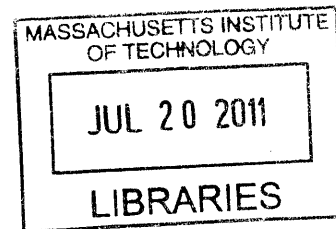# Service Platform Strategy: Social Networking and Mobile Service Platform Perspectives

by

Jang Hoon Yoo

M.S. Information Technology
Carnegie Mellon University, 2007

Submitted to the System Design and Management Program
in Partial Fulfillment of the Requirements for the Degree of

Master of Science in Engineering and Management

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June 2011

Signature of Author:_____
Jang Hoon Yoo
System Design and Management Program
May 2011

Certified by: _____
Michael A. Cusumano
Sloan Management Review Distinguished Professor of Management
Professor of Engineering Systems
Thesis Supervisor

Accepted by:_____
Patrick Hale
Director
System Design and Management Program

Service Platform Strategy: Social Networking and Mobile Service Platform Perspectives

by

Jang Hoon Yoo

Submitted to the System Design and Management Program on May 5, 2011
in Partial Fulfillment of the Requirements for the Degree of

Master of Science in Engineering and Management

Abstract

The significance of the service platform is increasing, while studies on this phenomenon remain scarce and insufficient. Most of the researches focus on products, market segmentation and how platform triggers innovation and there's a lack of researches that focus on services, the fast growing industry nowadays. In analyzing the service platform, it is important to understand the interactions between different players, such as application developers, content providers, network operators, and users. For that purpose, a value network analysis which analyzes the interactions for creating value between the key players is more suitable than the common value chain analysis which is one-directional and sequential. This thesis adopts the value network approach in an attempt to analyze the two different types of service platform, that is, social networking platform and mobile service platform.

The Social Networking Service (SNS) is evolving beyond the bounds of a simple personal network and is gradually transforming into a social networking platform where SNS information is used to develop various new services. This thesis examines the positioning and interaction of the key players for the social networking platform and the values that the key players can gain and capture.

The mobile service platform is becoming more important, as 3G mobile technologies are mature and widespread and the smartphone market is growing rapidly. For the mobile service platform, the market players are engaged in a severe competition to control the market through various strategies. The biggest current issue in the mobile market is the movement to open platform strategy to build an ecosystem in which third-party developers can participate. This thesis also examines the positioning and interaction of the key players surrounding the mobile service platform and the values that the key players can gain and capture.

Ultimately, this thesis aims to suggest service platform strategies for service platform providers and third party developers from the perspectives of social networking platform and mobile service platform. For that purpose, case studies are conducted in depth.

In this thesis, the term "service platform" is defined as a set of interfaces provided for the development of applications or contents as service and software grow into one.

Thesis Supervisor: Michael A. Cusumano

Title: Sloan Management Review Distinguished Professor of Management & Engineering Systems

Acknowledgments

First and foremost, I would like to express my sincere gratitude and appreciation to Professor Michael Cusumano for his role as my thesis supervisor. Our regular discussions and his thoughtful feedback on my work contributed to my learning and to a better end product.

I would like to thank Pat Hale, the director of the System Design and Management program, for giving me the opportunity to grow both academically and personally while at MIT.

I would like to take this opportunity to thank my sister, nephew, parent-in-law, and brother-in law for their love, support, and prayers.

I would also like to thank my dear daughter Yenah for all the joy she brought. I was able to pick up my pace through her beautiful smiles whenever I felt down and was at a loss for my thesis work.

My heartfelt gratitude goes out to my parents for everything. Despite all the mistakes I made and heartaches I caused them, they never stopped loving me and never stopped having the faith and confidence in me. They were always supportive of me and respected my decision to go back to school for my graduate study. I am deeply indebted to my parents for their continued encouragement and support during this study. I cannot thank them enough.

Most of all, my overriding debt is to my wife Heelim who always provided me with encouragement from the beginning to the end of my academic journey. She always cheered me up whenever I was down. Even when things were gloomy, I never felt completely hopeless because I knew she would always be there cheering me up and will never lose her faith in me. This thesis would not have been possible without her encouragement, support, sacrifice, love, and prayer.

Last but not least, I give my greatest thanks to God who guided me throughout my entire life.

Table of Contents

List of Figures

List of Tables

Chapter 1: Introduction

1.1 Research Background and Objectives

The competitiveness of platform has become very important as the convergence between device and service has been accelerated in connection with the advent of the era of digital convergence, and the integration of wireless and wired, broadcasting and telecommunications. As the cooperation and competition between the value chains or within the value chain are becoming fierce, the race that's been formed by platform is retooling in the market.

The value chain has become complicated since not only the players in a different industry play a critical role, but also they have been placed in a competitive circumstance together with the players in a totally different field. As a consequence, internet service providers, content providers, and mobile handset manufacturers have been trying to transition themselves into a service platform provider. Open service platform, such as Amazon Open Platform and Google OpenSocial, which is a set of open APIs that Google is releasing to web application developers to create web applications for social networking services, such as Myspace, Facebook or LinkedIn, and Facebook's open platform based on web centered around social network analysis has emerged core value of the future of many businesses. In addition, companies like Apple, Nokia and Google are striving to take the initiative in service platforms.

However, studies have not given ample attention to service platforms. It is therefore necessary to apply a theoretical analysis to service platforms through value networks.

The objective of this research is to analyze the value network of the social networking platform and mobile service platform as service platforms have become very important in securing competitive advantage, and to suggest a strategy that the key players of the platform value network must adopt in order to generate customer value and to build sustainable competitive advantage.

In this thesis, "Value Network Analysis" is used as a major research method as this is a business modeling methodology that visualizes business activities and sets of relationships from a dynamic whole systems perspective. Value Networks are sets of roles, interactions, and

relationships that can generate economic or social value. Tools used in the past to analyze business value creation, such as value chain and process models, are simply inadequate to address a new level of business complexity.

1.2 Research Approach

- Analyze market trends related to the social networking and mobile service platforms.
- Use the value network and case study approach to analyze both the social networking and mobile service platforms.
- Review key issues related to the service platforms.
- Suggest a platform-based strategy and approach that the key players (or participants) of the "value network" must adopt for growth within a platform-centric ecosystem.

1.3 Brief Summary of Chapters

This thesis consists of six chapters and the following are brief descriptions of the main chapters.

Chapter 2: This chapter discusses a theoretical review of Network Economy and Value Network. This chapter also discusses the rise and importance of the service platform related to environmental change and paradigm shift.

Chapter 3: In this chapter, value network model of a social networking platform is analyzed. Also, representative case study for the social networking platform is conducted.

Chapter 4: In this chapter, value network model of a mobile service platform is analyzed. Also, representative case study for the mobile service platform is conducted.

Chapter 5: This chapter suggests the service platform strategies for the service platform providers and third-party developers.

Chapter 2: Theoretical Review and Environmental Change

2.1 Theoretical Review

The size of the ecosystem of the service platform providers and the value of the platform are closely related. The value of the network increases exponentially when the size of network gets larger, and a virtuous cycle from which all the participants can benefit is formed due to positive network effects. In addition, the interaction among various stakeholders, such as application/content developers, network providers, end users, is important in analyzing the service platform. It is therefore necessary to investigate value networks analyzing network economy and the interaction among the key players for creating value.

2.1.1 Network Economy

Boyett and Boyett (2001) pointed out that the larger the network, the greater its value and desirability. In a networked economy, success begets more success.

Kelly (1998) states that in a network economy, value is created and shared by all members of a network rather than by individual companies and that economies of scale stem from the size of the network - not the enterprise. Similarly, because value flows from connectivity, Boyett and Boyett (2001) point out that an open system is preferable to a closed system because the former typically have more nodes. They also indicate that such networks are blurring the boundaries between a company and its environment.

