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How to Leverage Third-Party Developers in the Mobile Communications Industry

A case study of two mobile phone producers

The recent improvement of better, faster and more secure mobile networks have enabled an unbelievable pace of collaboration and connectivity. Web 2.0 makes information and knowledge accessible anywhere, anytime. There is a possibility for companies to integrate this type of thinking, and leverage on external knowledge in order to be more innovative and deliver better customer value. The question is then how external knowledge is best leveraged. This thesis examines how two leading mobile phone producers collaborate and communicate with third-party developers with regards to their mobile service offerings. Drawing from theory of business models, platforms and innovation, the authors make an attempt to identify factors that are likely to influence third-party developers' engagement and willingness to contribute of developing new mobile service offerings. The conclusions are that the business model should be flexible in order to meet customer demand, the platform neither open nor closed to be able to harness on network externalities, and lastly, giving third-party developers freedom to affect their own possibility of making money when using the platform. In addition, and more in general terms, there is the need for companies to act and think in line with Web 2.0 in order to successfully compete within an evolving industry.

Key words: Web 2.0, third-party developers, platforms, mobile communication industry

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1. Introduction

1.1 *The ways of doing business is changing*

The ways of doing business are changing as an effect of Web 2.0¹, forcing companies, and especially those within the mobile communications industry², to reconsider their business processes and models, and to think of new activities better suited for the new environment. These activities include everything from the process of developing new products and design improvements, to distribution and service. New models are emerging, where collaboration and global networks are crucial factors of success, and communities worldwide are assisting companies to become and stay competitive. This new way of interacting as well as the increased frequency of communication, between companies and outside actors, are making company barriers, of what is considered internal and external, blurred. Some examples of companies that have started to adapt to this new environment are MySpace, InnoCentive, YouTube and Second Life. In order to stay competitive these companies have embraced the new possibilities that the Web 2.0 brings and changed the way they operate. They have managed to incorporate and capture the extensive worldwide knowledge available in order to produce superior products and services. The phenomena of using third-party developers³ is something that occur in several industries, such as the gaming industry, pharmaceuticals, fast mover consumer goods or the mobile communications industry.

The mobile communications industry is particularly interesting because it is a truly global industry, with over 3.8 billion subscribers worldwide that is looking towards third-party developers in order to take the next step in mobile technology and deliver superior services to its customers. The industry has seen tremendous worldwide growth the last decade, much thanks to innovative business models. Today the leading actors have understood that collaborating with third-party developers is the key to success. Furthermore, customers demand interactive services and applications⁴, and co-produce and co-lead the development of these new products and services. The question that springs to mind is to figure out what is needed for customers to take part in this development. Maybe not as clear, but still an integral part of this process is that some kind of platform⁵ is needed to handle the interaction with third-party developers. A platform can be many different things, such as the operating system that a mobile phone uses, or, a service (the latter being a less substantial option). Platform as a Service (PaaS)⁶ provides the entire infrastructure needed to run the applications over the Internet, and needs to be efficiently structured in order to benefit from external developers.

¹ O'Reilly (2007) defines Web 2.0 as "a business revolution in the computer industry caused by the move to the Internet as a platform..." (p. 24).

² This thesis defines mobile communications industry as all actors involved in creating, enabling and using mobile phones and services.

³ This thesis defines a third-party developer is defined as a separate entity, adding value to the firm's primary products/services, with or without gaining profit.

⁴ Software that is used for business or entertainment purposes. An "application" or "application program" refers to virtually any type of program from spreadsheets such as Excel to media players such as iTunes (PCMagazine, http://www.pcmag.com/encyclopedia_term/0,2542,t=application&i=37892,00.asp, [2009-05-03]).

⁵ A platform is defined as an infrastructure and a set of rules that facilitates and/or enables this interaction between the two distinct types of customers (Eisenmann, 2008; Rochet and Tirole, 2004).

⁶ Salesforce is a company that has worked a long time with software as a service (SaaS) and PaaS, and they define the latter as platforms for building and running custom applications on-demand, <http://www.salesforce.com/paas/>, [2009-05-16].

As mentioned above and as will be shown in the next chapter, a company has to actively work outside its traditional boundaries. So therefore, the question that companies within the mobile communications industry have to ask themselves is how much they are willing let go of control in order to benefit from third-party developers and their customers, as well as decide what and how much they can ask in commitment from them.

1.2 Purpose

The purpose of this thesis is to identify factors that are likely to influence third-party developers' engagement and willingness to contribute to the process of developing new mobile service offerings⁷. Theory of business models, platforms and open innovations are explored to be able to identify these factors.

1.3 Research questions

By studying two mobile phone producers this thesis aims to answer the following research questions.

- i) What are the predominant features of the business model that are likely to effect customer value through the interaction with third-party developers?
- ii) How is the platform structured in order to access both customers and third-party developers?
- iii) How is a business model organized so that third-party developers can contribute to the internal innovation process?

1.4 Structure of thesis

This thesis is structured as follows. First a brief background to this case study is described, necessary to fully understand the case and to follow the study's reasoning. The thesis' theoretical standpoint is firstly reviewed and then summarized to show the theories' applicability to this thesis; how they fit together and why they are chosen. The next chapter describes how research was conducted, and what the difficulties were. Furthermore, empirical findings about the two studied companies are assessed and described as two separate cases, which in the following section is analyzed in order to come up with a conclusion of what a business model should look like in order to leverage on third-party developers. To end up, some interesting suggestions for further research are given.

1.5 Background

1.5.1 From 1G to 3G and beyond

Today there are over 3,8 billion mobile subscribers worldwide, in over 200 countries; one simply has to dial a mobile phone number to call anyone, anywhere in the world.⁸ But this scenario has not always been the case. In the early 80's different mobile standards on different continents and countries existed, which meant that mobile phones could not communicate with each other, and

⁷ Mobile service offering include all services and applications available for mobile phone.

⁸ Budde, <http://www.budde.com.au/Research/Global-Mobile-Subscriber-Statistics.html>, [2009-02-12].

thus people had to use different phones in different countries. Examples of these standards were the Nordic Mobile Telephone 450, which was used in the Nordic countries, Eastern Europe and Russia, or the Advanced Mobile Phone System used in the USA.⁹ In 1982, the European Conference of Postal and Telecommunications Administrations created the Groupe Spécial Mobile (GSM) to develop a standard for a mobile telephone system that could be used across Europe.¹⁰ The first GSM network was launched 1990 in Finland and three years later there were over one million GSM subscribers in more than 48 countries. During this time period mobile phones were exclusively used to talk to each other with, and were considerably more expensive to call with than the fixed line telephones.

The GSM technology, also known as the second-generation mobile phone system (2G), was superior to its predecessors because it could be used to transmit mobile voice and data services. Today it is used by more than 80 % of the world's mobile phone users. Compared to the first-generation mobile phone system (1G), the 2G radio signals were digital and not analogue; this meant that data communication was easily built into the system. One example of the effects of the 2G-network as a worldwide standard was that users could access the same services when travelling abroad as well as at home thanks to roaming¹¹ capability. A short message service (SMS) was developed for the 2G-network, to be used as an alternative to voice call communication. The first SMS ever, was sent in the UK in 1992 and today the SMS business is a huge industry, which in 2005 involved mobile phone users sending more than 1 trillion SMS globally.¹²

The shift from 2G to the third-generation mobile system (3G)¹³ has been a gradual change, which can be divided into three phases. All these phases regard improvements of the speed and quality of data transfer; higher speed has made it possible to provide new and better services to customers. In a first phase, several new services were introduced to customers, such as wireless application protocol (WAP), multimedia messaging service (MMS) and access to email and the World Wide Web (also known as the Internet). This improvement is known as the General Packet Radio Service (GPRS), which in the later phases involved an increased capacity, allowing for more advanced mobile services with media rich content.¹⁴

In 2001, NTT DoCoMo made the first commercial launch of 3G-network in Japan. The 3G-technology enabled the network operators to provide new types of services. These services include wide-area wireless voice telephony, music, entertainment content, video calls and broadband wireless data in a mobile environment. The 3G-network has made it possible for operators, mobile phone producers and developers to offer completely new services to their customers. Moreover, the 3G-network has enabled a more interactive communication between service providers and customers (Tapscott and Williams, 2008).

⁹ Wikipedia, http://en.wikipedia.org/wiki/Nordic_Mobile_Telephone, [2009-02-12].

¹⁰ GSM World, <http://www.gsmworld.com/about-us/history.htm>, [2009-02-12].

¹¹ Roaming is defined as "the ability to use a communications device such as a cellphone or PDA and be able to move from one cell or access point to another without losing the connection" (PC Magazine, http://www.pcmag.com/encyclopedia_term/0,2542,t=roaming&i=50583,00.asp, [2009-05-19]).

¹² GSM World, <http://www.gsmworld.com/about-us/history.htm>, [2009-02-12].

¹³ 3G is defined as a third generation mobile systems and hardware, superseding 2.5G and is based on the International Telecommunication Union (ITU) family of standards under the IMT-2000 (Wikipedia, <http://en.wikipedia.org/wiki/3g>, [2009-05-05]).

¹⁴ GSM World, <http://www.gsmworld.com/about-us/history.htm>, [2009-02-12].

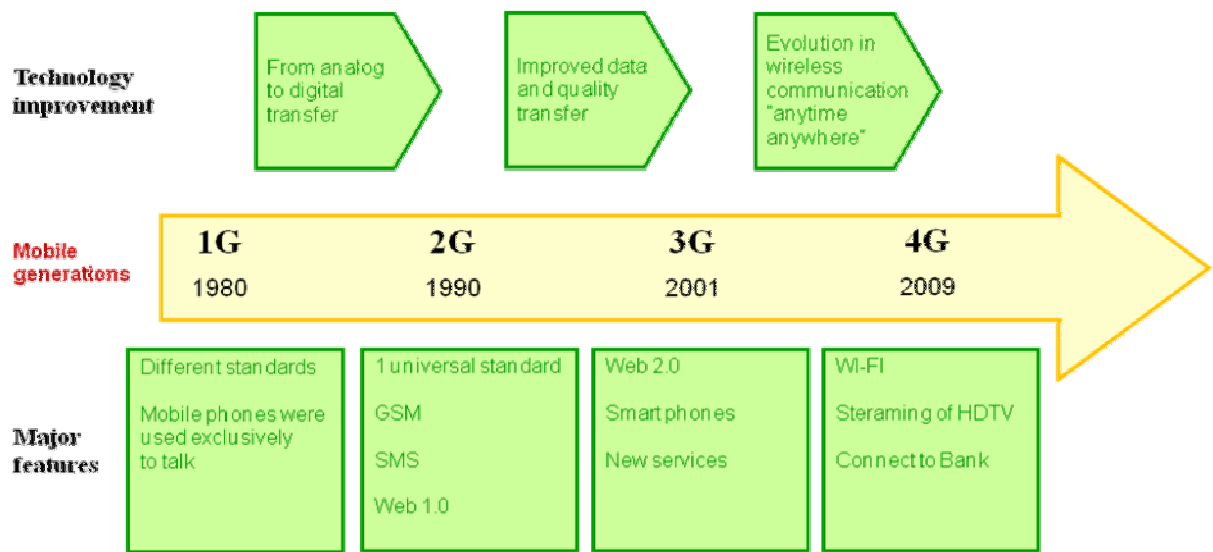


Figure 1. Mobile development from the 1980's and beyond¹⁵

1.5.2 How Web 2.0 changes the nature of how business is conducted

With the development of the 3G-network, which simplified the data transaction by making it better, faster and more secure, came the possibility for customers to fully appreciate Web 2.0 using their mobile phones. The creativity and innovation pace of applications and other mobile service offerings would never have reached the level of complexity and variation as of today if it was not for Web 2.0 together with 3G technology. Web 2.0 is a relatively new concept, coined in 2004, marking a new era of how to make business in an environment defined by interactivity and user connectivity (O'Reilly, 2007, p.24). The author defines Web 2.0 as

"...a business revolution in the computer industry caused by the move to the Internet as a platform..."

Web 2.0 is not a technological improvement, but symbolizes a shift in how consumers and companies use the Internet.¹⁶ Previously companies published what they thought would be interesting to their target group, who in that sense only acted as passive receivers of information and content. With the introduction of Web 2.0, these receivers were upgraded to participants in the information exchange process, and together with the growing access to information technology, the tools to collaborate and create value are now in the hands of everybody. One example would be PaaS, which have allowed single developers to create web-based applications at a lower cost.¹⁷

This new phenomenon of consumer involvement and mass collaboration implies that companies can leverage on their consumers' knowledge and resources to improve their own services and create value (Tapscott and Williams, 2008). This corresponds to one of the key principles of the Web 2.0, which is that a "service automatically gets better the more people using it" (O'Reilly, 2007, p. 22). In a development later becoming known as Wikinomics, companies started to

¹⁵ Fourth generation mobile systems and hardware, a term used to describe the next complete evolution in wireless communications, giving users access to voice, data and streamlined multimedia anytime, anywhere (Young Kyun, & Prasad, 2006).

¹⁶ Wikipedia, http://en.wikipedia.org/wiki/web_2.0, [2009-02-11].

