*

This fragment from the protocol makes an example of one of the dimensions we found useful in describing all of the cases. We called this dimension “Product Strategy” and used it for addressing the orientation of the business on the axis where one end described customer projects or tailored solutions and the other end comprised commercialized products or services. This was, however, not the only dimension identified on the basis of the first cases. For example, the same interviewee told later (in Case 1):

*“We have never borrowed from banks. To avoid risks that the financing of product development with loans would comprise, we implemented those [product features accepted to the uniform product] along customer projects.”*

This quotation reflects that even if the product strategy in the Case 1 was commercialised product –oriented, the product development was financed by customer projects to avoid risks usually connected to the development of universal products. This was first seen as an exception compared to other cases, but similar cases are considered possible, because the product in Case 1 was quite complex, parameterised system software. However, it was found common in all cases analysed that financing environment and stakeholders’ utilities are closely involved in the product development approach, thus setting boundaries to the product strategy.

The axial coding of items associated to this category resulted into the following subcategories (that represent an array of options within the root category):

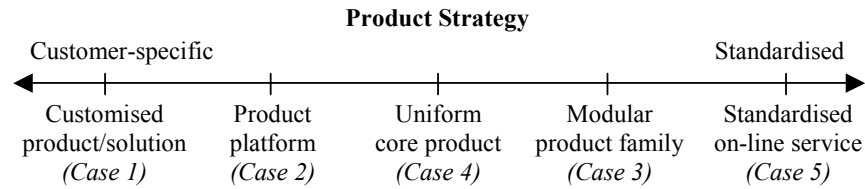


Figure 1 An axial coding of options related to “Product Strategy”

A summarization of the original data related to this category is presented in Table 1.

Cases	Case 1	Case 2	Case 3	Case 4	Case 5
Product Strategy	The product proposition is based on a parametrised enterprise system software targeted to a small vertical market segment.	A uniform platform for enabling on-line use of 3rd party products and solutions.	Customisable software solution comprising a connectivity platform and related applications for mobile use of business software.	A software development tool for other software producers to make their software production more efficient.	An ASP concept for SMEs comprising tools for building electronic shops in the WWW-service hosted by the provider.

Table 1 Items in the root category "Product Strategy"

## Revenue Logic

The second root category describes the way the software business generates its revenue and profit. From the cases we identified several ways of value appropriation. Items belonging to this category included mentions of, e.g. “pricing”, “cost structure”, “sources of revenue”, etc. The different approaches to capture revenue ranged from different methods of pricing to different sources of revenue and different things sold (e.g. from work effort to user licenses, operation time and advertisement space). This root category is called “Revenue Logic”.

### Revenue structure

The revenue logic in this study includes both sales revenues and other sources of financing. Here we will focus on just the revenue element assuming it includes the cost structure. It is subject to some discussion whether revenue model should be incorporated to the concept of business model. Amit and Zott (2000) exclude it on the basis that revenue model deals with value appropriation and not with value creation. Here we see that a revenue model is an inherent part of a business model as it can support the model in which it is used and thus create value. This was apparent in all the interviews where the managers of our cases described their business model.

The axial coding of items within this category resulted into the following subcategories (Note that the scale is not ordinal but nominal in this axial representation.):

**Revenue Logic**

Effort-, cost- or value-based pricing (Cases 1 and 5)	License sales and royalties (Cases 1, 3, 4 and 5)	Revenue sharing (Case 3)	Hybrid models and loss-leader pricing* (Cases 4 and 5)	Other, e.g. media model (Case 4)
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\* Loss-leader pricing here means giving something for less than its value. This was identified in Case 4 to increase customer base for later revenue, and, in Case 5 to support sales of some other part of the product/service offering.

Figure 2 An axial coding of items related to “Revenue Logic”

A summarization of the original data related to this category is presented in Table 2.

Root category	Case 1	Case 2	Case 3	Case 4	Case 5
Revenue Logic	Software licence sales. Additional sources of revenue are training, integration projects and maintenance services.	Revenue sharing with telecom operators providing Application Service Provisioning (ASP) on the ASP platform of the case company.	Application licence sales and consultation services to telecom operators. Revenue is collected from up-front fees and usage of the products.	Software developers are provided with a development tool for free. Revenue comes from runtime licences sold to end-user organizations.	Time-bound licences with up-front fees and occasional tailoring services on hourly basis.

Table 2 Items in the root category "Revenue Logic"

**Cost structure vs. pricing strategies**

High initial cost and nearly zero marginal cost characterize the production and dissemination of information-intensive products (Shapiro and Varian, 1999, Mahadevan, 2000). In addition to the various revenue stream alternatives described above, a software vendor, as any other organization that sell electronically delivered products<sup>2</sup> has unique characteristics of the information economy to exploit. We did not, however, get sufficient data on costs to go deeply into analysing the cost structures of our cases.