One of the most important features of network economy is dynamic nature. That is, the behavior of a member of network can have a positive or negative effect on members of all other networks. In order for the behavior of a member to be more effective, behaviors of participants of other networks may be required. The key to value creation in a network economy is to understand how the value is created within relationships (Blankenburg Homn et al). In a network, other network players that can have an effect on value creation activity of a firm should also be included together with customers, suppliers, competitors, allies, regulators, and substitutes.

11

2.1.2 Value Network

Value Chain

The value chain, also known as value chain analysis, is a concept from business management that was first described and popularized by Michael Porter in his 1985 best-seller, *Competitive Advantage: Creating and Sustaining Superior Performance*. He defined a value chain as the set of activities and/or firms that create a specific product or service. In addition, he defines value as the amount of money buyers are willing to pay for a product or service. The value chain explicates the value that is created and the activities that contribute to the creation of value. In this way, the value chain outlines the transformation of various kinds of input, for instance raw material, to various kinds of output, for instance a finished product or service. The value chain model distinguishes primary activities, i.e. creating, selling and transferring the end product, from supporting activities, i.e. procurement, technology development, human resource management and firm infrastructure. It can be used to analyze the competitive advantage of businesses, identify cost drivers in each value-adding activity or help decide how to distinguish oneself from one's competitors. According to Porter, value chain desegregates a firm into its strategically relevant activities in order to understand the behavior of costs and the existing and potential sources of differentiation. That is, it is about a rudimentary value creating process related to producing goods or services, and value adding activities are components that create a competitive advantage.

While this approach is often used to analyze the activities of individual business, it can also be used to analyze the exchanges and activities of a series of businesses involved in producing value, or even entire industries. Although the concept of value chains has been widely used, it has also been the subject of criticism. Firstly, Stabell and Fjeldstad (1998) argue that it is an approach that is less suitable for certain specific service sectors. The underlying assumption of input being transformed into a standardized bulk product via by a fixed set of activities does not hold for two types of service offerings. One of them involves solving situation-specific customer problems, for instance in the case of a doctor, where primary and support activities have to be carried out simultaneously, dealing with unique cases, non-linear value-adding activities, and interdependence between the activities, while the other mainly creates value by facilitating a

12

network relationship between customers, using a mediating technology, for example in the case of a telecommunications service or a bank. In this type, input and output are conflated rather than chronologically separated.

Secondly, Allee (1999, 2000) finds that the value chain model focuses on the exchange of tangible assets between businesses and buyers, while in today's economy intangible assets have become increasingly important. She asserts that these intangible assets include customer or external capital (alliances and relationships with customers, strategic partners, suppliers, investors and the communities); human capital (individual capabilities, knowledge, skills, experience and problem-solving abilities that reside in people within an organization); and structural capital (systems and work processes that leverage competitiveness, including IT, communication technologies, images, concepts and models of how the business operates, databases, documents, patents, copyrights and other codified knowledge). Allee advances a value network model in which tangible as well as intangible resources are being exchanged.

Thirdly, the value chain model implies a linear structure, which in today's world is no longer the case (Hearn & Pace, 2006), in particular when we look at the telecommunications industry, as illustrated by Li and Whalley (2002), who explain that, whereas TV, voice and data services used to be offered via individual networks in isolated, linear value chains, after the liberalization of the telecommunications market and the introduction of Internet technology, relationships in these chains have become less close and long term-oriented. In other words, the traditional value chain model is not suitable for understanding complex value in the era of convergence and knowledge economy because of its linear and mechanical perspectives based on the industrial era. In addition, Internet technology has created new markets that have been entered by the players from different industries. The authors argue that these developments imply that there are no longer linear, silo-like value chains, but that the industry can be better described in terms of value networks consisting of various actors from a range of industries working together to deliver goods and services to end users. To summarize, although the traditional value chain model applies to production industries, it is less suitable for service industries. Furthermore, with non-tangible assets becoming increasingly important in the today's economy, the value chain model has a too narrow view on value. A special case can be made for the telecommunications industry, in which convergence has made any thoughts of linear value chains obsolete.

Kothandaraman and Wilson (2010) also pointed out the limitations of the value chain in that it takes into account the value chain by the value adding activities from the perspective of the individual business without deeply exploring the links between the businesses in the value chain. Kothandaraman and Wilson argue that businesses have moved from competitive to cooperative paradigm, where the focus has moved beyond individual business to examining the value-creating network formed by the key businesses in the value chain. Indeed, business paradigm has now been shifted to a collaborative relationship between buyers and sellers. The focus therefore has moved beyond individual business to the analysis of the value-creating network formed by the key businesses in the value chain that delivers the value to the end customers. In addition, Greenstein (1999) mentioned in his study of the evolutionary structure of electronic commerce that it's meaningless to analyze the value chain as the structure of the electronic commerce industry is too complex.

Value Network

Terms like value network, value net and value web are often used interchangeably. The definition of value network is "network" which proposes value for customers connected between them (Tatsushi Takata). Clayton Christensen defines value network as "the collection of upstream suppliers, downstream channels to market, and ancillary providers that support a common business model within an industry. When would-be disruptors enter into existing value networks, they must adapt their business models to conform to the value network and therefore fail that disruption because they become co-opted". Verna Allee defines value networks as "any web of relationships that generates both tangible and intangible value through complex dynamic exchanges between two or more individuals, groups or organizations. Any organization or group of organizations engaged in both tangible and intangible exchanges can be viewed as a value network, whether private industry, government or public sector". The value network relies on value, an emerging property of the network that a mediating technology creates and that facilitates relationship between customers (Allee, 2008). Van Eck et al. (2000) define a value network as "a graph that represents a number of collaborating actors that create, distribute and consume objects of value". Campbell and Wilson (1996) argue that a value-creating network is a series of dyadic and triadic relationships that have been designed to generate customer value and

build sustainable competitive advantage to the creator and manager. Bovel and Martha (2000) emphasize the flexible nature of value networks by defining them as a dynamic network of customer/supplier partnerships and information flows. All these definitions refer to a number of businesses, organizations, actors, departments, or customers and suppliers who collaborate, participate in a network, or have interorganizational ties. Some of the definitions mention a goal for the network (`to generate customer value and build sustainable competitive advantage to the creator and manager') or a set of activities (`create, distribute and consume objects of value').

Setting the boundaries to any type of interorganizational network poses a challenge, given its very interconnected nature (Halinen & Tornroos, 2005). Montalvo et al. (2005) state that a value network consists of firms that are involved in a specific service offering to specific end users. This means that the firms in a value network should in some way contribute to the service offering.

Fjeldstad and Stabell presents a framework for "value configurations" in which a "Value Network" is one of two alternatives to Michael Porter's Value Chains.

Fjeldstad and Stabell's value networks consist of these components:

- A set of customers.
- Some service the customers all use, and enables interaction between the customers.
- Some organization that provides the service.
- A set of contracts that enables access to the service.

The Value Chain (Porter, 1980) connects multiple activities within, by including internal processing, and between firms. Value Networks, however, connect multiple buyers and sellers at a single node (Funk, 2009; Normann & Ramirez, 1994). This node can be part of another larger value chain or network, which initially develops an abstract relationship dimension because indirect entities can be linked to one another through moving upward or downward throughout the dimension of scale. For example, as the Internet cannot be described as one single value network; many individual firms participate in fragmented segments and thus each segment represents a value network of buyers and sellers, and thus they can be represented more accurately than value chains. Additionally, since the segmented networks are interlinked they can be part of a more generic, thus larger value network, as for instance the Internet (Funk, 2009).

The mobile industry has transformed its initial structure (especially due to critical defensive movements from mobile service operators) from a value chain towards a fully intrinsic value network, as the mobile carriers have opened up their platform for externalities by using and providing open platforms for which external application development was facilitated and supported. Therefore the concept of a value network will be defined as the process where value is co-created by a combination of players in the network, in parallel, instead of suppliers providing inputs before passing them downstream to the next link in the chain. (Peppard & Rylander, 2006).