¹⁷ Guardian, <http://www.guardian.co.uk/technology/2008/apr/17/google.software>, [2009-05-16].

combine mass collaboration with open-source technology in order to be successful (Tapscott and Williams, 2008). The authors explain Wikinomics as a way of thinking that should (if not done already) permeate the way companies view their business operations. According to them, Wikinomics view is characterized by four principles; openness, peering, sharing, and acting globally, which will shape how companies will do business and compete with each other. (i) Openness refers to companies having an open attitude towards sharing their previously closely hidden resources, and (ii) peering can best be described by a new form of horizontal organization that better captures its capacity to create information-based products and services. In terms of (iii) sharing, companies should make their proprietary resources available to others. Last but not least, companies need to (iiii) act globally as opposed to just think globally, meaning that a company should not have any physical or regional boundaries. To sum up, there are vast possibilities to create new business opportunities and greater customer value if opening up to external partners. Some of the more successful examples, which have chosen to open up their firm boundaries, are described in the next section, these companies have appreciated and benefited from the development of Web 2.0.

1.5.3 Examples of new ways of doing business

Four companies that have managed to leverage on external capabilities are Amazon, Linux, Second Life and Wikipedia. All of them have in one way or another used outside competencies in order to improve their business models and become successful in their respective markets/industries.

Amazon.com: An e-commerce company that was launched in 1995. Among many things, the company sells music, videos, games, toys, furniture and food online. Today, it is the biggest American retailer online. Amazon.com collaborates and interacts with its customers in two essential ways. Firstly, each customer buying merchandise from the store creates a personal account, this account will register and memorise what kind of articles the customer buys and thereafter suggest products that might be of interest, as well as linking him or her up with other customers with similar taste. Secondly, the users themselves write the book and film reviews that will be available on the site, free for others to take part of.¹⁸

Linux: An operating system for computers that was designed by Linus Thorvalds, with assistance from developers from all over the world. The source code¹⁹ for Linux was released in 1991 and the software is used in computers and programs for governments, schools and universities, businesses, and for example in Play Station 3. The main reasons why Linux is popular among its users are that the company has a lower operating cost compared to competitors, but it is also secure and there is a well-functioning support for companies using it. Linux is probably one of the best-known cases of free and open software development. As previously mentioned, the software has been created by developers all over the world, and is continuously being improved by dedicated people. There is an online Linux community where people can meet and discuss improvements or problems they have encountered using the software. Linus Thorvalds and his Linux software would never have become a worldwide success without the free help and collaboration of developers.²⁰

¹⁸ Amazon, <http://www.amazon.com/>, [2009-02-13].

¹⁹ The source code can be explained as instructions and data written in a certain programming language, telling the software how to function (Techterms, <http://www.techterms.com/definition/sourcecode>, [2009-05-19]).

²⁰ Linux, www.linux.org, [2009-02-13].

Second Life: A free virtual world online where people can interact with each other in the form of avatars. In 2008 there were more than 15 million accounts registered at Second Life where the users can socialize and meet other people, join discussion groups and own virtual property. The world also have their own currency, called Linden \$, and a small amount of users even make a living of out Second Life though creating and selling virtual property. The Second Life fully appreciates the concept of Wikinomics and Web 2.0 because the users themselves build up the actual virtual world. The creator of Second Life only provides a platform, which the users build upon to create the world they want.²¹

Wikipedia: A free online multilingual encyclopaedia where collaborating volunteers create its content. The site was launched in 2001 by Jimmy Wales and Larry Sangerv and now contains 12 million articles (2,7 in English). Compared to traditional encyclopaedias, Wikipedia is constantly evolving and changing, through registered users that update the site with new information. Even if the users provide the content and Wikipedia do not guarantee the validity, it is still the most popular general reference work on the Internet.²² However, the accuracy of Wikipedia has proven to be the same as Britannica Online, which is the oldest English-language encyclopedia written by a staff of about 100 full-time editors and over 4,000 expert contributors (Tapscott and Williams, 2008). Wikipedia has managed to create a site where everybody can add knowledge collectively and for free.

All these four companies, mentioned above, have somehow created a business model that leverage upon external knowledge and peoples' personal efforts to create value. Amazon's users write the reviews themselves, the Linux software is updated by volunteers, and Second Life and Wikipedia have platforms created and constantly developed by individuals collaborating globally to create what the users really want.

As these examples of new ways of doing business show, third-party developers can contribute to the business in many different ways, and the issue is not if, but rather how companies can leverage their knowledge via encompassing third-party developers into the business model. Also, to make the relationship with developers a successful collaboration, companies have to be clear about what role third-party developers should play and what the business model should look like. In a mobile communications context, the concept of Web 2.0 and Wikinomics have become even more important than in other industries like physical products, because of the nature of the business, as an enabler of user connectivity. Mobile phones are, in today's fast moving environment, an important tool for people to stay connected with their friends and are often used to consume the content created on the Internet. The mobile phone is likely to become the dominant way of accessing the Internet since mobile phone growth is driven within the household as well as with the fact that more people are using their mobile phones to go online.²³

As a result of the introduction of Web 2.0 and Wikinomics, the boundary between industries related to the usage of the Internet as a platform has become blurred, forcing companies to reconsider who their true competitors really are and what they sell (Tapscott and Williams, 2008). With its launch of iPhone, which is built on Web 2.0 principles, Apple had 71 % of the US smart phone market one year after the product's introduction.^{24 25} In Gartner's recent mobile market analysis, Apple increased its global smartphone

²¹ Secondlife.com, <http://secondlife.com/whatis/>, [2009-02-13].

²² Wikipedia, <http://en.wikipedia.org/wiki/Wikipedia>, [2009-02-12].

²³ Wright, A., <http://www.ipsos-na.com/news/pressrelease.cfm?id=3049>, [2009-02-12].

²⁴ Apple, <http://events.apple.com.edgesuite.net/rtp20e92/event/index.html?internal=fj213s9dm>, [2009-05-19].

²⁵ Apple, <http://www.apple.com/pr/library/2007/06/11iphone.html>, [2009-05-19].

(iPhone) market share to 10,8%, from 5,3% in Q1 2009.²⁶ Rumors circulated long before the iPhone was marketed, but still managed to surprise everybody with its success and dominance in the smart phone²⁷ market where companies like Sony Ericsson and Nokia should have had the upper hand.^{28 29} The definition of a Smart phone in this document: A large-screen, data-centric, handheld device designed to offer complete phone functions whilst simultaneously functioning as a personal digital assistant.

To sum up, the advancements within mobile technology have allowed consumers and companies to appreciate the Internet to a fuller extent and use it in a different fashion, while making products and services better by using it. This calls for new business models to appreciate the opportunities that have opened up to companies in the mobile communications industry. In order to develop a new business model for leveraging third-party developers, guidelines are needed. Next, theories about business models, platforms and open innovations are described in order for this thesis to be able to analyze two companies' collaboration with third-party developers. A further explanation of the relevance, usage and fit of theories is given in the next section.

²⁶ IntoMobile, <http://www.intomobile.com/2009/05/21/not-surprising-iphone-doubles-global-smartphone-market-share.html> [2009-07-31]

²⁷ There is no standard industry definition of what a smart phone is, other than it is a mobile phone with more technical capabilities than a normal phone. Analyst house Gartner gives the definition of a smart phone as a large-screen, data-centric, handheld device designed to offer complete phone functions whilst simultaneously functioning as a personal digital assistant, (<http://www.gartner.com/it/page.jsp?id=910112>, [2009-02-13]).

²⁸ Petty, C., Stevens, H., <http://www.gartner.com/it/page.jsp?id=910112>, [2009-02-13].

²⁹ Dolan, B., <http://www.fiercewireless.com/story/timeline-apple-iphone-rumors-1999-present>, [2009-02-12].

2. Theory

2.1 *Business models*

Generally, a business model is illustrated as the ways of doing business, or similarly as the architecture of the business, but there is no widely accepted definition. Timmers (1998) was one of the first to make an attempt to define what a business model is. The author describes a business model by three pillars, consisting of architecture for the product, description of benefits for the actors involved, and lastly, how revenue is generated. A more recent and developed view, most relevant to this thesis, is the definition elaborated by Methlie and Pedersen (2007), concerning the business model choices effect on the value creation of mobile services. Their definition of a business model incorporates three dimensions and pursues the following structure.

- First of all mobile service providers (and producers) have to decide on the *service strategy*, either they decide that their services are mobile specific (unique), or their mobile service can be used in as many mobiles as possible (scope).
- In terms of *governance*, or infrastructure, the authors focus on the relational and the hierarchical form. The first option implies that the service provider has access to the platform offering the service to end-users. The other option, the hierarchical, means that the service platform is inaccessible to service provider, since the platform provider controls the platform.³⁰
- Companies also have to consider how to divide and value the revenue, which is likely to depend on the most influential actor, in a *revenue model*.

They conclude that more effort should be directed at mobile specificity, and that mobile service providers should offer services with “gratifications that are mobile specific, such as accessibility, personalization and information dissemination” (Methlie and Pedersen, 2007, p. 81), because end-user knowledge tend to focus on intrinsic attributes when evaluating the proposition made by mobile service providers. Furthermore, the decision of open versus closed business models is a difficult one, and depends on the type of service and the structural conditions on the market.

Ballon (2007) presents another theoretical framework for business modeling, which further adds to the understanding of new business models, aiming to provide a tool to more appropriately design and analyze business models for Internet communication technology (ICT) services, as presented below. In this model, focus is on variables of *Control* and *Value*, which, according to the author have to be strategically aligned in order for the business model to be successfully implemented. Following a multi-level approach, initially developed by Faber et al (2003), this framework defines four levels that a business model operates in, which makes it more suitable for a network of actors and relationships, instead of just a single firm, which is the case in this thesis. There are three design parameters on each level that will have implications for the business model’s success.

³⁰ Platform provider is explained further in section 2.2, about the openness of platforms.

CONTROL		VALUE	
<i>Value network</i>	<i>Functional architecture</i>	<i>Financial parameters</i>	<i>Value proposition</i>
Concentrated vs. distributed assets	Modular or integrated	Distributed or concentrated cost sharing model	Complement or substitute positioning
Disintegrated vs. integrated vertically	Centralized or distributed intelligence	Direct or indirect revenue model	High or low user involvement
Direct vs. intermediated customer ownership	Interoperability or not	Revenue sharing model or not	Intended value – price/quality or lock-in

Figure 2. Ballon's (2007) Business Model (modified)

The business model's four levels and twelve design parameters:

i) **The value network** – an illustration of how roles, actors and relationships are combined into a value-creating network.

- *Combination of assets.* To determine the value network's power structure, i.e. whether resources are distributed among actors or concentrated with one structural partner. Relating to Chesbrough's (2003) theory, described in section 2.3, being able to combine internal and external resources into "hard to imitate"-mixture is of great strategic importance if wanting to survive in an open innovations environment.

- *Vertical integration.* The way actors' different roles in the network are combined will have an effect on the business model. In the case of uncertainty, as typically with systemic and radical innovations³¹, co-ordination and integration is supported through integration of some kind. On the other end, standardization is likely to lower the rate of collaboration, even as far as disintegrating actors.

- *Customer ownership.* In essence, the objective of any firm would be to place oneself as close to the customer as possible, i.e. a direct established relationship. The opposite alternative would be to have an intermediary, between the producing firm and the customer. The choice between the two alternatives depends on deciding on which actor most to guarantee the value proposition to the customer.

ii) **Functional architecture** – describing how the technical system, involving building blocks (modules), governance rules and interoperability, is enabling the production of the service/good.

³¹ More information about radical and systemic innovation is presented in section 2.2.

- *Modularity*. The design of systems and artefacts, as sets of discrete modules that are connected via predetermined interfaces³². The main trade-off for design and production (functional architecture) is the choice between a modular system and an interdependent (integrated) system. The main proposition offered by modularity is “the possibility of delivering a continuous stream of incremental innovations around a common technological platform, or product architecture” (p. 12). Some advantages modularity offers are enhanced product variety, being better at meeting customer needs and decreased coordination costs to name a few.

- *Distribution of intelligence*. Intelligence refers to the distribution of processing power, control and functionality across the system, or in other words, how is the functional architecture is governed by certain rules; centralized or distributed intelligence.

- *Interoperability*. This design parameter decides whether the system should have the ability to communicate and exchange information with other technical systems. This will have influence on the value network, through for example integration and customer ownership, and for the value proposition, as with the case of customer lock-in strategies and network externalities. This option between a interoperable or non-interoperable system is very similar to the choice of operating an open or closed platform, which is considered further in section 2.2 regarding open platforms.

iii) ***Financial parameters*** – describing the financial features of the business model.

- *Cost model*. This parameter determines how costs are shared between actors, whether it is concentrated to one actor or distributed among actors.

- *Revenue model*. Concerns how the business model’s revenue is generated, either directly (by the customer) or indirectly (by the “advertiser”).

- *Revenue sharing*. Sometimes revenue is shared among actors in the value chain, but how should it be distributed. The main trade-offs are having a revenue sharing model in place or not, and also whether to have a content-oriented or a transport-oriented revenue sharing model. Content revenue sharing implicates that end-users pay per unit of delivered service content, and transport-based revenue sharing means paying for the transport of the mobile service, e.g. airtime online.

iv) ***Value proposition parameters*** – describing how value is created for the customer

- *Positioning*. A decision of whether the new offering should complement the company’s other offerings or whether it should be a substitute. However, most often this is not a decision made by companies, but instead a decision by the customer’s perception of the new offering to be.

- *User involvement*. Another increasingly important parameter concerns whether customers should be involved in the creation of the value proposition of the service.

³² The term interface can be used to describe either hardware interface or user interface. The former enables two electronic devices to be connected, e.g. like an USB-port, and the latter describes the user’s interaction (experience of) with the software or hardware (Techterms, <http://www.techterms.com/definition/interface>, [2009-05-19]).