**Distribution Model**

A concept that emerged from all the interviews conducted to define the businesses of our case companies was dealing with the centralized vs. distributed nature of marketing and sales operations. We called this dimension for “Distribution Model”. This root category was established to describe the ways the marketing and sales of the product and service offering

<sup>2</sup> Mahadevan (2000) has defined electronically delivered products to include all those that could be downloaded over the net. These include software, copies of books, electronic journals and research reports, music and games.

has been organized and to identify the sellers and marketers of the product and service offering. This category was first put up to describe the dimensions of centralised vs. distributed ways of operation and the question of whether the business had wide or narrow focus. Statements indicating these items were found in all the interviews.

This dimension summarizes the items identified to describe the way the marketing of the product and service offering has been organized and who are its sellers and marketers. This dimension also characterizes the sales process and its outcome, i.e. the agreement between the vendor and a customer about the characteristics of the solution delivered. Subcategories identified in the axial coding of the data related to distribution strategy include:

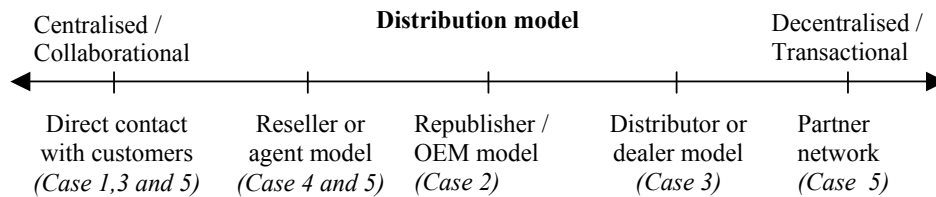


Figure 3 An axial coding of items related to “Distribution Model”

We also considered the aspect of sales model in this category to characterize the sales process and its outcome, i.e. the agreement between the vendor and a customer about the solution delivered. The sales approaches among our case companies ranged from direct contacts with customers striving to strategic partnerships with customers to serve them with specialized needs, to straightforward sales of universal products and commercialised services to a great number of customers with homogenous needs. Hence, this category is tightly interconnected with the first root category, product strategy.

A summarization of the original data related to this category is presented in Table 3.

Root category	Case 1	Case 2	Case 3	Case 4	Case 5
Distribution Model	Direct contact between customers and the vendor’s own sales organization.	Telecom operators republish ASP services to their customers based on the platform of the Original Equipment Manufacturer (OEM) in case.	Direct contacts with end-user organizations due to small number of customers and novelty and complexity of the solution.	System integrators producing software solutions make both the target market for the development tool and the distribution channel for end-users’ runtime licences.	Direct sales to SME’s in the local market. New media companies build e-commerce sites for customers using this hosted service.

Table 3 Items in the root category "Distribution Model"

## Services and Implementation

The fourth root category, “Services and Implementation”, emerged from the data to sum up the descriptions of what happens when software is dispatched to the customers and deployed



interactions, as described in Figure 5. The figure illustrates the concept of business model in the way that it shares the insights of the managers interviewed in our case studies.

Firstly, a business model is bounded by external variables like competing environment and customers (their characteristics, location and needs), and comprises a value appropriation system to capture the opportunities identified in the marketplace. On the other hand, the business model comprises a value creation system to produce the value proposition, which is bounded by the financing environment, stakeholders' utilities and resource environment. Furthermore, the business model is aimed at achieving the strategic objectives set by a business strategy. Finally, the business model appears in practise as a value proposition combining the value creation and value appropriation actions of a business and is bounded to the characteristics of the product and service offering as long as it is at work.

According to the view formed in this study, the business model is largely derived from business strategy and can, thus, be positioned between business strategy and business processes. It could also be seen as an action plan to accomplish the strategic objectives of a company with a given product and service offering. Accordingly, a single business model deals with a single product/market segment.

We decompose a generalized business model into four elements and describe it as a combination of different schemes of actions within them. Our proposed framework combines earlier presented structural views of business models (Whittingham, 2000, Haapanen et al., 2000) into a cohesive one. The elements in our conceptual business model are:

- **Product Strategy** describes the core product and service proposition of a software business and the way its product development work is organized. The product proposition in this context describes the focus of product development and its outcome, the core product and service offering of a software business. The product development model can be thought as the way the product development work is organized.
- **Revenue logic** describes the sources of revenue and the way a software vendor generates its revenue from these sources
- **Distribution model** describes the ways the marketing and sales of the product and service offering has been organized and identifies the sellers and marketers of the product and service offering. This element also characterizes the sales process and its outcome, i.e. the agreement between the vendor and a customer about the characteristics of the solution provided.
- **Service and Implementation model** describes how the product offering will be dispatched to the customers and deployed as a working solution, including the set of services and actors implementing them, e.g. physical distribution, implementation and maintenance of the product/service offering.