The competition between stakeholders who had tried to take the initiative in a series of the structure of the value chain in the form of the contents of the existing internet and mobile communications, platform, network, mobile phones was not fierce. However, the established industry structure and the value chain have been changed due largely to the emergence of various and complex forms of services along with convergence of broadcasting and communication, the integration of wired and wireless networks, IT convergence, etc.

In addition, it has been quite difficult for individual firms to develop and produce everything as the world is becoming more and more complex. In facing with the era of convergence, it would not be enough to join forces with a small number of business partners to meet the customers' rapidly changing needs. It is important to create value by building a relationship with many participants inclusive of individuals, firms, institutions, government agencies in a very dynamic manner. Therefore, the importance of collaboration through partnership has been increased.

As such, the role of each of the value chain participant is becoming ambiguous as value chain participants' interrelationship is becoming diverse and the value chain keeps changing as well as the competition is getting fierce as they try to take the initiative. In order for firms to survive in this whole new environment, they need to fully understand the position within the value network and to reestablish their strategy and business model. For successful strategies, it is crucial to build and operate a network with firms that have different yet complementary skills as the complexity of market increases.

A value chain is evolving into a value network which has both entry and exit at the industry level at the same time it is causing an immense complexity for each and every participating player of

the value chain. The value network is created through the relationship between the key firms from within the value chain. Both tangible and intangible values are created through the complex and dynamic exchange between the participants of the value network. A value network itself is a phenomenon which emerges over the overall IT industry and the way it is created by firms depends on where the firms are positioned within the industry.

The change from the value chain to the value network is meaningful for all of the key players from the aspect of market position, strategy, business model, and revenue generation in that the players of the market will concurrently become more involved in the several considerably different intertwined value chains in terms of economy and value proposition. A value network can be seen as a continuum of a series of intertwined value chains as some players can belong to more than one value chain concurrently.

A firm can know its position within the network, enhance its presence within the market, and develop strategies for overcoming its vulnerability through the analysis of the value network. Understanding the firm's position within the value network is the first step in developing strategies for optimizing the firm's position.

A firm's position within the value network and the scope of the value chain have an effect on enhancing competitive advantage. Nowadays, the business environment has been transitioning from the competition between individual firms to the competition between networks to which individual firms belong. The fact that the competition between platforms is getting fierce in the individual competition between the products of the IT industry or services proves this. Therefore, firms strive to create higher value by benefitting from creating partnerships with excellent partners.

A firm's value network gets solidified by building a strong relationship with major business partners that can add value to the market. As Amit and Zott (2000) described, the ideal partner is one who adds significant value to one's market offering and at the same time presents low risk in having as a partner.

By and large, the customers of a firm that has a strong image of the form of the value network can fall into more than two heterogeneous categories. For example, the banking business has customers who borrow money and deposit money. In the case of online internet-based auctions,

there are two customer groups. Namely, sellers and buyers. Similarly, service platform providers have two customer groups and they are application developers and users and/or firms that use the applications developed by the application developers. The service platform must need to deliver high value to these two customer groups. It is therefore important to maintain a solid relationship not only with end users but also with outside partners inclusive of third-party developers. It would not be easy for a new supplier to break this kind of relationship if a service provider can deliver value as long as they can. Therefore, the organic relationship between third-party developers and service platform providers is very important to create higher value.

From the perspective of value network, as Amit and Zott (2000) described, a business model can be defined as the architectural configuration of the components of transactions designed to exploit business opportunities. As value networks evolve and become complex, firms' ability to exploit business models and strategies is enhanced. For example, a financial institution and internet portal that are competing against each other in a mobile portal have different objectives and strategies. Internet portals enter into a mobile portal as a means to expand their access to customers, whereas financial institutions enter into a mobile portal as a means to gain access to customers. Management process of value networks gets complicated as a diverse range of players that have a different motivation move into the market and market complexity increases.

[Figure 1. A Model of Value-Creating Networks]
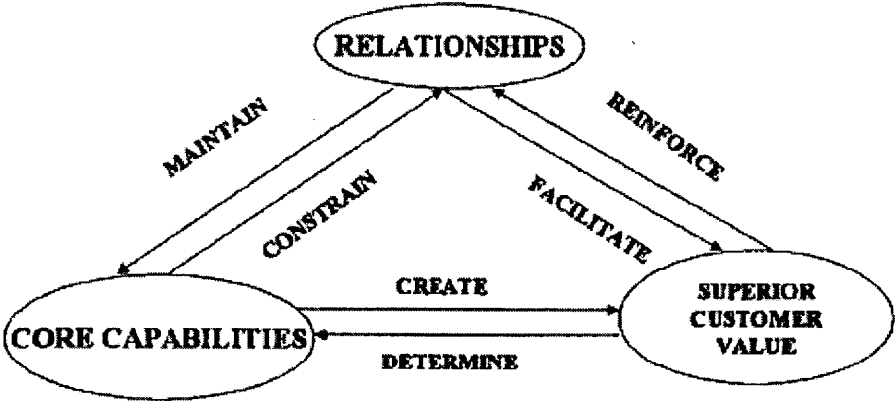
Source: Kothandaraman & Wilson, The Future of Competition, Value-Creating Networks

Kothandaraman and Wilson (2001) suggested that "Value Nets" or "Value Creating Networks". The network is created based on the evaluation of potential partners' ability to add significant value to the market and at the same time presents low risk in having as a partner. The model of value-creating networks uses the following three key concepts:

- Superior customer value
- Core capabilities
- Relationships

The core capabilities of the members of a firm have an impact on the expansion of value creation by network. That is, the core capabilities of the members of a firm that is part of the value network are coupled together, thus creating customer value. as Amit and Zott (2000) described, the way the firms in a network combine to create this value is influenced by the nature of relationships that the firms have between themselves. Thus the quality of relationships facilitates the creation of value. Relationships also hold the network in place and thereby help the firms continue to invest in order to maintain and improve their core capabilities.

Maitland et al. (2002) analyzed the stature of stakeholders caused by the change of the structure of the European mobile industry and the evolution of the value chain. They thought the value chain of a new industry, corporate resources and skills, economy and regulation are coupled together to create corporate strategy.

A numbers of scholars described that the mobile industry could better be represented as a value network rather than a (limited) value chain (Funk, 2002; Funk, 2008; Li & Whalley, 2002).

[Figure 2. General Framework of a Value Network in Mobile Industry]
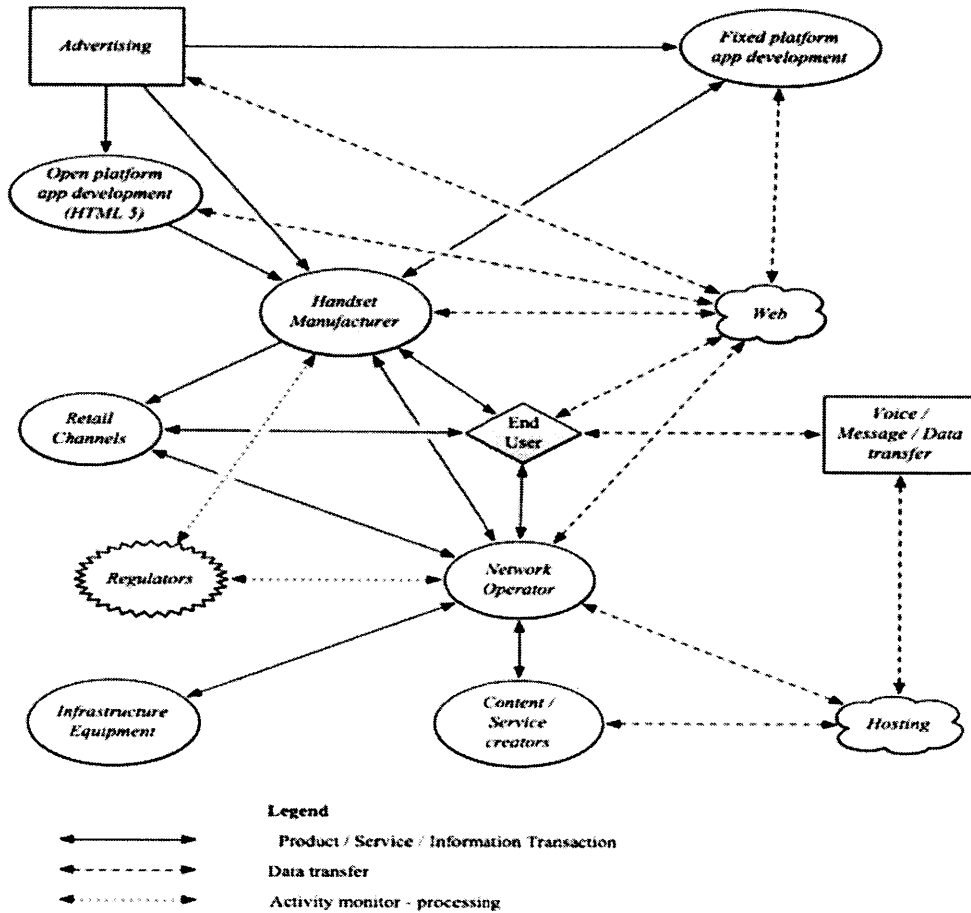
Source: Remco Gaykema, Fostering development in vertical mobile-supply chain integration and the effects on their value network