There can either be a low level or high level of customer involvement. As further elaborated on in section 2.3, von Hippel (2005) argues that empowered customers play important roles within value networks, mainly the role as the single most important source of innovation.

- *Intended value*. Intended value refers to the main value proposed to the customers, and what this value is composed of. To achieve optimal customer value, firms can choose from three strategies. They can either deliver the best price-product offering, premium quality/innovation or provide custom-made solutions (Treacy and Wiersema, 1993).

Furthermore, Ballon points out that there is a difference between business models in one-sided platform networks and those in two-sided platform networks (see platform theory in next section). Business models in two-sided platform networks have to focus more on attracting both user-sides, balancing user platform interest and being concerned with multi-homing³³, than on profit maximization (Ballon and Walravens, 2008). This implies that a successful mobile service platform business model depends on deciding on the right price policy, maximizing content provided by application developers and the number of end-users using that platform (Cortade, 2006). The next section will continue to elaborate on the concept of one- and two-sided platforms, its implications for the business model, and to structuring the platform properly in order to access third-party developers and customers.

2.2 The dynamics of a two-sided network

Definition of network and platform

To be able to describe what a platform is and how it works, it is favorable to begin with a description of what one- and two-sided networks are,³⁴ since a platform is a component in the midst of these. As opposed to a one-sided network,³⁵ which only serves one distinct type of customer, a two-sided network coordinates the demands of two distinct types of customers who need each other in some way (see for example, Evans, 2003; Evans, Hagiu and Schmalensee, 2004). The difference between one- and two-sided platforms can be illustrated using the value chain.

- Traditionally the value chain flows one-way (see figure 3 below), cost occurs to the left and value comes into the picture to the right. In the two-sided network, revenue and cost streams from both the left and the right side (Eisenmann, Parker and van Alstyne, 2006), which is the reason why theory refers to two types of customers.

- Following the same underlying thought (as is illustrated above), Economides and Katsamakas' (2006) exemplifying the two-sided platforms as hubs of value chains, implying that the platform is placed in the midst of the network. A two-sided network connects sellers with buyers and vice versa (Eisenmann, Parker and van Alstyne, 2006).

³³ Multi-homing refers to users having more than one Internet connection (O'Reilly, <http://www.oreillynet.com/pub/a/network/2002/08/12/multihoming.html>, [2009-05-19]), but can also be used to describe a user employing more than one technology or platform (Eisenmann Parker van Alstyne 2008). One example would be having both a DVD-player and a VCR at home.

³⁴ For the sake of simplicity, two-sided networks also describe multi-sided networks.

³⁵ One- and two-sided network is the same thing as one- and two-sided market.

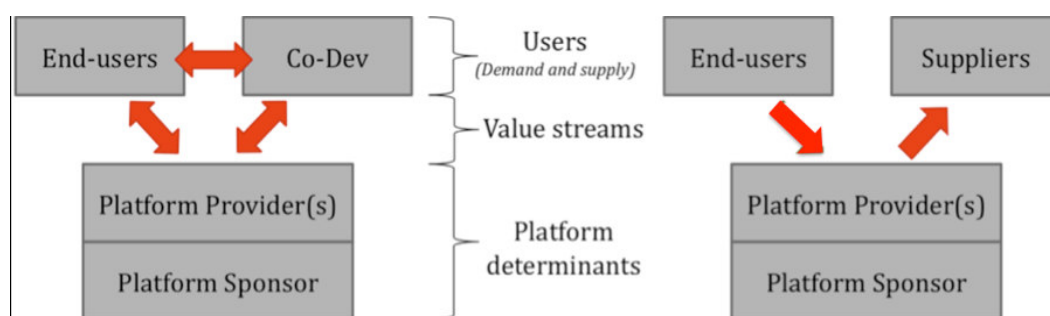


Figure 3. Two-sided network to the left and one-sided to the right. Elaborated and developed from Eisenmann, Parker and van Alstyne, 2008

With an explanation of the network, a definition of a platform is now easier described. Drawing from definitions developed from Eisenmann (2008) and Rochet and Tirole (2004), a platform covers an infrastructure and a set of rules that facilitates and/or enables this interaction between the two distinct types of customers. Platforms are products and services that carry the interaction between user-sides (Eisenmann, Parker and van Alstyne, 2006).

Network effects

As a result of the interaction that the platform enables, network effects are likely to arise that can be described as one customer joining the network for his/her own sake when at the same time provide value for others in the network (see for example Eisenmann, Parker and van Alstyne, 2006).³⁶ These network effects are important factors in the discussion since they are the reason to why platforms may benefit from increasing returns to scale (Eisenmann, Parker and van Alstyne, 2006). There are many examples of positive network effects, like for example Google.

- The more people using the search engine Google.com, the more valuable it is to other users, because of these users contribution to Google's ability to rank popular home pages.
- A popular example is the telephone. The more people own telephone, the more valuable the telephone is to each owner.
- In the case of an online auction, where the more the merchants, the greater depth and breadth of product assortment available to the purchasers.

A network that is built around one core platform to facilitate transaction among users exposed to network effects is called a platform-mediated network (Eisenmann, Parker and van Alstyne, 2008). A platform's success depends on each group's participation and willingness to trade in the platform (Evans, Hagiu and Schmalensee, 2004). Companies in platform-mediated networks that leave out the fact that there is a difference between their products (what they offer the users) and products sold by companies outside a platform-mediated network, will fail to create successful strategies for their platforms (Eisenmann, Parker and van Alstyne, 2008).

Types of two-sided network platforms

According to Evans, Hagiu and Schmalensee (2004) there are four types of two-sided network platforms that have been identified; matchmakers, audience-makers, transaction-based businesses and shared-input platforms (Evans, Hagiu and Schmalensee, 2004, p. 8).

³⁶ This is done by internalize the externalities created by one group and apply it to the other group.

- i) Matchmakers are information intermediaries that do business on knowing information about the two sets of users. One example would be dating sites, where men and women are matched against their profile and needs.
- ii) Actors that are trying to match advertisers with an audience are called audience-makers because of their attempt to create an audience for which advertisers would like to reach. One illustration would be web sites like Eniro.se.
- iii) Companies that act as a monetary intermediary for the users use the transaction-based platforms. A frequently given example would be credit cards, which enable a transaction between cardholders and storeowners.
- iv) The fourth type, shared-input platforms, relevant to this paper, is what the authors describe as one participant in need of access to the other user-side in order to provide value to the end-user. They further exemplify it using the case of software developers; they need access to application programming interface (API) to be able to create applications that the other participant may use in mobile phones for instance.

Platform roles

Platforms need not to be created and managed by a single company, but can be divided among a number of roles that can be played by different firms/entities in the platform (Eisenmann, Parker, van Alstyne, 2008). The authors have identified different supply roles that together encompass the platform (see figure 3 above):

- *End-users (demand side user)*; using the final product
- *Component suppliers (supply side user)*; creating content
- *Providers*; primary point of contact for the platform users
- *Sponsors*; responsible for platform design and technology

The end-users will together with component suppliers compose the two user-sides in the platform-mediated network that ultimately make it two-sided. Due to the component suppliers being substitutable, and therefore not essential to the platforms' operability, they rather act as supply-side users. To exemplify what the authors mean with these different roles, one can imagine a consumer (demand-side user) purchasing a computer that later on wishes to install/download other programs (created by supply-side users) that complement the computer and make it more valuable to the demand-side user. Furthermore, following the definition of a platform, a platform provider makes it possible for the two user-sides to interact via the platform and serve as "users' primary point of contact with the platform" (Eisenmann, Parker, van Alstyne, 2008, p. 4). Platform sponsors are different from the providers in the sense that they are responsible for the platform's design and technology, and holding its intellectual property rights.³⁷

³⁷ Intellectual property is ownership of intangible and non-physical goods, and includes names, designs etc. (Techterms, <http://www.techterms.com/definition/intellectualproperty>, [2009-05-19]).

Open and proprietary platforms

As mentioned above, a platform does not need to be owned by a single company, which is referred to as an open platform (see for example Economides and Katsamakas, 2006; Hagiu, 2006). The opposite would constitute a platform owned by a single company, meaning that the platform is proprietary. This paper focuses on platform openness as a concept based on openness of the platform roles, described above, in line with Eisenmann, Parker and van Alstyne's research (2008). They describe the openness of these roles by looking at how the role is structured to promote participation. Thus, a fully open platform is described as any participant able to join the platform to develop, use and commercialize it. All potential restrictions like licensing fees are applied equally to all participants. The different degrees of openness then refer to whether the platform roles are opened or closed, and thereof it gives rise to multiple strategies for how to manage open platforms.

Openness encourages innovation, but may also increase competition, thus the decision of whether or not to open up is often seen as a tradeoff between appropriability and adoption (West, 2003). By opening a platform, companies have the possibility to attract more users and harness the network effects of it. On the other hand, openness may make it more difficult to charge the users if switching costs are lower than if being a proprietary platform. What companies also have to be aware of is that disclosure of precious information may aid competitors that are interested in the competitor's business (Cusumano and Gawer, 2002).

Platform openness effect on innovation

Boudreau (2006) discusses the effect of open platforms on modular and systemic innovation. The author has reviewed previous literature on modular and systemic innovation and lists a number of advantages and disadvantages that an open platform may have on modular innovation. The concept of modular innovation springs from Clark and Henderson's work on innovation (1990), and is defined as a change in the core concept of a product or technology, without changing the product's architecture. One example would be the transfer from analogue to digital telephones. Boudreau concludes that the effect on modular innovation is ambiguous, but describes some advantages and disadvantages of opening a platform may have on a modular innovation: strengthens investment incentives of smaller firms working with innovation in complementary products, with the number of external suppliers the local knowledge, production experience and specialized skills increase, a diverse pool of suppliers may increase the range of possible innovations.

Systemic innovation on the other hand, which Clark and Henderson (1990) refers to as architectural innovation, is different from modular innovation in the sense that it reinforces the core product by changing the architecture behind it, and keeping the components unchanged. They furthermore point out that established firms may have difficulties recognizing the fact that architectural knowledge often becomes embedded in the different procedures in these firms. But this usually requires a change in the linkage (dependencies and interactions) between the core product and its components (Taylor and Levitt, 2004). One example of systemic innovation would be transfer to desktop photocopiers from the bigger stand-alone photocopiers. The effect of open platforms on systemic innovations may not be as advantageous as the effect on modular innovations. Boudreau (2006) concludes that systemic innovations require an integrated

company that can “internalize externalities, centralize authority, and promote knowledge sharing among various development activities” (Boudreau, 2006, p. 2).³⁸

Platform challenges

Eisenmann, Parker and van Alstyne (2008) pose different challenges that are important to consider when managing two-sided platform networks, for example the following:

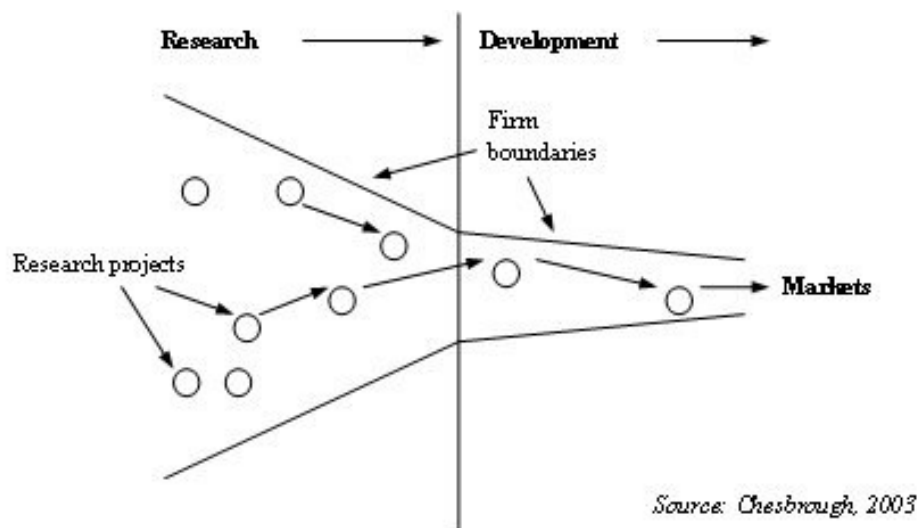
- Pricing: The platform must be able to affect the volume of transactions in order to be defined as a real two-sided network platform (Rochet and Tirole, 2004). According to the authors, charging a higher price to one side affect this volume, which will reduce the other side’s price by an equal amount, and the platform owner has to design the price structure so that it attracts both user-sides. Thus, the pricing structure is critical to any platform strategy to maximize its value. Determining one price for one side, will affect the other side’s growth and willingness to pay (Eisenmann, Parker and van Alstyne, 2008).
- Platform competition: In order to cope with competition, companies first have to calculate the likelihood that the market will be served by a single platform. The likelihood increases with the cost of multi-homing, strong and positive network effects apply, and lastly, when the level of standardization in the market (special features are discarded by the user-sides). Subsequently, if it is likely that a single platform will rule the market, it has to be decided if the company should own the platform or share it with others. In addition, Eisenmann (2008) also describes another underlying aspect that affects the decision between a shared or proprietary platform, namely that shared platforms may have issues with free-riders and lack the centralized infrastructure or the user subsidies to enable a platform-mediated network. In the long run, if a proprietary platform evolves into a monopoly, users may go over to another platform due to price advances. Companies that have sought dominance in the market have focused on control of core assets on the one hand and on open interfaces on the other, and these are the more common leadership strategies among these (Ballon and Walravens, 2008).