The elements of our framework are illustrated in Figure 5. The factors identified from literature setting constraints on business models are presented in the figure surrounding the business model.

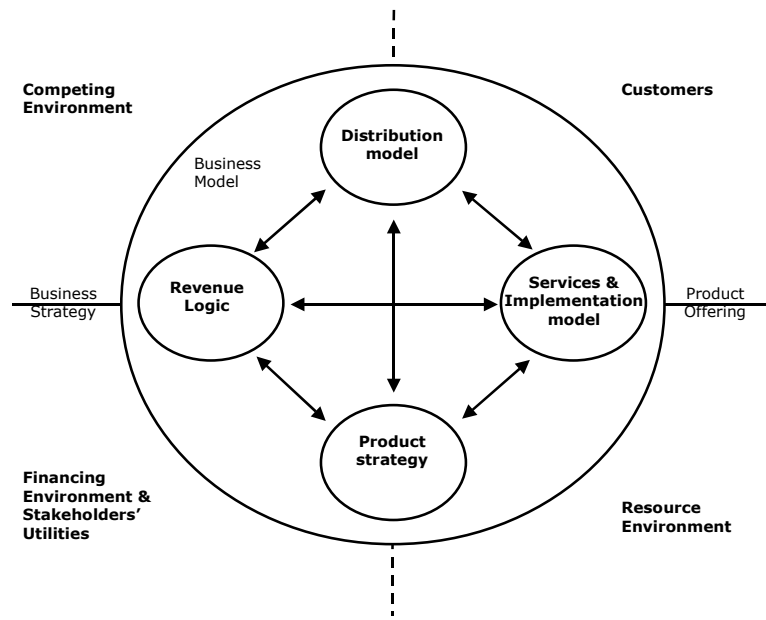


Figure 5 Elements of a Business model

Interrelationships between all of these elements were identified in our data. This examination is, however, excluded from this paper due to space limitations.

## Summary and Conclusions

In this study we have looked at business models of software companies. The aim of the study was to develop a practically applicable framework for analysing different software businesses. This task was divided into two sub-goals: defining an empirically grounded model of software businesses, and delimiting it with practical constraints to focus the analysis on feasible level of abstraction.

We defined the concept of a business model as an appearance of action related to both value creation and value appropriation of a single business in a specific product and market situation. Although we limited our perspective to the action of one company in a specific product/market situation, our framework can be used to analyse any business as a part of a business network. Instead of concentrating on one or two parameters of a product or a service, our main emphasis has been on the development of a coherent and holistic view on all aspects of the value proposition of a business. We believe, that what might have been lost on the depth of addressing some issues, is gained by providing a balanced model of the key aspects of a software business.

Our analysis is divided into four main problems and their solutions: The *product strategy* describes what is the core product and how the development of the core product of a company is organised. The *revenue logic* describes how the company finances its operations, in other words, how and from whom the revenue is generated. The *distribution model* describes how the marketing and distribution have been organised and who are the sellers and marketers of the product. The *service and implementation model* explains how the core product is made available for the end users as a working solution. We are aware of the fact that the array of options within these root categories can be far wider in the real life than the

items in our data embody. However, we believe that this categorization can serve as basis for further development of the theoretical construction and the analysis of any software business in the future.

In the future research we need to concentrate on developing further the tools for analysing the situation of a given software company and a given product. The analysis should also be expanded to model partnerships and value networks of companies that do cooperate in their business processes. This also calls for more research into the roles of various stakeholders at any given life cycle phase of a software company.

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## Appendix 1

Cases	Case 1	Case 2	Case 3	Case 4	Case 5
Characterization	“System software vendor”	“ASP aggregator”	“Product platform provider”	“Software publisher”	“Application service provider”
Target Customers	Trade unions and unemployment funds	Telecom operators	Telecom operators and service providers	Software developers	Small and medium sized enterprises (SMEs)
Product proposition	A parametrised enterprise system software targeted to a small vertical market segment.	An Application Service Provisioning (ASP) platform for enabling on-line use of 3rd party products and solutions.	Customisable software solution comprising a connectivity platform and related applications for mobile use of business software.	A software development tool for Internet application development.	An ASP concept comprising tools for building electronic shops in the WWW-service hosted by the provider.

*Table 5 A Summary of Cases*