Li & Whalley, (2002) analyzed the key players, strategy and business model in the telecommunications and relevant industry through the value network and proposed the value network focusing on a mobile portal.

[Figure 3. Value Network of Mobile Portal]
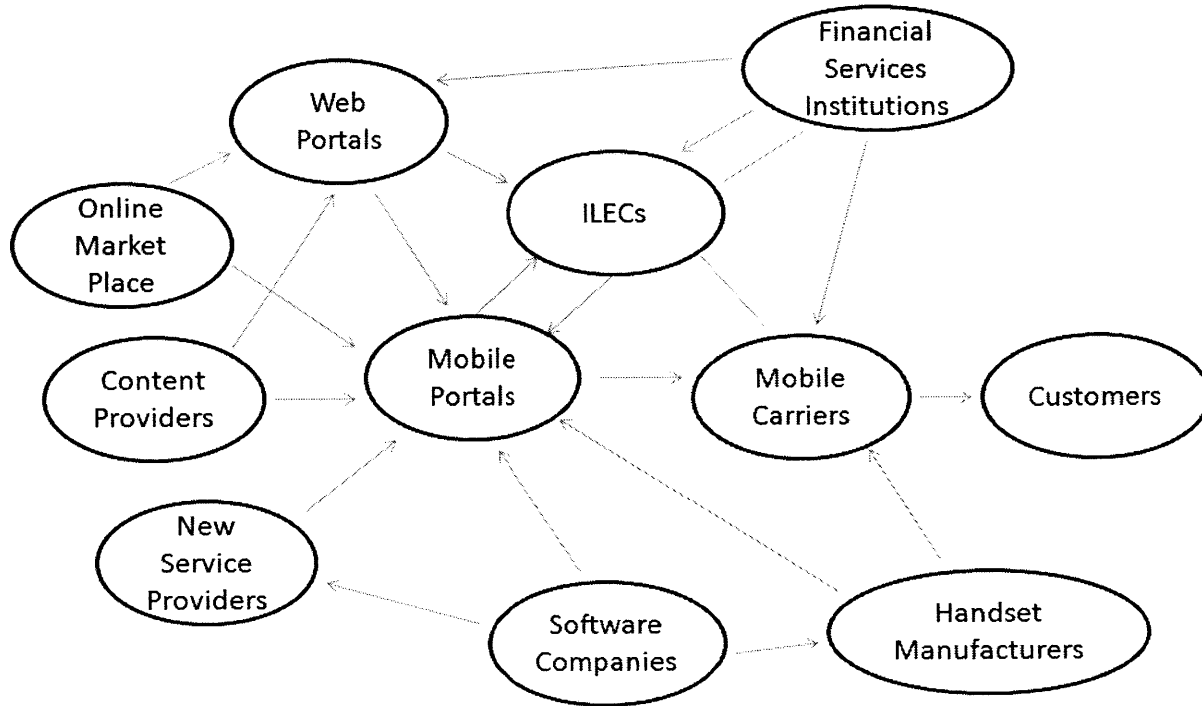
In a value network, there is a leader who manages the entire network. A value network analysis which analyzes the interactions for creating value between the key players is more suitable than the common value chain analysis, which is one-directional and sequential. The value chain analysis seems suitable to understand traditional manufacturing firms, delivering value by transforming inputs into products. The value chain analysis, however, is less appropriate to understand service industries. Hence, in this thesis, the value network focusing on the service platforms is analyzed.

2.2 Environmental Change and the Emergence of Service Platform

Almost every industry's paradigm is changing due to the internet economy and digital convergence. Web 2.0 focusing on participation, sharing, openness, has been changing users by

21

providing them with the opportunity of sharing and participation as well as the shift in internet service paradigm. In addition, the shift in user paradigm drives the shift in technology and service paradigm. Hence, the paradigm shift from the perspectives of convergence and user will be examined in the following section.

2.2.1 Diffusion of Convergence

Convergence has been widely discussed in theory and practice and has a variety of meanings. In the electronic commerce context, convergence typically refers to digital convergence.

Info.org (2005) defines digital convergence as "the trend for various ICTs to become digital and for CTs to be based on packet switching and to operate over a common network infrastructure." Digital Convergence is the priming of underlying digital technology components and features, such as voice, texts, video, pictures, broadcasts, presentation, streaming media, global connectivity and personalized services; the combination of all of these features and abilities from multiple electronic systems into a simplified, converged and computer-mediated communication system to enable individuals interact, play, communicate, collaborate and share information in many new and different ways. Based on digital technologies and digitized content, it encompasses converged devices, such as smartphones, laptops, internet enabled entertainment devices and set top boxes, converged applications (e.g. music download on PC and handheld) and converged networks (e.g. IP networks).

Convergence has been diffused due largely to technological development, broadband in telecommunication, the diversity of customer needs, ever-changing customer needs, competition between firms, changes in environment surrounding policies. Convergence makes it possible to offer convenience to customers and help firms create a new market by recombination of existing products, services or technologies. Digital convergence provides opportunities for firms to seek out uncontested market spaces.

There are three major types of convergence and they are technological, market, and industry convergence. There is a relationship between the three types of convergence. Technological

convergence can be a prerequisite for market and industry convergence. That is, market convergence and industry convergence may require technological changes.

Technological convergence. Yoffie (1996) defined technological convergence as the unification of technology functions or features – the union of previously distinct products that employ digital technologies. This technological convergence has changed the retail environment; consumer power has increased, and customers are empowered to become sellers via the various technologies and convergence. For example, Internet-ready cellular phones allow customers check the prices of products online before they make a purchase in a physical store. Reviews of products or services are accessible with the touch of a button on a cell phone. Texting services on mobile phones, enabled by a portal or social network, enables easy advertisements for C2C sellers who are looking for low cost alternatives to traditional marketing methods. Voice over Internet Protocol (VoIP) enables resource-constrained open marketers to reach their potential customers and maintain current clients, all with minimal phone bills.

Market convergence. Greenstein and Khanna (1997) present two types of convergence: *convergence in substitutes and convergence in complements.* "*A convergence in substitutes* implies that formerly-separate products or services become more interchangeable from a user perspective" (Bauer et al., 2001). Netflix shows a pattern of market convergence -- more specifically, a convergence in substitutes – by merging formerly-separate services: rental service and delivery service (Bauer et al., 2001). A *convergence in complements* creates synergy when two or more products/services are combined (Greenstein and Khanna, 1997). iTunes illustrates this convergence in complements, as Apple produces iPods, mp3 players, and owns iTunes (an online music service). In sum, Netflix and iTunes Music Store are good examples of how market convergence has brought about new business models. Since both are enabled by common Internet technologies, we can view them as products of digital convergence, as well.