³⁸ The definitions of architectural and systemic innovations are not what are usually used, but as the definitions do not interfere or is in contradiction with the subject of this thesis they are maintained.

2.3 Open innovations

In the book *Open Innovation* (2003) by Henry William Chesbrough, the issue of how to organize the firm most efficiently when it comes to innovation is brought up. The author claims that today's business environment require a different mindset and company culture, in order to best work with innovations. The vital difference between traditional and open innovation is the view on where new knowledge does and can come from.

Historically, companies have been building up their own internal resource centers and tried to invent the best solution themselves, relative to their competitors. This meant that the first company that discovered something new was the one winning a first-mover advantage. The idea that prevailed was that it was crucial for companies to control the innovations in order to hinder competitors from copying the innovations. Nowadays the trick is to build a business model that best incorporates external knowledge and capabilities together with the companies' core capabilities. The difference is that the core capability must be hard (if not impossible) to copy. Randall Rothenberg puts in a different way, and states that companies can no longer keep their own innovation unto themselves. The key is to create a platform around innovations so that customers and competitors can build upon it.³⁹ According to both Chesbrough (2003) and Tapscott and Williams (2008), companies that want to be successful in today's business environment need to acknowledge that the company can make use of smart and knowledgeable ideas, both from inside and outside the company. Furthermore this means that companies must change their business model and approach in order to benefit from external knowledge. By looking at the two pictures below, one can understand how companies must change to incorporate external innovations. Companies must look beyond their firm boundaries in order to build on external ideas, which involve everything from research stage to market commercialization. Companies must be flexible in order to be able to benefit from findings outside of the own firm.



³⁹ Strategy-business.com, <http://openinnovation.haas.berkeley.edu/openinnovation.html>, [2009-03-15].

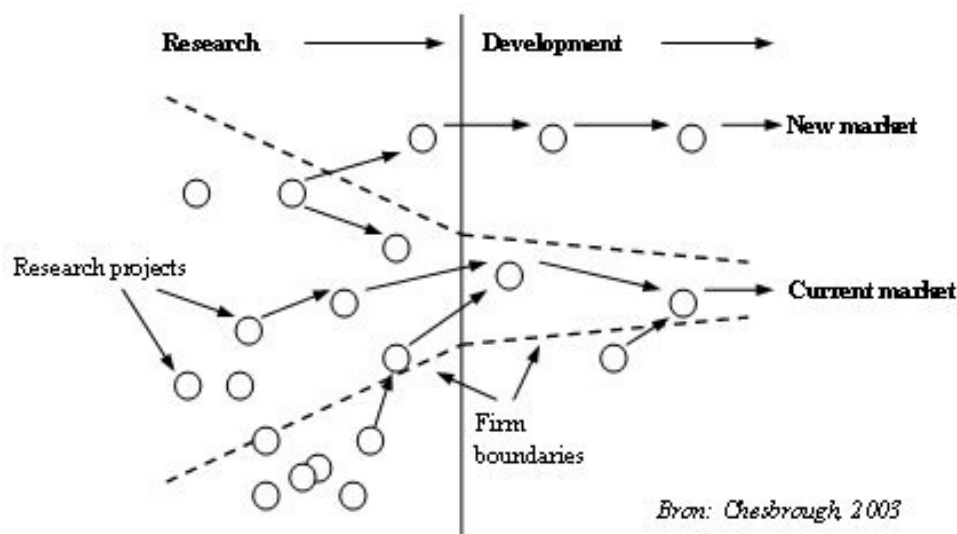


Figure 4. How companies should change to incorporate external innovations
Chesbrough, 2003 (available on www.openinnovation.eu, 2009-03-15)⁴⁰

Major advances in technology in recent years have facilitated this shift, Internet being the most important factor. Today communication and flow of information is made quick and easy on a global scale. In the case of innovation this has meant that companies can collaborate with researchers or users in real time all over the world, leading us to Web 2.0 and further to the idea of Wikinomics, implying that mass collaboration is the foundation of the new economy (Tapscott and Williams, 2008). Chesbrough's ideas behind the biggest differences between closed innovation principles and open innovation principles are summarized in the table below.

Closed innovation Principles	Open innovation Principles
The smart people in our fieldwork for us.	Not all the smart people work for us. We need to work with smart people inside and outside our company.
To profit from research and development (R&D), we must discover it, develop it and ship it ourselves.	External R&D can create significant value; internal R&D is needed to claim some portion of that value.
If we discover it ourselves, we will get it to market first.	We don't have to originate the research to profit from it.
The company that gets an innovation to market first will win.	Building a better business model is better than getting to market first.
If we create the most and the best ideas in the industry, we will win.	If we make the best use of internal and external ideas, we will win.

⁴⁰ Figure 4, the second picture describes how input for a new product can come both from within the company or from an external developer. Apple is an example where input to the iPhone both comes from internal developers as well as third party developers and users. In contrast to several American studies, the Apple example is more in line with European studies. One major difference between the two pictures is that in the first one, developments and improvements for new and existing products solely comes from knowledge within the company. Whereas the second picture shows that input can be created by players that do not belong to the company.

We should control our innovation process, so that our competitors don't profit from our ideas.	We should profit from others' use of our innovation process, and we should buy others' intellectual property (IP) whenever it advances our own business model.
--	--

Figure 5. Chesbrough, 2005 (available on www.innovation-point.com, 2009-03-17)

Innovations can come from anywhere, e.g. from the internal R&D department, from external suppliers, manufactures or from the end users. Von Hippel (1988) has identified the end-users as the single most important contributors to new innovations. In his book *Sources of innovation* the author discusses and defines the terms lead-users and user innovation. Lead-users have two distinct features:

- “1. Lead-users face needs that will be general in a marketplace, but they face them months or years before the bulk of that marketplace encounters them, and
2. Lead-users are positioned to benefit significantly by obtaining a solution to those needs.” (Von Hippel, 1988, p.107)

2.4 Theoretic summary

Two business models are illustrated in order to best illustrate why theories have been chosen and to answer the main research question; one that illustrate a traditional value chain and one that demonstrate the new type of value chain. The main differences between the two are

- How the firm is organised (business model theory).
- The way communication and interaction is organized (platform theory).
- How open the companies act with regards to innovations (open innovation).

As described in the background, the ways of doing business are changing as some companies have chosen to accept that knowledge can come from outside of the firm. In order to best leverage on third-party developers' innovations and contributions, companies must decide on how open they should be in regards to the innovation process. The open innovation theory highlights the main topics that need to be considered when moving towards new ways of doing business.

Once a company have decided to be more open, they must find a way to deal with both customers and external innovators. Platform theory puts forward arguments for how a platform can look like in order to access both end users and third-party developers, going from traditional one-sided platforms towards two-sided ones.

When a company sets it overall strategy and business model, two questions need to be answered and outlined. How open should the company be and how should it build the platform. When a decision has been taken with regards to the two questions, a business model must be formulated so that the company can organize itself for the future.

I) *Business model illustrated by traditional value chain*

The traditional value chain is signified by:

- One-way interaction, meaning that third-party developers are unable to communicate with end-users.

- The company is organised in the way that cost occur to the left and revenue to the right, in terms of the flow in the value chain.
- Low degree of openness towards external knowledge.

To sum up, in the traditional value chain there is no exchange between 3rd party developers and the end-users. When the 3rd party developers are unable to interact with the end-users the company may become a gate keeper and possibly miss out on developments that could occur if there could be interaction between all the stakeholders.

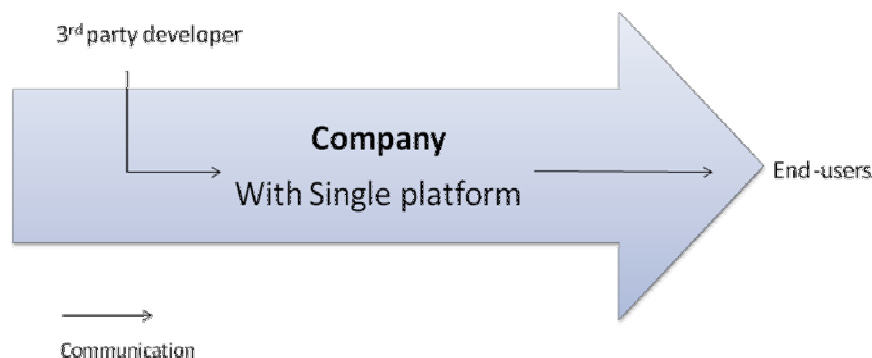


Figure 6. Traditional business model's value chain

II) Business model illustrated by new value chain

The new value chain is signified by:

- Two-way interaction via a two-sided platform. End-users and third-party developers can now communicate via a platform that is provided by a company.
- The firm is organised so that cost and revenue occur in several places in the value chain (between the company and the third-party developers and between the company and the end-users)
- High degree of openness towards external knowledge

In essence, in the new value chain all three stakeholders (3rd party developers, the company and end users) can communicate on a common platform. Communication can for example be the exchange of ideas, a better understanding of supply and demand or just a dialogue between the stakeholders that may lead to new ideas and improvements. A way of looking at it is that if the company provides a platform on which developers and end-users interact, then they contribute to the development of current and new products.

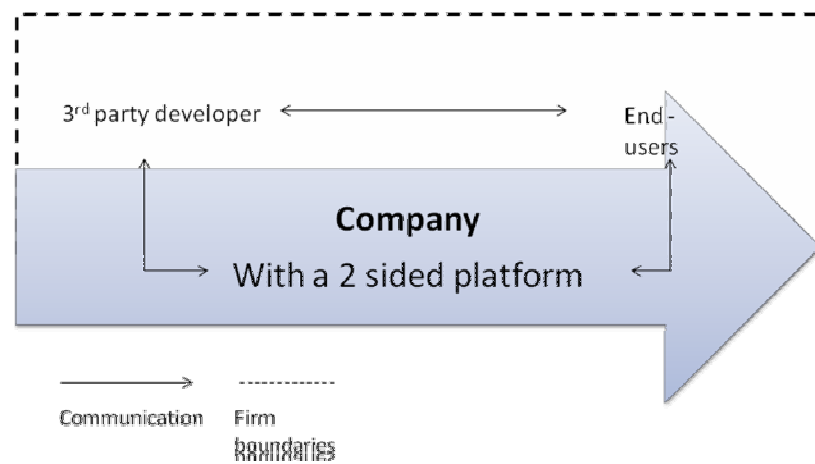


Figure 7. The business model's new value chain

3. Research design

As this thesis aims to identify factors to engage third-party developers in the process of developing applications and not to generate new theory, a deductive approach is the preferred research design. This implies that theories are chosen on beforehand and used as a theoretical frame of the study to analyze the empirical findings. However as theory and empirical data has been collected simultaneously the approach cannot be said to be a pure deductive one but an abductive one (which is a mix of a deductive and inductive approach), starting with theory that has been verified against empirical data. A qualitative study is chosen since this thesis' is based on an in-depth examination of two companies to understand how they engage third-party developers in their business. (Merriam, 1994)

A case study of two major mobile phone producers, Sony Ericsson and Apple, is carried out. Sony Ericsson is chosen because they were one of the first companies to work with third-party developers globally to have an open dialogue with them. At the other end of the continuum is Apple, a relatively new player on the market and with a different way of handling third-party developer, which is why they are chosen to contrast Sony Ericsson in this case study. As will be shown, these two actors tend to differ quite a bit from each other in terms of interacting with third-party developers, and the role these have in each company.

In the light of Web 2.0, this thesis has employed a number of Internet sources and blogs to find information, because Internet is such an essential part of our lives today and because this thesis interviewed sources have referred to the Internet for more information. Of course one have to be aware of the Internet as a tool to spread false information and strong opinions, and therefore being critical of sources is important. The choice of using Wikipedia as a source can be widely discussed (and is likely to be), but since Wikipedia has proven to be more accurate and updated than Britannica this thesis made the decision to employ Wikipedia.⁴¹ Also, the information generated from Wikipedia is advantageous for this thesis, but does not constitute central concepts.

3.1 Data Collections

3.1.1 Apple

Primary data

Information about the company was collected from telephone interviews, e-mail questions and Internet sources. The Apple developers that were contacted were found browsing around in Apple's App Store, searching for Swedish application developers.

At first, a selection of four developers was sent an e-mail asking if they would like to answer a few questions regarding their collaboration with Apple. The option to be anonymous was given to them. The questionnaire consisted of 21 questions, starting with general question about the developer then more specific questions about the collaboration.⁴² To increase the response rate

⁴¹ Blodget, H., <http://www.businessinsider.com/henry-blodget-sorry-britannica-wikipedias-not-only-bigger-but-better-2009-4>, [2009-05-16].

⁴² Questionnaire is included in appendix 2.

recipients were given the estimated time for filling in those questions and also stated their very important contribution of trustworthiness to the thesis. One developer was contacted to answer the questionnaire, and also referred to the Internet for more information. A second wave of mails was sent out to another four developers, of which one answered. Many of the mail recipients who did not answer the questionnaire, replied that they had either too much to do or that the Internet as well as blogs contained the necessary information.

A mail with contact initiation was also sent to Apple's Nordic PR manager, who replied that the company did not reply to these kinds of questions and suggested the Internet for further information. This did not come as a surprise since "Apple is notoriously known for being secret about company information and products".⁴³

Secondary data

Before the primary data was collected, the Internet was searched for information, but also to be prepared for potential interviews with the company. In order to support primary source data, a lot of information about Apple has been generated through the Internet, as suggested. Due to the current interest around Apple and its products there is much information about the company online, both from positive brand loyalists as well as from people accusing the company of locking up their customers to Apple products and services. Also, the authors have also downloaded iPhone applications and tested them, as research.

3.1.2 Sony Ericsson

Primary data

The first interview with Alexander Thurban, in-house application developer at Sony Ericsson in Lund, was initiated by a telephone call to the company's office in Stockholm. Alexander Thurban works on the JAVA⁴⁴ platform. A second interview via mail was also sent to sort out the information about Sony Ericsson and its Sony Ericsson Developer World. As he could not answer all the questions, he referred to senior management of SEDW or similar. The next attempt was therefore to interview one more senior person, and Stellan Svensk, who is Global Content Partner Manager (Games) at Sony Ericsson, was found by a telephone call to Sony Ericsson HQ. Stellan Svensk has been working with SEDW, since its beginning, and even if this thesis topic very much does concern him, he is nowadays not as engaged in subjects concerning their open platform applications.

Once those interviews were completed, the aim was also to interview one of Sony Ericsson's external developers. Using Developer World web site, an account was created to be able to communicate with developers through a discussion forum. A new topic was posted, *Student Thesis – what do developers think about SEDW*, with questions about their opinions about SEDW and how it works for them. Instead of publishing answers in the forum, the contacted developers had a possibility to be anonymous if sending an email to an account specifically created for this. Unfortunately, there were no replies, even if about 210 people had viewed the post in SEDW.⁴⁵ A further attempt to get in contact with an external developer was made by searching for previous winners of Sony Ericsson Content Challenges. Last year's winner, 3D Bruket (www.bruket3d.se), was contacted by mail and by telephone, but chose not to reply.

⁴³ Person 1, 2009-03-23.

⁴⁴ JAVA is a programming language. (Techterms, <http://www.techterms.com/definition/java>, [2009-05-23]).

⁴⁵ As of 2009-05-07.

Secondary data

The SEDW web site has been employed to read discussions among members and to understand how the process of developing new applications is done. Also, the home page of Sony Ericsson and their library of press releases have been used to get a hold of information about the company. The authors have tried to download applications for Sony Ericsson mobile phones, but not been successful due to technical and timing issues.

3.2 Validity

Validity is an issue of measuring, what was set out to be measured; a way of making sure that the results correspond to reality. One method to increase validity overall is to apply different perspectives when collecting data. In this thesis, interviews have been done on different corporate levels and also with the external developers, the latter giving an important perspective outside of the company. Additionally, a vast amount of Internet sources, with both positive and negative views on the research subject, have also been examined to appreciate even more perspectives.

Internal validity, meaning that people with relevant and experience to support the research should be interviewed, this thesis has taken actions to interview people in direct relation to the research questions; third-party developers, in-house developers, and content managers.

The possibility of generalizing the thesis' results is called external validity and in essence affects the thesis' purpose and applicability, without it there is little contribution to the research field. To be able to transfer the results, the researcher can never assess transferability, but can enhance it by describing the research context and the assumptions thoroughly, which this thesis has done in the introduction and the background.

3.3 Reliability

In the background of this case study, a thorough description of the events and developments, relevant to this paper, is given. The reader has to be aware of the development pace within the mobile communications industry, and the inherent rules and requirements change almost daily.

3.4 Limitations

This study will be limited to study two leading mobile phone producers in the mobile communications industry, Apple and Sony Ericsson, and to see how these companies work with third-party developers.⁴⁶ Therefore, this study will not include other actors in the mobile communications industry. Necessary for customers to enjoy the full range of mobile service offerings that are available, they need to have a smart phone. Therefore, this study is limited to the smart phone market. Also, in terms of mobile service offerings, the study is analyzing the creation of applications by third-party developers. When trying to identify factors that engage third-party developers in the process of developing applications it is important to clarify that this thesis does not try to compare the importance of these factors. This means that the identified factors may be equal in importance when collaborating with third-party developers, but at the same they may not be equal. This relative importance between factors will not be discussed in this thesis.

Information about Apple is generated from their third-party developers and Internet sources. Because of the vast sources of information about Apple online we believe that the impact on the empirical evidence will not be immense. However, it would have been beneficial to have first hand information from Apple employees to receive internal information and their personal opinion, which would have added to the thesis' execution and trustworthiness. All interviews have been carried out either via mail or telephone because of geographical distance. Developers that have been contacted are all Swedish and not randomly chosen, which may have implication the applicability of this paper and the possibility to draw general conclusions, may be limited. Another difference in research of the two companies is that contacts with Apple are limited to external sources and Sony Ericsson to internal sources. The authors are aware of this and would of course have preferred to have better access to both researched subjects.

For the case of simplicity, definitions on technical terms and concepts specific for this thesis are described in footnotes throughout the paper, but also stated in appendix 3.

4. Empirical studies

4.1 Apple

4.1.1 General company information

Apple Inc. is engaged in the design, development and marketing of personal computers and related software and accessories, such as digital music players. The product portfolio comprises for example Mac computing systems, iPods, iPhones, servers and Mac compatible software. The company mainly operates in the US and is head quartered in Cupertino, California and employs 21,600 employees (Datamonitor, 2008). Some of the more known software and hardware are:

⁴⁶ Sony Ericsson employs a varied directory of operating systems (Symbian and Android for example) on their handsets, which allow for a number of software platforms (JAVA and Play Now for example) to be compatible with Sony Ericsson mobile phones. Apple, however, only allows applications developed on their platform, and the iPhone only runs the Apple operating system.

- iLife: A software package that enables users to manage, distribute and publish digital media⁴⁷
- iWork: a office software package⁴⁸
- Safari: The world's third most used web browser⁴⁹
- QuickTime: A multimedia framework capable of handling various formats of digital video, media clips, sound, text, animation, music, and interactive panoramic images⁵⁰
- iPod: A portable digital media player⁵¹

In 2007, Apple launched their first version of iPhone in the US, after a period of consumer hype around the product, and on July 11, 2008 Apple launched iPhone 3G in Sweden.^{52 53} The iPhone is described as an Internet-connected smartphone, built on the iPod hardware platform. During the Apple Worldwide Developers Conference in 2007, Apple announced a third-party development solution for iPhone, which put people's fear of closing the handset platform to rest.⁵⁴ Apple's iPhone has been a success to the company and recently ranked highest among smart phone consumers in the US, and doubled its smartphone market share in the first quarter of 2009.^{55 56}

4.1.2 iPhone Developer Program

The first step in becoming an Apple developer is to have access to a Mac computer. The second step is to download the SDK⁵⁷ from Apple's website.⁵⁸ Thirdly, the third-party developer has to submit an application to App store together with paying a fee. There are two different fees available, i) the Standard program for \$99 which is for developers that are creating and want to distribute free or commercial applications to the iPhone (or iPod touch), ii) the Enterprise program for \$299 which is for enterprises with more than 500 employees that create proprietary in-house applications for the iPhone. The difference between the two is that developers for using the Standard program get to distribute their apps via the App store whereas the developers using the Enterprise program do in-house distribution. In-house distribution means that the company works together with Apple and that new applications are not sold via iTunes but are incorporated with other offers from Apple.⁵⁹

On developing for Apple: "it is simpler, and more joyful" compared to developing on other software.

Oskar Lissheim-Boethius (2009-03-25)

⁴⁷ Apple, (<http://store.apple.com/us/product/MB966?mco=MzA3MDc5Mg>) [2009-05-23].

⁴⁸ Apple, (<http://www.apple.com/iwork/>) [2009-05-23].

⁴⁹ Net Applications, <http://marketshare.hitslink.com/report.aspx?qprid=0> [2009-05-23].

⁵⁰ Apple, <http://www.apple.com/se/quicktime/> [2009-05-23].

⁵¹ Apple, <http://www.apple.com/itunes/> [2009-05-23].

⁵² USAToday, http://www.usatoday.com/tech/wireless/phones/2007-06-28-iphone-launch_N.htm, [2009-05-19]

⁵³ MacDailyNews, <http://macdailynews.com/index.php/weblog/comments/17790/>, [2009-02-07]

⁵⁴ Apple, <http://www.apple.com/pr/library/2007/06/11iphone.html>, [2009-02-07]

⁵⁵ JD Powers and Associates,

<http://www.jdpower.com/corporate/news/releases/pressrelease.aspx?ID=2009082&sr=hotnews>, [2009-05-20].

⁵⁶ Dalrymple, J., http://news.cnet.com/8301-13579_3-10245339-37.html, [2009-05-20].

⁵⁷ Software development kit needed to be able to create applications.

⁵⁸ Stuart, K. <http://www.guardian.co.uk/technology/gamesblog/2009/feb/10/gameculture-apple>, [2009-02-13].

⁵⁹ Apple, <http://developer.apple.com/iphone/program/>, [2009-02-13].

“The main reason why choosing Apple is because of the design, quality, community and the platform...”

Ian Vänmann (2009-04-30)

Via the iPhone Developer Program, Apple provides a complete and integrated process for developing, debugging, and distributing free, commercial, or in-house applications for the iPhone (and the iPod touch). Developers can find complete development resources, and real-world testing on an iPhone simulator. Furthermore Apple offers the possibility to distribute the applications on the App Store online, they also offer assistance and interactive help, from code to a final application.⁶⁰

4.1.3 Applications and Distribution

In order to understand how the distribution of iPhone applications is done, one have to understand the role of iTunes in the process of purchasing third-party developers' applications. iTunes is Apple's proprietary digital media player application, and it is free of charge to the customers. The software is the interface to manage content on the iPod as well as on the iPhone and is also the main way the user accesses the Internet (via iTunes) and downloads digital media. New versions of iTunes are released continuously to keep the software up to date.⁶¹

App Store was launched on July 11, 2008 after an extended period of time guessing when it should be launched.⁶² The App Store is the actual service allows users to browse, download and pay for applications available for iPhone, and is only accessible via iTunes.⁶³ In order for customers to be able to buy new applications, they have to register as a user on iTunes, providing Apple with personal details like credit card information for example.⁶⁴

According to a Barclay's analyst, Apple seems to have found a well functioning business model and the success of the App Store is due to the “stickiness” to iPhone. Stickiness is explained as enhancing customer loyalty in the long term due to the customization of applications, which hinders multi-homing. Stickiness can also be referred to as a “lock-in” effect.⁶⁵ An iPhone is less useful without iTunes, and vice versa. Apple has created many products that would not work without the support of other products, some are free and some are not. For example the iPod needs iTunes in order to manage and download digital media such as music and videos. But the iTunes itself needs QuickTime media player in order to be able to listen and view digital media.

The different applications available for iPhone are grouped into nine different categories in the Apple's application shop, App Store; books, business, education, entertainment, finance, games, health & fitness and lifestyle.⁶⁶ In March 2009, there were more than 20 000 available applications and over 500 million downloads in total, since App Store was launched in July

⁶⁰ Apple, <http://developer.apple.com/iphone/program/>, [2009-02-13].

⁶¹ CrispSofties, http://www.crispsofties.com/iPod.iTunes_-_Why.html, [2009-05-23].

⁶² Techcrunch, <http://www.techcrunch.com/2008/07/09/apple-notifies-developers-iphone-app-store-to-launch-thursday-morning/>, [2009-05-23].

⁶³ Wikipedia, http://en.wikipedia.org/wiki/App_store [2009-05-23].

⁶⁴ Apple, <http://www.apple.com/pr/library/2007/06/11iphone.html>, [2009-02-07].

⁶⁵ Macnn, <http://www.macnn.com/articles/09/02/10/app.store.customer.loyalty/>, [2009-02-15].

⁶⁶ Apple, <http://www.apple.com/iphone/appstore/>, [2009-02-13].

2008.^{67 68} As of May 10th, 2009 the number of applications were 40 564 and the number of downloads exceeded one billion.^{69 70}

Apple determines whether or not an application is accepted for distribution using the App store, based on what they decide is an appropriate application. There have been cases where new applications have been rejected because the application has either duplicated feature of existing Apple applications or in the case of the new application have been of limited utility. But even if applications have been rejected they still may be redistributed ad-hoc distribution among a few users. According to developers that were asked about the selection criteria they all referred to the site and their own experience. Ian Vännmann, for example, had an application that was rejected because it used too much data capacity, he modified it according to Apple's request and it was later accepted.⁷¹

According to the Apple webpage it states that a new application should not be offensive and cannibalize on existing Apple products.⁷² However sometimes weird apps are accepted, like the "Baby shaker", even though it was quickly pulled back after heavy criticism.⁷³ Therefore, Apple has been critiqued for not being able to clearly communicate how they evaluate and approve applications.⁷⁴

Customers use the App Store to download new applications, and third-party developers use it as a go-to-market channel. If the application is accepted, third-party developers decide what price they charge customers for the application, or they can provide it for free. Apple then provides marketing and sales distribution only via the App store distribution channel and charges 30 % of the sales revenue and the remaining part ends up with the developer.⁷⁵

According to Nicola F. Sharpe and Olufunmilayo B. Apple has facilitated their market dominance by deliberately limiting interoperability with non-Apple devices and non-Apple online music stores for iPod device and iTunes Music Store users.⁷⁶ But from a customer perspective, a lock-in is not necessarily a bad thing as long as the company is not abusing its monopolistic position.⁷⁷

*"CEO Steve Jobs spent about a third of Monday's Worldwide Developers Conference (WWDC) keynote address talking up the iPhone as platform."*⁷⁸

⁶⁷ Apptism, <http://www.apptism.com/>, [2009-02-15].