In addition, when small businesses and individuals complement their weaknesses in expertise, experience, skills, and knowledge through collaboration, they too are employing a market convergence strategy -- more specifically, a convergence in complements. Combining portals' network economics (the ability to attract many visitors), platforms, and technologies increases the participants' flexibility to meet changing market needs and to focus on niche segments.

23

Industry convergence can be defined as "a confluence and merging of hitherto separated industries, removing entry barriers across industry boundaries" (Lind, 2004). As technological convergence increases, boundaries between industries become ambiguous and overlap until they finally converge (Kaluza et al., 1999). The most vivid example is the online community converging with information technology and communications.

Convergence of unrelated technologies provides opportunities for envelopment of an adjacent ecosystem by a focal ecosystem (Eisenmann et al. 2006). Technological convergence can offer opportunities for a platform to expand into the domain of adjacent but unrelated platforms and simultaneously allow unrelated platforms to offer the focal platform's functionality as part of a multi-product bundle (Eisenmann et al. 2006). Convergence is therefore laden with envelopment opportunities, particularly since adjacent platforms often have overlapping user and developer bases (Eisenmann et al. 2006). For example, digital music players such as the iPod have expanded into adjacent application domains of movie players, email and Web functionality of personal computers, payment devices, and navigation systems.

In the era of digital convergence, the competitiveness of a platform is critical as the merger between various devices and services has been accelerated. Reinforcing governing power of a platform by offering various firms the opportunity for a new product and service through a platform strategy creating standardized technology and one single standard interface has become very important in securing the competitiveness of a firm. A platform generalized in concept in the automotive and PC industry is emerging as a key element in the IT convergence focusing on software and service.

2.2.2 Shift in User Paradigm

Users get involved in creating value by participating in producing and distributing services more actively. The shift in user paradigm will be examined in the following section through what is known as "Generation Y", "Digital Native", "Peer Production", and "Prosumer".

Generation Y and Digital Native

Generation Y, commonly abbreviated to Gen Y, also known as the Millennial Generation (or Millennials), Generation Next, Net Generation, Echo Boomers, describes the demographic cohort following Generation X. As there are no precise dates for when the Millennial generation starts and ends, commentators have used birth dates ranging somewhere from the mid-1970s to the early 2000s. Members of this generation are called Echo Boomers, due to the significant increase in birth rates through the 1980s and into the 1990s, and because many of them are children of baby boomers. The 20th century trend toward smaller families in developed countries continued, however, so the relative impact of the "baby boom echo" was generally less pronounced than the original boom.

Characteristics of the generation vary by region, depending on social and economic conditions. However, it is generally marked by an increased use and familiarity with communications, media, and digital technologies.

[Figure 4. Online Behavior of Generation Y and Its Preferred Media]
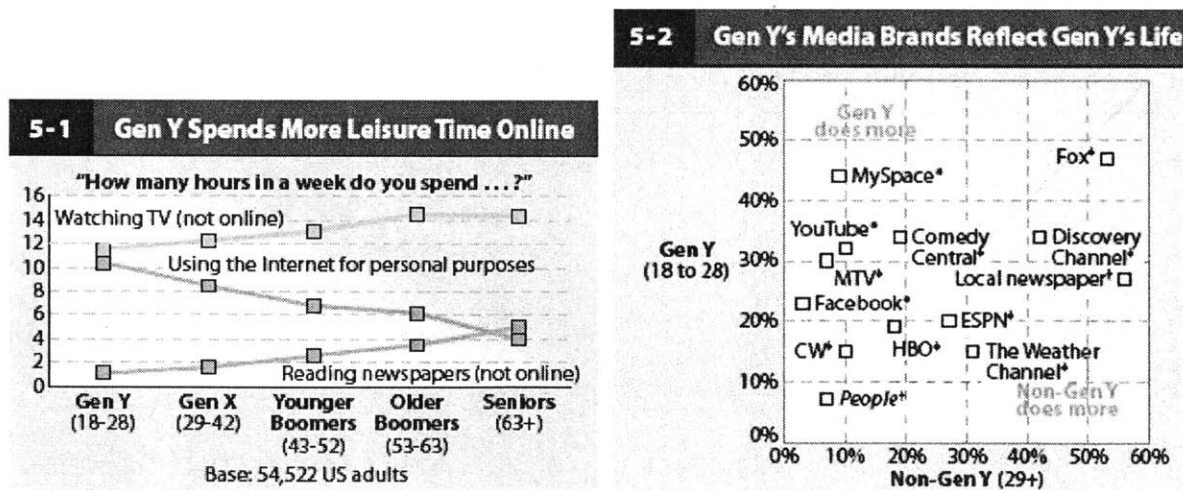
Source: The State Of Consumers and Technology: Benchmark 2008, Forrester

According to Forrester Research's 2008 North American Technographics Benchmark survey, although Gen Y (those 18-28 years old) is a small generation, comprising just 38 million US adults, they set the pace for technology adoption - 9 in 10 own a PC and 82% own a mobile phone.

But what sets Gen Y apart is its technology use, a generational analysis of the survey results, "The State Of Consumers And Technology: Benchmark 2008," found.

Gen Y spends more time online - for leisure or work - than watching TV; 72% of Gen Y mobile phone owners send or receive text messages; 42% of online Gen Yers watch internet video at least monthly. Gen Y actively participates in activities related to entertainment and social networking through YouTube, MySpace, Facebook, and other social networking sites.

[Figure 5. Technology Use across Generations]

Source: http://www.marketingcharts.com

26
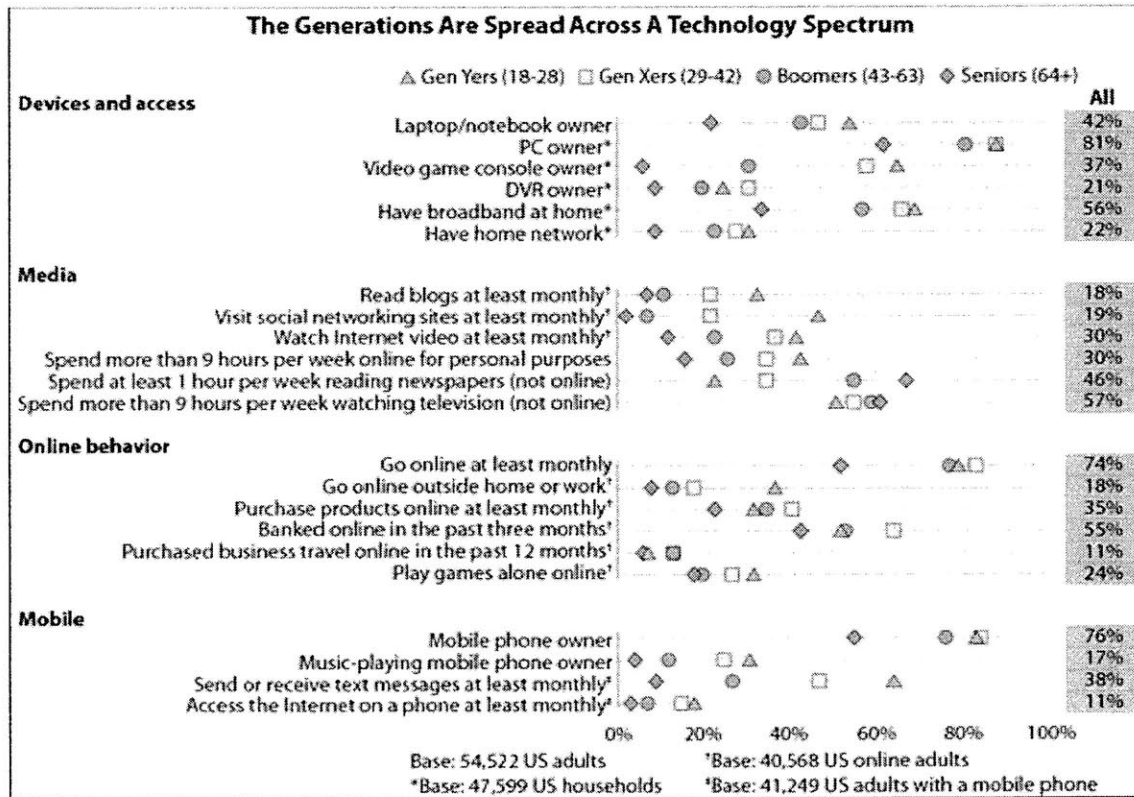
The term digital native is a young person who was born during or after the general introduction of digital technology, and through interacting with digital technology from an early age, has a greater understanding of its concepts. Alternatively, this term can describe people born in the latter 1970s or later, as the Digital Age began at that time; but in most cases the term focuses on people who grew up with 21st century modern technology.