⁶⁸ Russel Beattie, <http://www.russellbeattie.com/blog/500m-iphone-app-downloads-didnt-see-that-one-coming>, [2009-02-15].

⁶⁹ Apptism, <http://www.apptism.com/>, [2009-05-10].

⁷⁰ Apple, <http://www.apple.com/se/itunes/billion-app-countdown/>, [2009-05-10].

⁷¹ Interview, Ian Vännman, 2009-04-28.

⁷² Santo, M., <http://www.realtechnews.com/posts/6646>, [2009-05-20].

⁷³ Techcrunch, <http://www.techcrunch.com/2009/04/22/feel-like-shaking-a-baby-to-death-theres-an-app-for-that/>, [2009-02-15].

⁷⁴ Frakes, D., Griffiths, R., <http://www.macworld.com/article/134960/2008/08/appstore.html>, [2009-02-15].

⁷⁵ Apple, <http://www.apple.com/pr/library/2007/06/11iphone.html>, [2009-02-07].

⁷⁶ 5 Nw. J. of Tech. & Intell. Prop. 332 at <http://www.law.northwestern.edu/journals/njtip/v5/n2/5>

⁷⁷ Designing a lock-in effect, <http://gettingsoftware.posterous.com/designing-a-lock-in-effect#ixzz0GJKvZkh&B> [2009-05-19].

⁷⁸ Keizer, G., <http://www.itbusiness.ca/it/client/en/home/News.asp?id=48781>, [2009-02-15].

2.1.4 The Apple business model for third-party developers

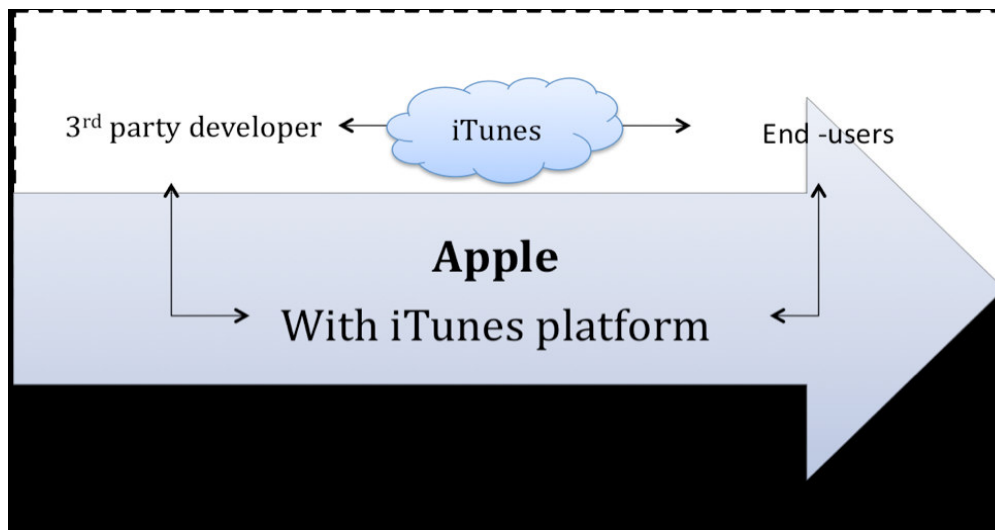


Figure 8. Apple's business model

4.2 Sony Ericsson

4.2.1 General company information

Sony Ericsson Mobile Communications was created when Ericsson Consumer Products Division and Sony Digital Telecommunication Network entered a joint venture in 2001.⁷⁹ The collaboration was said an attempt to take advantage of Sony's consumer electronics expertise and Ericsson's technological knowledge to become the leading producer of mobile phones (Marek, 2004). All production of mobile handsets was transferred to the new company, which now co-develops mobile multimedia devices, such as feature-rich phones, accessories, services and more.⁸⁰

Sony Ericsson had a couple of years of turbulence before it turned its loss into profit (Marek, 2004). As of 2008, Sony Ericsson was the fifth largest mobile phone producer in the world⁸¹, but the company has not managed to successfully gain a significant share of smartphone market.⁸² As a result of last year's economic slowdown, Sony Ericsson is forecasting a continued deterioration for 2009, and is expected to save about 300 million Euros by this year's end.⁸³ Three months later, the company declared that sales had dropped with 35 %, in a market that is expected to decrease with ten percent (Törnwall, 2009-05-08). Saving money is done by reducing the number of products in the portfolio, which has already decreased with 20 %, but

⁷⁹ Sony Ericsson, <http://www.sonyericsson.com/cws/corporate/company/aboutus/profile>, [2009-02-15].

⁸⁰ Ibid.

⁸¹ Wikipedia, http://en.wikipedia.org/wiki/Sony_Ericsson, [2009-02-16].

⁸² Petty, C., Stevens, H., <http://www.gartner.com/it/page.jsp?id=910112>, [2009-02-13].

⁸³ Sony Ericsson, <http://www.sonyericsson.com/cws/corporate/press/pressreleases/pressreleasedetails/pressreleaseq408-20090116>, [2009-02-16].

also by a strategic move towards entertainment mobile phones.⁸⁴ Sony Ericsson employs several different operating systems in its mobile phones, like Symbian OS, Windows Mobile, UIQ and it is their aim to employ different platforms for their future mobile phones.⁸⁵

4.2.2 Sony Ericsson Developer World

The initiative to invite professional developers to create applications started in 2002, when Sony Ericsson provided a SDK for their model P800.⁸⁶ As a next step, Sony Ericsson launched Sony Ericsson Developer World (SEDW hereinafter), which is an online community for professional developers, functioning as a global support program and web portal for interaction with these developers.

“In the beginning the underlying reason for starting Developer World was to keep an open dialogue with external developers, and this has today evolved into the Developer Programme, which aims to assist developers with technical support to a greater extent than previously.”

Stellan Svensk (2009-04-14)

Another reason for starting SEDW was because it was unreasonable to think that Sony Ericsson had the resources needed to be able to produce all applications in-house as the mobile phone contained more and more functionalities.

“With a stable and well-functioning platform separated from the applications, it also becomes more easy to exchange applications more often and the time line from idea to market is shortened.”

Alexander Thurban (2009-02-20)

By using SEDW, developers are assisted with a wide variation of tools, like technical support and documentation, in order to speed up the process from creative idea to market introduction. Ultimately, the community should help developers to achieve business success. According to Sony Ericsson, SEDW will assure that the company receives “constant stream of fun, useful and innovative content and applications is continually available for Sony Ericsson mobile phones”.⁸⁷ To become a member, a developer has to register his/her personal information as well as information about the company, programming language employed, type of applications developed, and kind of membership. A few days after the online registration, the developer will receive a mail with log in details for Sony Ericsson Developers World.⁸⁸

The developer could previously choose from three types of membership; a free of charge community membership, and Core or Core +, memberships charged with a fee. The Core membership cost USD 500 and Core + USD 2500. The free membership gave developers the right to download documentation, tools, and participate in the forums. Core membership enabled developers to access, on top of what the free membership offers, more advanced developing services, what Sony Ericsson describes as “dedicated technical developing support”, and also the

⁸⁴ Gripenberg, P., <http://www.dn.se/ekonomi/noje-blir-blodigt-allvar-for-sony-ericsson-1.799112>, [2009-02-16].

⁸⁵ Augustsson, T., http://www.svd.se/naringsliv/kronikorer/artikel_2474419.svd, [2009-02-16].

⁸⁶ Orlowski, A., http://www.theregister.co.uk/2002/08/28/sonyericsson_cuts_linux_p800_fee/, [2009-02-17].

⁸⁷ Sony Ericsson, http://developer.sonyericsson.com/site/global/home/aboutus/aboutdw/p_aboutdw.jsp, [2009-02-16].

⁸⁸ The authors have tested the registration process themselves.

possibility to buy new mobile phones to a better price. The Core + member were also assigned an account manager. The community also had a fourth level, which could not be purchased.⁸⁹

Today, the community is restructured and offers only free memberships, including making documents and tools accessible without registration. But still there are some services, like newsletters and discussion forums that are only for registered members. Moreover, there is a five level ranking system, in which developers can climb up the hierarchy. For technical support, developers can purchase assistance or “incidents” in the Developer Shop. The new basic community membership is similar to the previous, but Core memberships are replaced with “premier partners”, which Sony Ericsson only privately invites developers to. In addition, Sony Ericsson also selects key developers to become the company’s “fellow experts”, which means they (i.e partner relationships) are prioritized and managed by a particular Sony Ericsson team.⁹⁰

In addition to the SEDW, Sony Ericsson has also hosted, and still does host, a number of contests, or so-called “outreach programs”.⁹¹ The Sony Ericsson Game Developers Challenge was held in 2004 and generated over 130 applications.⁹² The award for winning the contest was a visit to Sony Ericsson’s development site in Lund, to meet company management and discuss business opportunities.⁹³

Today, Sony Ericsson has a new contest, launched in 2007, namely the Sony Ericsson Content Awards. Winners will meet Sony Ericsson senior management for a two-day visit at Sony Ericsson’s development site in Lund. Except for winning the possibility of discussing business opportunities, Sony Ericsson also help them meet the right people, if the application is decided to be appropriate for other third-party channels, like software vendors or publishers. Applications created by third-party developers must match “the value proposition of a specific phone, be innovative enough to have a global appeal and have a brand that fits the Sony Ericsson image”, in order to be preloaded on Sony Ericsson mobile phones.⁹⁴

4.2.3 Applications and Distribution

Applications for Sony Ericsson mobile phones are created by programmers that work for the company and third-party developers, either collaboration with larger companies like Google or smaller partners that have entered Sony Ericsson Developer World or competitions held by the company.

⁸⁹ All About Symbian, <http://www.allaboutsymbian.com/forum/showthread.php?t=17117>, [2009-02-17].

⁹⁰ DesignTaxi.com, <http://designtaxi.com/news.jsp?id=1986&monthview=1&month=2&year=2006>, [2009-02-19]; Stellan Svensk, interview, 2009-04-14.

⁹¹ Stellan Svensk, interview, 2009-04-14.

⁹² Sony Ericsson,

<http://www.sonyericsson.com/cws/corporate/press/pressreleases/pressreleasedetails/2303sonyericssonshowcasesdeveloperworldan-20041005>, [2009-02-16].

⁹³ Sony Ericsson, http://developer.sonyericsson.com/site/contentawards/press/p_press.jsp, [2009-02-16].

⁹⁴ Sony Ericsson, http://developer.sonyericsson.com/site/global/gotomarket/sellit/p_sellit.jsp, [2009-02-14].

“Generating content to mobile phones, for example using SEDW, has not been lead priority neither for Sony Ericsson nor for other mobile phone producers, but this has changes with the introduction of Apple’s iPhone. The level has risen incredibly since then.”

Stellan Svensk (2009-04-14)

Applications are either preloaded on the mobile phone or accessible using the Sony Ericsson Application Shop or any other online application shop.⁹⁵ At the Sony Ericsson Application Shop there is a wide range of categories, like work & school, travel & entertainment, phone tools etcetera. For the Sony EricssonX1, Handango.com provides 4,323 applications, of which four percent is free of charge. In comparison, the available applications drop in number when switching to Sony Ericsson’s other models like P990 and G900, which have 1,665 and 926 applications respectively.⁹⁶ There are vast possibilities for third-party developers to create applications out of control of Sony Ericsson and sell these via web sites like, mobilclub.org, youpark.com, orange.com, and applications that are created for the Symbian and Windows operating system are available on other mobile phones that employ these systems.^{97 98} Most of Sony Ericsson’s new applications (across all categories of applications) are produced in-house, and as an example, SEDW only generates about one Symbian application per month available in the application shop.⁹⁹

Sony Ericsson launched its application shop in 2003, initially as a means “for Sony Ericsson P800 users to be able to download more value-added applications to their smartphone” and to increase sales of third-party developers applications for Sony Ericsson Symbian based mobile phones.¹⁰⁰ The Sony Ericsson Application Shop is supposed to acts as a go-to-market channel for professional developers.¹⁰¹

The Sony Ericsson Application Shop is today outsourced to Handango.com, which has a vast portfolio of applications for different kinds of mobile phone manufacturers, operators and operating systems. Visitors choose which mobile phone brand and model they have and they are shown all the applications compatible with their phone. Applications created by SEDW developers ensure that contents are available when new products are launched, but are also distributed via PlayNow and Fun & Downloads on the Sony Ericsson home page, as well as the Sony Ericsson Application Shop. Sony Ericsson encourages developers to use other channels to reach out to consumers, and also initiates these relations themselves.¹⁰²

⁹⁵ Interview, Stellan Svensk, 2009-04-14.

⁹⁶ Sony Ericsson, <http://applicationshop.sonyericsson.com/>, [2009-02-14].

⁹⁷ Ibid.

⁹⁸ Interview, Stellan Svensk, 2009-04-14.

⁹⁹ Ibid.

¹⁰⁰ Sony Ericsson,

http://developer.sonyericsson.com/site/global/gotomarket/appshop/introduction/p_introduction.jsp, [2009-02-14].

¹⁰¹ Sony Ericsson,

<http://www.sonyericsson.com/cws/corporate/press/pressreleases/pressreleasedetails/2304sonyericssonapplicationshopproven-go-to-20041005>, [2009-02-16].