Other popular discourse identifies a digital native as a person who understands the value of digital technology and uses this to seek out opportunities for implementing it with a view to make an impact.

Digital natives share a common global culture. They can be a friend with people from around the globe through SNSs without experiencing geography, culture, and language barriers. A SNS like Facebook or MySpace is becoming the playground for digital natives. Almost every interaction occurs through one or several of these kinds of SNSs.

Digital natives will likely to seek technologies satisfying all the needs described in the Maslow's "Hierarchy of Needs". Hence, it is likely that SNS will become more important in the era of digital convergence. SNS made it possible to meet the "Belonging and Love Needs" of digital natives as it has become the backbone for social interaction with the community. According to Gartner, Inc., by the year 2018, digital natives are expected to attain "Self-Actualization" through various personas.

[Figure 6. Maslow's Hierarchy of Needs]

Need for Self Actualization
Need to realize our fullest potential

Esteem Needs
Need for achievement, education, competence, and respect

Belonging and Love Needs
Need for love, acceptance, and belonging

Safety Needs
Need for safety and security

Physiological Needs
Need for food, water, shelter, oxygen, and sleep

Digital natives' power will increase by degrees due to their IT skills and capabilities, sharing and participating culture via online communities and SNSs, familiarity with innovative consumer goods and business models, information search capability, attitude toward project collaboration.

Peer Production

Peer production, also known by the term mass collaboration or commons-based peer production is a new way of producing goods and services that relies on self-organizing communities of individuals who come together to produce a shared outcome. Peer production harnesses the collective wisdom of large groups. In these communities the efforts of a large number of people are coordinated to create meaningful projects. Wikipedia may be the most famous example, but the Linux operating system, Firefox browser, and Web sites like Flickr and Digg all owe their existence to swarms of dedicated co-creators. Peer production refers to the production process to which the previous examples are based on.

Don Tapscott and Anthony D. Williams said in their book "Wikinomics" that due to deep changes in technology, demographics, business, the economy and the world, we are entering a new age in which people take part in the economy like never before. The growing accessibility of information technologies puts the tools required to collaborate, create value and compete at everybody's fingertips. This new mode of innovation and value creation is called peer production or peering.

As peer production gets more active, businesses can benefit from exploiting talent from outside, reinforcing intimacy with customers, cost savings, and creating new value added services.

Prosumer

In the 1980 book, The Third Wave, futurologist Alvin Toffler coined the term "prosumer" when he predicted that the role of producers and consumers would begin to blur and merge (even though he described it in his book Future Shock from 1970). Toffler envisioned a highly saturated marketplace as mass production of standardized products began to satisfy basic

consumer demands. To continue growing profit, businesses would initiate a process of mass customization that is the mass production of highly customized products.

However, to reach a high degree of customization, consumers would have to take part in the production process especially in specifying design requirements. In a sense, this is merely an extension or broadening of the kind of relationship that many affluent clients have had with professionals like architects for many decades.

Digg.com is a user-driven news web site that brings together hundreds of thousands of people to do the work of finding, submitting, reviewing and featuring news stories drawn from every corner of the Web.

The huge Digg community is made up of users who play different, often overlapping roles. There are submitters who post news stories that they find in blogs, professional news sites and random postings around the Web. These stories land in the Digg queue. There are casual reviewers who look for interesting stuff in the queue and "Digg it" -- meaning they click a button to let Digg.com know they think it's cool. Once an article gets enough Diggs (and meets a bunch of other secret requirements), it's promoted to the homepage. There are truly dedicated reviewers who spend hours every day combing the queue to actively promote good stories and report bad stories (which will eventually get removed with enough reports against them). These people really drive what ends up on the homepage and therefore what gets thousands and thousands of people clicking through to read the story, sometimes crashing unsuspecting Web servers.

And finally there are the Digg readers, who make up the majority of Digg users and reap the benefits of the willing Digg army that promotes the best stories to front page. In return, the readers keep Digg in ad revenue and give the submitters and the Diggers something to do.

In some instances, end-users are creating products on their own, without the interference or assistance of third-parties (i.e. companies, organizations, etc). For example, Lego Mindstorms allows users to download software from Lego's website so that the users can edit and update software as they wish.

Today, clever businesses intend to benefit from actively bringing prosumers in by providing tools and platforms for them to be able to develop products and services. Customers also want to actively participate in the "prosumer" paradigm.

2.2.3 Emergence of Service Platform

The web, a set of web sites, is developing into a complete platform providing applications.

The web platform is a set of open interfaces for developing web-based solutions or content. It can be seen as also considering the emergence of the ecosystem that is joined by relevant stakeholders via opening APIs. A service offering model, such as SaaS (Software as a Service) and PaaS (Platform as a Service), has come out as the web has evolved into a platform.

A service platform led to a shift of power in the industry in the internet sphere of simple web sites or the established digital device market in which hardware manufacturers had taken the initiative. The service platform providers have come to take the hegemony as the added value of hardware itself has decreased and applications or content serves as a complementary product for hardware. The service platforms, such as Amazon Open Platform, Google "OpenSocial"[1], and Facebook Open Platform, have emerged as the core value of the future of businesses.

OpenSocial provides APIs for collaboration among social applications, social networking websites and web browsers. The goal is to allow social applications to be written once and run on many social networking websites, such as LinkedIn, MySpace, NetLog and orkut.

OpenSocial provides the ability to write three types of social apps and they are as follows.

- Social mashups[2], in which gadgets run inside the user's Web browser and request personal information from the containing social network
- Social applications, which rely on Facebook-style external servers for rendering
- Social websites/social mobile applications, which are external websites that request personal information from a social network.

---

[1] http://code.google.com/apis/opensocial/, http://en.wikipedia.org/wiki/OpenSocial
[2] In Web development, a mashup is a Web page or application that uses and combines data, presentation or functionality from two or more sources to create new services.

The web platform connotes an important change in a development process and business model. The successful web platform companies, such as Amazon, Google, Facebook, and Salesforce, all share one thing in common and that is, they adopt an open platform policy by revealing APIs and leverage the ecosystem. The general situation in the mobile market is that the service platform has been vitalizing due largely to smartphone penetration, and an open platform is quickly becoming a key issue leading to providing a whole new business opportunity to both software companies and content providers together with the emergence of a variety of mobile services.

In order for businesses to well adapt to a paradigm shift driven by digital convergence and to secure competitive advantage, they need to build a strong network of users, providers, and partners. The competition among businesses striving to take the initiative in the service platform keeps getting hotter. It is therefore necessary to go through the meaning of platform and the importance of the service platform.

Concept of Platform

The term "platform" can be defined in several different ways. A hardware and/or software architecture that serves as a foundation or base. The term originally dealt with only hardware, and it may still refer to only a CPU model or computer family. For example, the x86 PC is the world's largest hardware platform. IBM's iSeries (AS/400) and Sun's SPARC are also hardware platforms

From another point of view, a platform is a crucial element in software development. A platform might be simply defined as a place to launch software.

The term often refers to an operating system, and the hardware is generally implied. For example, when an application is said to "run on the Windows platform," it means that the program has been compiled into the x86 machine language and runs under Windows. It implies x86 because Windows runs mostly on x86 PCs.

The Xbox "gaming platform" refers to the Xbox proprietary operating system, but different hardware depending on model (Xbox or Xbox 360). The same goes for the "Palm platform," which ran the Palm OS on Motorola 68000 chips and later on ARM chips.