¹⁰² Interview, Stellan Svensk, 2009-04-14; Symbian, <http://www.symbian.com/news/cn/2006/cn20068552.asp>, [2009-02-19].

4.2.4 The Sony Ericsson business model for third-party developers

“Currently there is no well-functioning business model, as with Apple’s iPhone, but still, it’s possible to make money out of developing applications for Sony Ericsson. But you have to manage distribution and payment on your own.”

Alexander Thurban, (2009-02-20)

Even if Sony Ericsson does not have a clear business model for third-party developers, as implied by the quote written above, the company still has a process and tools for interaction to co-operate with these developers, which is shown in the figure 9 below.

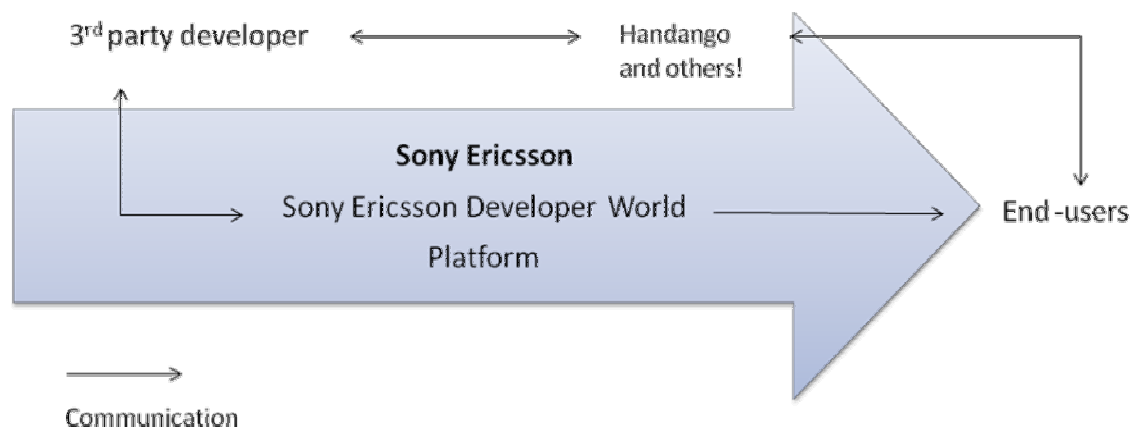


Figure 9. Sony Ericsson’s business model

5. Analysis

5.1 Business model theory

How is a business model organized so that third-party developers can contribute to the internal innovation process?

The two features that are the most salient when analyzing the business model differences between Apple and Sony Ericsson are:

- User involvement is more evident in Apple’s business model
- Intended value; Apple has a higher degree of customization, whereas Sony Ericsson focuses more on the price/quality aspect

In order to analyze all of the features of the model it is important, according to the theory, to understand that business models are results of choice between control and value. According to

Ballon, the business model is defined as the architecture of a specific business in which control and value are balanced, within a network of collaborating firms. On one side, control refers to the level of power in relationships as well as different forms of pervade in technological architecture. On the other side, value constitutes individual, societal and economic value that is generated through certain architecture. Apple and Sony Ericsson have sometimes chosen different architectures and sometimes the same, with regards to value and control. But it is the combination of the whole that constitutes the business models of Apple and Sony Ericsson.

5.1.1 The value network

With regards to combination of assets, meaning the distribution of resources among actors, both Apple and Sony Ericsson can be considered to have more concentrated resources than distributed ones. Both companies have products and tools essential to creating mobile services, for instance without mobile phones there would be no room for third party developers. However, Apple is more concentrated than Sony Ericsson due to the fact that Apple runs its own software and platform, which Sony Ericsson has chosen to open.

Neither Apple nor Sony Ericsson has chosen to integrate third-party developers, by combining the roles of the actors, implying little difference of how the two companies collaborate with them. They both have opened up to developers but have not integrated them fully as theory suggests.

When it comes to customer ownership, which is defined in theory as a direct (established) relationship, Apple is more direct in its relation to customers, than Sony Ericsson. While there are no intermediaries between third party developers, iTunes and end-users, there is a direct link for communication. Sony Ericsson on the other hand, has limited interaction with their customers as they download new software via external sites or buy a new phone.

5.1.2 Functional architecture

Relative to each other, Apple is modular and Sony Ericsson is less modular; modularity referring to the production system's different parts being fully connected via interfaces. Apple is modular because they have created a platform (iTunes) that enables a continuous stream of incremental innovations, easily understood by end-users. Sony Ericsson has also created a platform, but it does not enable the rapid mass customization that is needed to meet ever-changing customer demands and the different modules are not well connected.

With regards to distribution of intelligence, meaning how the functional architecture is governed, Apple's distribution can be considered centralized while Sony Ericsson is less centralized. The reason being that Apple has built their own platform around downloading applications and third-party developers, and which they control. Sony Ericsson has not the type of control that Apple has, probably because being open towards other actors have been highlighted for being successful in the new business climate.

Regarding the question whether the technological system should be able to communicate with other systems, Apple has chosen not to be interoperable with competitors while Sony Ericsson's mobile phones sometimes run similar software as their competitors and are therefore more interoperable. For third-party developers, applications made for the iPhone can only be used on the iPhone. But applications made for Sony Ericsson mobile phones may be used on competitor mobile phones running the same operating system.

5.1.3. Financial parameters

When it comes to the cost model, in other words how cost are shared between actors, Apple provides developers with SDKs, developer support, access to end-users and more. The distribution cost of mobile services is paid by Apple, and what the developer has to pay for is the cost for developing new applications that later can be sold in the App Store, if the application is to be accepted. Since Sony Ericsson is not in full control of the distribution of new applications they cannot be considered to bear the associated costs. For example Handango is responsible for the costs of their site while Sony Ericsson for the Developer World. For the developer, the search cost, of where to best promote the new application, is higher than in Apple's case (which is not even possible).

In Apple's case, revenue of new, created mobile services is shared between the company and the developer (30% to Apple, 70% to developer). Sony Ericsson is sharing some of its revenue, but not with a clear division, in comparison to Apple. Instead, if developers are chosen to be pre-loaded on Sony Ericsson phones, with no possibility of referring revenue to that specific application, they are compensated individually for their application.

5.1.4 Value proposition parameters

The issue of how to position new products, i.e. complementarity and substitutability of new applications, is a decision taken by end-users. Does the new application complement or substitute of how I as a consumer see the offering? For third-party developers creating applications for both Apple and Sony Ericsson, new applications are seen as complements, because of the limited interoperability of the applications. In other words, developers can create applications for both companies, and their portfolio is strengthened. In the eyes of the end-user, applications may appear like substitutes in Apple's App Store, like simple games that consumers can choose between. In the case of Sony Ericsson, applications are chosen to complement the new phone to make it attractive to end-users, which means that substitutability is mobile phone specific and not application specific.

User involvement refers to end-users taking an active part of the creation of the value proposition. Apple's end-users are more involved in creating value because they have the possibility of choosing what application they'd like, to a greater extent than end-users of Sony Ericsson products. The App Store provides the necessary link between end-users and third-party developers, and compared to Apple, the interaction between Sony Ericsson third-party developers and end-user is rather limited.

In Apple's case applications are custom made for iPhone end-users and developers, meaning that there is a lock in effect because they cannot be used on any other mobile phone. Intended value, as this parameter concerns, refers to the strategy to choose what the main value should consist of. An application for a Sony Ericsson mobile phone may be used on other mobile phones running the same OS, and hence they have chosen to pursue an "intended value"-strategy of delivering quality to the "right" price.

5.2 Platform theory

In order for the platform to access both customers and third-party developers, how should it be structured?

- The platform must not limit itself by being a certain type of platforms; it may have multiple purposes for the end-user. A platform is a set of rules for simplifying interaction between users, and should therefore be simple to use otherwise it is no longer a platform

by definition.

- Operating a dynamic platform increases customer value since it adjusts to changes in the environment.
- The right pricing is vital when attracting users to the platform.
- Partially open platform makes developers' applications less valuable to the platform owner; a way of assuring attraction to that platform.

5.2.1 Dynamic platform

In the light of the platform definition provided by Eisenmann and other researchers, one unavoidable question is if Sony Ericsson even operates a two-sided platform for interaction between users, similar to what Apple has.¹⁰³ In their case, one way that end-users can access third-party developer's applications is by buying them from Handango, Jamba and others, or to buy a new Sony Ericsson mobile phone, and none of the two options can be seen as simplifier of user and developer interaction. However, the company does have another platform for interaction, namely the mobile phone; this hardware platform that also plays an important part in the interaction. The problem is that the mobile phone is not as a dynamic tool for interaction as a software program is which should give Apple an advantage. With Apple introducing their own mobile phone that runs on their own operating system, and ownership of a dynamic platform, the company has now taken over the whole ecosystem (referring to everything connected to the mobile phone), as spelled out by competitors and media. The dynamic platform in this case would be iTunes and the App Store. The provide iTunes for free, but charge the developers for using the platform, and at the same time providing services and SDKs to them. In the case of Sony Ericsson, the company has been too focused on having an open dialogue with developers, and not putting enough attention on content generation and consumers. Anyhow, SEDW can still be considered a platform, but a one-sided platform appealing only to developers, then the distinction between one- and two sided networks is interesting to look at for example serving one type of customer can be easier than dealing with two types, and one can also imagine it to be of less risk. But with serving two distinct types of customers, comes opportunities to appreciate what Web 2.0 offers, namely connectivity and interactivity. The failure to see that Web 2.0 has brought immense opportunities for interaction between end-users has resulted in lost market share for Sony Ericsson.

Creating a dynamic platform allows companies to generate more customer value through being able to adjust to customer needs, and thus more appreciated by end-users as supply and demand is better matched. Also, end-users are charged for what they want and not what they are forced with. Providing better customer value will encourage end-users to enter the platform.

5.2.2 Multi-purpose and simplicity

In any case for a mobile phone producer collaborating with two user-sides, there is a win-win situation; the more developers that are attracted to the platform (and allowed entrance) the more mobile phones are bought. In all types of two-sided platforms put forward by Evans, Hagiu and Schmalensee (2004), creating a solid customer base on both sides are essential; growing one side will grow the other, but both sides have to be subject of mutual consideration. Let's look at the

¹⁰³ Even if Sony Ericsson does not operate a platform in the same sense as Apple, this thesis argues that they do operate a platform, but the user-sides are separate from each other. This assumption will be carried out through the analysis.

Apple-case: it is match-making in the sense that it tries to match developers' applications with its end-users' needs, by letting the end-user choose the desired applications. Moreover, it creates an audience (or a market) for developers' applications that end-users can choose from but do not have to buy from. Lastly, the platform also includes a monetary transaction possibility, handled by iTunes, with which end-users can buy music and applications.

Sony Ericsson, on the other hand, has managed to give developers APIs so that they can create applications for their mobile phones, but the users are too far away to even acknowledge that developers are a part of the deal. Developers creating for Sony Ericsson do not have a distinct audience, nor is there a matching activity from Sony Ericsson's side; or rather they do it themselves and do not let the users do it.

The main difference between Apple and Sony Ericsson is that the latter lack the structure to facilitate interaction between the platform's users. If considering Sony Ericsson to have a platform, it is too diffuse to provide value to the company and platform users and may be a reason why Apple has more developers creating applications for them. As the case evolves, it becomes clearer that simplicity may be another parameter relevant to user attraction, if there is not simplicity, there has to be enough user value for them to overcome the obstacles. For instance, some developers claim that creating applications is somewhat difficult, "but it is worth it".

As platform theory suggests, attracting users is one of the main issues of managing a platform, and therefore finding new ways of attracting users is of great importance, and extending the purpose of the platform and making it simple, may be two attractive options.

5.2.3 Degree of openness

When trying to establish to what extent Apple and Sony Ericsson are operating open platforms, the platform roles played by them have to be considered. Even if the Sony Ericsson platform does not fully cover all platform roles they may still play a part in a larger context. It is quite obvious that Apple plays both the part of the provider and the sponsor, since the company both functions as a primary platform contact for users (through iTunes), but also is responsible for the platform's technology and design. Apple continuously releases updates of iTunes so that no intruders can modify the software, and also owns the operating system for iPhone. Sony Ericsson mobile phone employs different operating systems, none of which they control themselves. With this assessment, the openness of their respective platform and subsequent implications can be analyzed. Due to the fact that Sony Ericsson applies different technologies and designs make them (1) open in the case of being a platform sponsor. At the same time they are also (2) open concerning their role as a platform provider, because they are not the only point of contact for users and developers, they can also buy applications via other market channel parties. In other words, Sony Ericsson operates a fully open platform, which is in direct contrast to Apple, who controls the point of contact using iTunes (including The App Store) and controls their own software and operating system.

	Apple	Sony Ericsson
<i>Demand side user</i>	Open	Open
<i>Supply side user</i>	Open	Open
<i>Platform provider</i>	Closed	Open
<i>Platform sponsor</i>	Closed	Open

Figure 11. Comparison of openness by role in platform-mediated networks

In theory, opening a platform should enable companies to attract more users. For Sony Ericsson, it has attracted external developers to create applications, but has not managed to attract more mobile phone users, judging from their sales. In other words, Sony Ericsson may not be defined as having a real two-sided network platform, because they are not able to affect the volume of transactions. One reason for this may be a failure to acknowledge that the product they are selling is really a product with network externalities, and left out that there are two sides in this equation. This is especially important in the new business environment, where consumer (end-user) power is increasing. Being a partially open platform, as in the case of Apple, implies that the company has the ability to charge the users (in this case the external developer) and they still should not feel enveloped, because if they do they can easily start creating applications for another platform if wanted. However, Apple does something different, they do not charge the user side (the end-users) that is subject to switching costs. By not charging end-users, Apple is able to grow a market that will attract the user side that have to pay, in other words the supply side users.

As this research show, an open platform does not necessarily grow the platform, and thus a partially open platform can better suited for attracting users if balancing the two user-sides the right way.

Another implication of Apple's more closed platform is that the company reduces the dependency of complementary products by providing them themselves. However, the company has made itself quite dependable on mobile content provided by third-party developers. This implies that Apple had to make these developers a good deal on applications sold via App Store, or Apple's products would have been valued at a lower level, which may be a reason why Apple deferred the launch of the App Store. Apple's dependency on third-party developers may not be much of a dependency on the individual level, because another developer may replace one developer, and nothing is hampering developers to create applications for other mobile phone providers. Sony Ericsson is not really that dependant on others to make its mobile phones valuable, but then again, their products may never be as valuable in the eyes of the customers.

In the era of Web 2.0, co-creation seems to be key to success, but is determined by the degree of dependency intent by the company. Value rises with the number of complementary products, and the number of complementary products rises with the willingness to let go of control. So in essence, attracting end-users by increasing customer value a company has to be willing to make itself dependable on those creating value, and the only way to do that is to open up to these people. But that does not mean the company should be completely open in terms of platform roles. Assuring that developers cannot take their creations elsewhere, is a way of loosening the

dependability, which argues for a partially open platform.

A mobile service, nowadays seen as a product in itself, is subject to systemic change. There is no change in the core product; mobile services are still applications as for example games programmed the same way as before. Instead the change lies in the architecture behind the core product, for example using third-party developers to come up with new services, and how these are presented or sold to mobile phone users. Some important changes include the ability of users to choose which services they want to have in their phones. This was evident before Apple had a mobile phone on the market, which was that Sony Ericsson had an agreement with Handango already in 2003, but what Apple did differently than other companies was that the phenomenon required an integrated firm, in order to fully internalize network externalities and encourage knowledge sharing in development.

5.2.4 Pricing

As touched upon before, pricing is an important challenge when managing a two-sided network properly because of its effect on the interest of the two customer groups. From the beginning, Apple's revenue from the mobile service platform has been streaming from the developers and not from the end-users. By charging developers and letting them charge the end-users, Apple increases the value proposition of their mobile phone both to developers and end-users. In Sony Ericsson's case, where applications are either preloaded or selected with Sony Ericsson's market channel partners, developers are either paid a fixed sum by the company or by the individual partner. In the former option developers have no ability to set their own price, set discount and such, which means that developers may miss out on money because of their inability to charge Sony Ericsson the right price for their application. Hence, there is less motivation for developers to join their platform. Judging by the number of applications and the number of application downloads, Apple have been successful in setting the right platform price and therefore maximizing the platform's value better than Sony Ericsson.

Therefore, setting the right price and motivation to attract the user-sides is of importance when designing the platform.

5.3 Open innovation

How is a business model organized so that third-party developers can contribute to the internal innovation process?

- Developers influence their own profit
- Simple and easy to interact with the company, otherwise too time-consuming
- Developers (together with end-users) decide the content

Both Sony Ericsson and Apple have realized that all knowledge cannot be incorporated into one company, and as an innovative actor one has to internalize external knowledge. By changing their business models to include third-party developers, the two companies have taken a step further in the light of Web 2.0 and Wikinomics. From an open innovation principles perspective, both differences and similarities between Sony Ericsson and Apple are evident. To begin with, both companies have appreciated that their respective firm cannot possibly include all the smart people, and that is the reason why they are working with external partners in the first place. Secondly, external R&D proves to be an important issue to both, by giving third-party developers SDKs to play with to come up with new innovations. As a difference, Apple has waited for a long time to enter the market, which may be a consequence of wanting to build a

better business model than others, as two of the principles of open innovation refer to. Moreover, letting go of control over the innovation process, as Apple has done to a larger extent than Sony Ericsson by allowing users to choose their applications themselves, allows companies to gain more from other party's innovations. The main difference between Apple and Sony Ericsson is that the former has come up with an innovation process more suitable for external developers. Their innovation process is closer to the end-user and allows developers a faster go-to-market channel. All Apple has to do is to stand back and profit from developers using their innovation process, and pay developers for every application sold via the App Store. With Sony Ericsson, developers have to wait longer for the commercialization, and possibly also have to deal with several parties to make it happen. Time is a crucial element in the light of Web 2.0 and information flows much more quickly than before. This implies that developers cannot wait for a new launch of a mobile phone in order for users to access their application, by then the user will look for something else. Owning the platform for content creation, rather than the content itself is of more value to Apple and Sony Ericsson.

6. Conclusion

After analyzing two leading actors and how they work and interact with third-party developers, three main areas can be put forward in order to best answer which factors influence third-party developer's engagement and willingness to contribute to the process of developing new mobile service offerings. By having a business model that is simple and flexible, a platform (that is neither completely open nor closed) that provides choice a company may successfully enable communication and exchange between developers and end-users (with the company providing the platform). By having developers and end-users communicating allows the company to have a better overview of what is currently demanded by the users and, with the assistance of third party developers, the speed and flexibility to constantly provide new demanded services.

The business model should be **simple** and **flexible** in keeping up with constant changing customer/market demands and technological advancements. Flexibility for customers to choose the applications that they would want to have, allowing a delivery of tailor-made customer value, which in essence means that a product is never more valuable than the number and quality of complementary products. That may be one reason behind not launching iPhone 3G before the App Store, also explaining why App Store would have to have enough applications in order to even be able to introduce iPhone. Another implication of flexibility is the possibility of combining several types of platforms into one major platform where the end-user can satisfy a number of needs. Such a platform would not only simplify for the end-users, which may increase customer value, but also cut down on cost for the platform owner and attract more users to the platform, through extending its purpose. Having an Internet-based platform allows the business model to be flexible, enabling the company to leverage on services and innovations of third-party developers. Combining a Web 2.0 and PaaS in one business model will allow developers to focus on applications and innovation, enjoy lower risk, and faster time to market, which are all likely to attract them to the platform.

The business model should **neither be completely open nor closed**, with regards to innovation and platform. Harnessing the externalities, i.e. making sure that developers don't go elsewhere with their applications, is essential to make the business model successful. The balancing act between managing a partly closed, partly open platform is a difficult one. On the one hand, there is the threat of being perceived as a "sticky" company, locking customers in the company's arms, and on the other hand, there is the danger of losing revenue from not being able to profit from the company's products and innovations. In the end, it is the customers who choose and they

should be aware of the lock-in aspect. But as mentioned, a lock-in effect is not always a bad thing. Maybe being partly closed is a deliberate choice of keeping the end-users to the platform in order to keep the “audience” of the third-party developers’ applications.

Giving the developers choice by tying costs to actual utilities (i.e. developers pay for what they use) rather than flat-rate subscriptions or licenses, is likely to increase their adoption of the platform. In these kinds of business models, the cost of the platform can be tied directly to the adoption of applications. Developers are free to make choices regarding the price and design of their application, and thus they are responsible for the success of their application.

Because it is all about selling your product (both applications and mobile phones), the integration of **customers in the production of value** is extremely important. With Web 2.0, they are now used to be a part of the production process. Other international firms are doing the same; one simple example is Nike who lets customers design their own shoes. For customers, being able to choose applications is a large part of the App Store’s and iPhone’s success. With providing valuable services come great possibilities of tying the customer closer to the company and learn about the customer. Such a strategy may be vital in times of economic crisis.

In essence, developers may not provide Apple and Sony Ericsson with radical new innovations with each new application, but they do definitely contribute to increased customer value. There is a strong win-win situation when more users and developers can interact through a platform. Developers are winners because they can reach a larger market (earn more money if they price their applications and the users have a greater choice when selecting what kind of application they want to download and the company behind the platform benefits). This is why Apple has been more successful than Sony Ericsson with regards to getting third party developers’ engagement and attention.

7. Further research

For further studies it would be interesting to study how other companies work and interact with third-party developers in the mobile communications industry. One example would be to do a benchmark study of the whole industry to find the leading player is and who are not, in terms of leveraging third-party developers.

The study of how to best leverage on third-party developers could also be seen from a developer perspective. In order for third-party developers to be interested in creating applications for different platforms and different operating systems, one could study what the main drivers are for them to support one platform over another.

Moreover it would be interesting to see whether the mobile communication industry is good at leverage third-party developers’ competence by comparing it to other industries, which may have different business models for leveraging third-party developers. One example would be studying how Google and Amazon are collaborating with their users respectively. Another idea would be to reach for an industry, either less dependent on the Internet or less “new”.

To strengthen this thesis’ results it would be preferable to examine several mobile phone producers, which is now possible since many other mobile phone manufacturers have recently opened up their own application stores, for example Nokia, Vodafone and Motorola. It would be interesting to broaden the scope to entail these companies and their interaction with third-party developers, in order to be able to generalize to a greater extent. Future studies using quantitative data would also be preferable in order to follow-up on the qualitative data.

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APPENDIX 1.

List of figures

1. Mobile Development form the 1980's and beyond.
2. Ballon's (2007) Business model.
3. Two-sided platform, developed from Eisenmann, Parker and van Alstyne, 2008.
4. Incorporate external knowledge, developed from Chesbrough, 2003.
5. Differences between closed and open innovation principles, developed from Chesbrough, 2005.
6. Traditional business model's value chain.
7. The business model's new value chain.
8. Apple's business model.
9. Sony Ericsson's business model.
10. Comparison of openness by role in platform-mediated networks.

APPENDIX 2.

Questionnaire for third-party developers of iPhone applications

About the company

1. How many employees does the company have?
2. Is the company's business proposal to develop applications for Apple's iPhone or iPod Touch?
3. If not, what is the main business proposal?
4. Are there other business partners that the company develop applications for? In that case, which ones?
5. If the company are developing applications for several business partners, what is the main difference for third-party developers? (i.e. way of communicating, business model)
6. How much of the company's profit come is linked to applications sold in Apple's Appstore?

Being a application developer

1. Compared to other platforms (e.g. Android, Symbian), what is the estimated difficulty of creating applications for Apple?

About Apple and Appstore

1. How long is an application available in Appstore and what determines that length of availability?
2. What requirements are there to enter Appstore? What are the parameters to fulfill?
3. Apple has been critiqued for acting arbitrary in the process of accepting applications in Appstore? Have you as a company experienced that or have an opinion about the statement?

About the collaboration with Apple

1. What is the main reason for choosing to collaborate with Apple and develop applications for them?
2. How was the company introduced to Appstore (e.g. industry we sites, e-mail, internet search)?
3. What is the main form of communication with Apple?
4. How good at assistance is Apple? (Assistance with SDKs, support etc.) What kind of assistance is available?
5. What are the disadvantages collaborating/working with Apple?
6. What are the advantages collaborating/working with Apple?
7. How much in commission is Apple claiming for selling applications in Appstore?
8. Does the company pay the commission to Apple or the other way around? How often does this happen?
9. Is the company subject to other fees related to the development of Apple applications? Finns det andra avgifter som företaget har relaterat till att skapa applikationer via Appstore?
10. Are there different levels of business partnership or are the same rules applying to all third-party developers?
11. Is the company only selling applications in Appstore or are there other distribution channels? (Some developers in the US claim that they have started an independent web site for rejected applications).

APPENDIX 3.

Definitions

1G: First generation mobile phone system.

2G: Second generation mobile phone system, also known as the GSM network, a standard for a mobile telephone system that could be used across all over Europe.

3G: Third generation mobile systems and hardware, superseding 2.5G and is based on the International Telecommunication Union (ITU) family of standards under the IMT-2000.

4G: Fourth generation mobile systems and hardware, a term used to describe the next complete evolution in wireless communications, giving users access to voice, data and streamlined multimedia anytime, anywhere (Young Kyun, & Prasad, 2006).

API: application program interface

Application: An "application" or "application program" refers to virtually any type of program from spreadsheets such as Excel to media players such as iTunes.

GSM: see 2G.

Intellectual property: Intellectual property is ownership of intangible and non-physical goods, and includes names, designs etc.

JAVA: Programming language.

Interface: The term interface can be used to describe either hardware interface or user interface. The former enables two electronic devices to be connected, e.g. like an USB-port, and the latter describes the user's interaction (experience of) with the software or hardware.

Mobile communications industry: Companies that provide services or products related to mobile communication

Mobile phone: A mobile phone is a long-range, electronic device used for mobile voice or data communication over a mobile telephone network of base stations.

Multi-homing: Multi-homing refers to users having more than one Internet connections, or a user employing more than one technology or platform.

Platform: An infrastructure and a set of rules that facilitates and/or enables this interaction between the two distinct types of customers.

Platform as a Service: Platforms for building and running custom applications on-demand.

Roaming: The ability to use a communications device such as a cellphone or personal digital assistant and be able to move from one cell or access point to another without losing the connection.

SDK: Software development kit.

Smart phone: A large-screen, data-centric, handheld device designed to offer complete phone functions whilst simultaneously functioning as a personal digital assistant.

Software as a Service: An application hosted on a remote server and accessed through the Internet, for example web-based email.

Source code: Instructions and data written in a certain programming language, telling the software how to function.

Third-party developer: A separate entity, adding value to the firm's primary products/services, with or without gaining profit.

Web 2.0: A business revolution in the computer industry caused by the move to the Internet as a platform.