31

With Unix, the hardware may not be implied. The phrase "the program runs on the Unix platform" does not indicate which CPU family that particular program was compiled for. Unix programs run on almost every hardware platform, but they have to be compiled into the machine language of the hardware.

Operating systems are always "software platforms" because applications must interface with them. An application can also be a platform if it is a base for other programs. For example, Web browsers accept third-party plug-ins, which are small software components that add functionality. The browser becomes a platform to contain those components. A messaging or groupware platform is a base program that e-mail, calendaring and other client programs communicate with. Software platforms are always a two-way street; they provide the base functionality and communicate back and forth with other software.

A single application that runs in isolation is not a platform. For example, a simple photo editor that does not accept third-party plug-ins cannot be called a platform.

In this thesis, the term "service platform" is defined as a set of interfaces provided for the development of applications or contents as service and software grow into one. The term is therefore accepted as the same concept as "software platform". The term "software platform" generally means a specific program providing a service necessary for applications through APIs.

Why "Service Platform" so important

Once a service platform is built, users come together, new applications are loaded onto the platform, popular applications diffuse in a flash, and these kinds of services contribute to creating higher added value. Providing a standard interface through a platform offers the flexibility for application developers to create a variety of applications.

The authors of the book "Invisible Engines" stress in the book that software platforms are creating enormous added value and are being used for a variety of purposes in a variety of industries. Software platforms provide service to both application developers and platform users. Software platforms create value by making it possible to support multi-sided businesses linking

different groups of customers. Also, the flexibility of source codes created a favorable condition for software platforms to infiltrate into established industries or to enter into new industries.

The cases of Intel's processors and Microsoft's ecosystem built around operating systems talk about the importance of service platforms. Platform providers get to obtain power to take control over the whole industry, create higher added value, and are able to form an ecosystem by providing service platforms. Platform providers get to serve as a coordinator of the ecosystem by linking a variety of stakeholders in the value chain. Not only that, platform providers can benefit from competition at a whole system level as well as from the innovations of complementary goods. For example, Microsoft in the 80's benefited from competition among personal computer manufacturers that use its operating system.

[Table 1. State of Platform Competition among Global IT Enterprises]

	Name	State of Platform Competition
Game	Microsoft	Xbox-based games, IPTV, Multimedia service
	Sony	PS3 based games, Entertainment content service
Mobile	Google	Development of Linux & Android based mobile handsets
	Nokia	- Symbian switched from closed to open - Ovi services[3]
	Microsoft	Windows Mobile 7 released
	Apple	iOS based iPhone and iTunes service
	LiMO Foundation	Development of Linux based LiMO platform
Web based Software	Microsoft	Windows Live based Office software service
	Google	App Engine based application service
	Salesforce.com	AppExchange based application service
	Amazon	AWS (Amazon Web Service)
Framework for Development	Microsoft	.NET
	Sun	JAVA

---

[3] http://en.wikipedia.org/wiki/Ovi_(Nokia), http://www.ovi.com/services/

Building a network involving more users, application developers, and relevant businesses is crucial for the success of platform strategy as the service platform has a huge network effect. When the applications loaded onto the service platform earn popularity among users, this pervades the many people in a flash via the platform. That is, the value of a network increases exponentially in proportion to the size of the network and the size of the network is closely related to the value of a platform thus Metcalfe's law applies. Therefore, more applications attract more users, and more users attract more applications. And more applications and more users lead to more profits (David S. Evans, Andrei Hagiu and Richard Schmalensee, 2006). That's why the competition is getting fierce as platform providers try to take the initiative in service platforms.

Metcalfe's law states that the value or power of a network increases in proportion to the square of the number of nodes on the network. Metcalfe's law characterizes many of the network effects of communication technologies and networks, such as the Internet, social networking, and the World Wide Web. Metcalfe's Law is related to the fact that the number of unique connections in a network of a number of nodes (n) can be expressed mathematically as the triangular number $n(n-1)/2$, which is proportional to n^2 asymptotically. Websites and blogs such as Twitter, Facebook, and Myspace are the most prominent modern example of Metcalfe's Law.

Chapter 3: Analysis of Social Networking Platform

3.1 Social Networking Platform

3.1.1 Emerging Market Trends of Social Networking Platform

SNS is an abbreviation for Social Networking Service or Social Networking Site. A social networking service is an online service, platform, or site that focuses on building and reflecting of social networks or social relations among people, e.g., who share interests and/or activities. A social networking service essentially consists of a representation of each user (often a profile), his/her social links, and a variety of additional services. Most social networking services are web based and provide means for users to interact over the internet, such as e-mail and instant messaging. Online community services are sometimes considered as a social networking service. In a broader sense, social networking service usually means an individual-centered service, whereas online community services are group-centered. SNSs allow users to share ideas, activities, events, and interests within their individual networks. SNSs not just allow for users to stay connected more frequently, but they also provide a more personal user experience in a generation based upon technology. Like other web-based services, there is a mass conglomeration of social networking websites springing up on the Internet. Wikipedia, a free online-encyclopedia utilizing open-source, users have compiled a list of over 120-active, well-known SNSs on the web[4]. Of these popular sites, four are among the top 20 most-trafficked sites globally on a daily basis according to Alexa.

SNS itself is not a whole new service. Rather, it is driven by people who want to interact by using the internet. In a sense, SNS can be seen as a new way of packaging the existing activities, such as blog, instant messaging, UCC (User Created Content) or UGC (User Generated Content). The word "social" is becoming prominent since SNSs, such as Facebook, MySpace and Twitter, have been out. The social network platform market is changing and SNS is evolving into a social

---

[4] http://en.wikipedia.org/wiki/List_of_social_networking_websites

network platform with the emergence of a variety of interaction-based social services, such as social search[5], social music service[6], social shopping[7] or social commerce[8].

SNSs have a global reach (Figure 7). For instance, Orkut is most popular in Brazil and India, while MySpace is heavily concentrated in North America, Australia, and Italy. However, this disaggregated assembly of social networks could potentially hinder the global connections that these sites sought out to develop.

[Figure 7. Global Reach of Social Networking Sites]
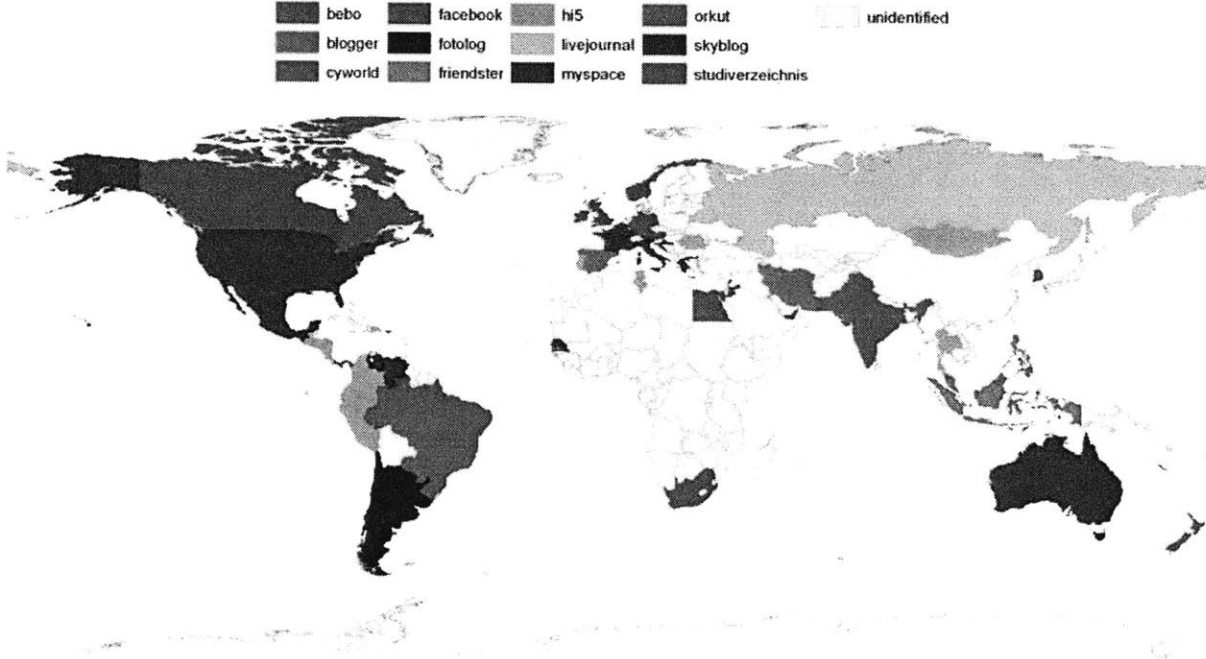
Source: Wandamere Technology Services

Because social networking sites span across nations and cultures, many networks are beginning to adapt to these changes. One example is XIHA, a Finland-based start up, which bridges language barriers by offering the first multilingual SNS. According to Jani Penttinen, the Co-

---

[5] e.g. "Google Social Search"
[6] e.g. "Last.fm", "Imeem", "iLike"
[7] e.g. "ShopSocially", "Blippy", "Swipely"
[8] e.g. "Groupon", "LivingSocial", "BuyWithMe"

Founder and CTO at XIHA, the website was created out of the necessity to provide an online community that wasn't based around one language. "Users can simultaneously select as many languages as they know or want to learn. Our technology platform recognizes and filters the languages, so that the user generated content is displayed based on the language preferences."[9] As time continues on, the website hopes to provide over 100 languages for users to choose from. XIHA is changing the way people perceive communication across borders.

[Figure 8. Social Networking & Existing Services]

Source: OVUM, 2007

[9] http://www.reuters.com/article/2008/04/23/idUS124432+23-Apr-2008+PRN20080423
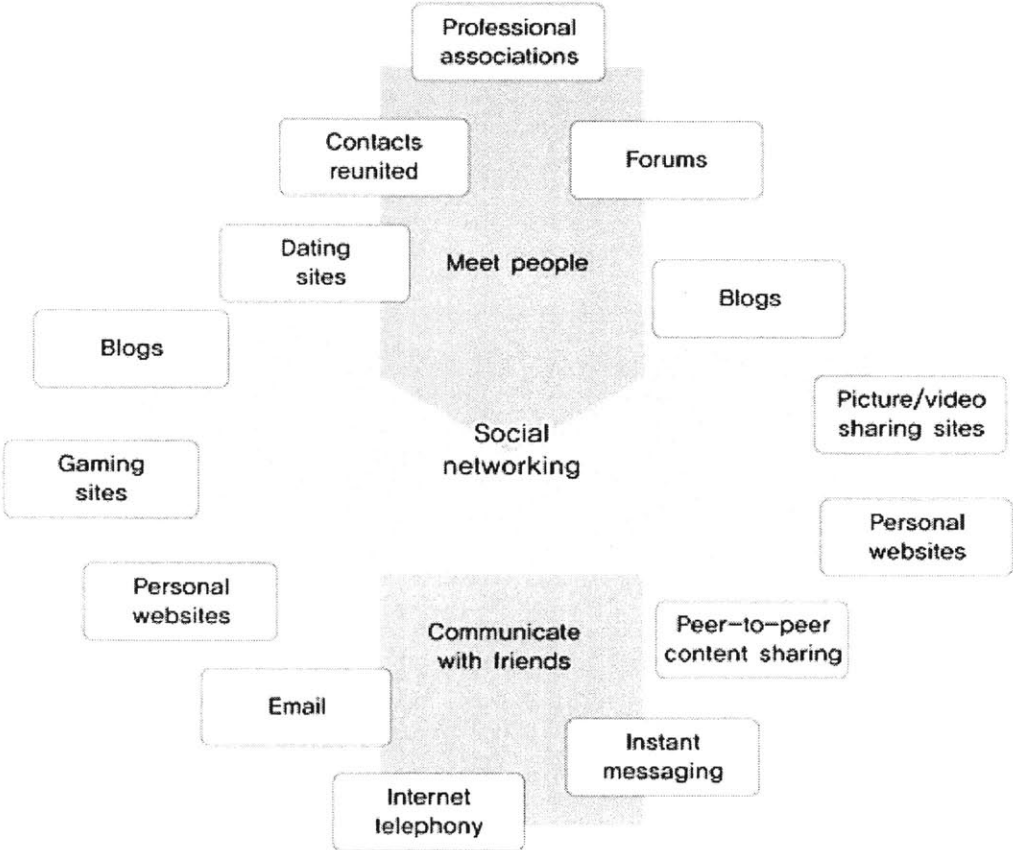
[Table 2. Top 10 Global Sites on the Web]

Top Sites
The top 500 sites on the web.

1. **Google**
   google.com
   Enables users to search the Web, Usenet, and images. Features include PageRank, caching and tra...
   More
   ★★★★☆   Search Analytics ▶   Audience ▶

2. **Facebook**
   facebook.com
   A social utility that connects people, to keep up with friends, upload photos, share links and ... More
   ★★★★☆   Search Analytics ▶   Audience ▶

3. **YouTube - Broadcast yourself**
   youtube.com
   YouTube is a way to get your videos to the people who matter to you. Upload, tag and share your... More
   ★★★★☆   Search Analytics ▶   Audience ▶

4. **Yahoo!**
   yahoo.com
   A major internet portal and service provider offering search results, customizable content, cha... More
   ★★★★☆   Search Analytics ▶   Audience ▶

5. **Windows Live**
   live.com
   Search engine from Microsoft.
   ★★★★☆   Search Analytics ▶   Audience ▶

6. **Blogger.com**
   blogspot.com
   Free, automated weblog publishing tool that sends updates to a site via FTP.
   ★★★★☆   Search Analytics ▶   Audience ▶

7. **Baidu.com**
   baidu.com
   The leading Chinese language search engine, provides "simple and reliable" search exp... More
   ★★★☆☆   Search Analytics ▶   Audience ▶

8. **Wikipedia**
   wikipedia.org
   A free encyclopedia built collaboratively using wiki software. (Creative Commons Attribution-Sh... More
   ★★★★☆   Search Analytics ▶   Audience ▶

9. **Twitter**
   twitter.com
   Social networking and microblogging service utilising instant messaging, SMS or a web interface.
   ★★★★☆   Search Analytics ▶   Audience ▶

10. **QQ.COM**
    qq.com
    China's largest and most used Internet service portal owned by Tencent, Inc founded in Nov ... More
    ★★★★☆   Search Analytics ▶   Audience ▶

Source: http://www.alexa.com/topsites

[Table 3. Top 10 most-visited social networking websites & forums, February 2010]

Rank	Social Networking Website	U.S. Market Share of Visits
1	Facebook	49.62%
2	MySpace	15.47%
3	YouTube	15.20%
4	Tagged	1.19%
5	Twitter	1.12%
6	Yahoo! Answers	1.05%
7	Yahoo! Profiles	0.80%
8	myYearbook	0.60%
9	Windows Live Home	0.54%
10	Meebo	0.54%

Source: Hitwise

The fast growth of SNS is due largely to its attractiveness as an advertising channel and to active user participation/sharing together with the diffusion of Web 2.0. Four SNSs (Facebook, MySpace, Twitter, myYearbook) ranked in Top 10 most-visited social networking websites (Table 3).

According to comScore[10], it appears that 65% of US internet users and 60% of world internet users use SNSs. In addition, according to eMarketer[11], social networking is an activity that 37% of US adult Internet users and 70% of online teens engage in every month, and the numbers continue to grow. eMarketer projects that by 2011, one-half of online adults and 84% of online teens in the US will use social networking. eMarketer also forecasts that over 800 million people worldwide will be participating in a social network via their mobile phones by 2012, up from 82 million in 2007.

---

[10] A global leader in measuring the digital world and the preferred source of digital marketing intelligence
[11] Objective Analysis of Internet Market Trends

[Table 4. Mobile Social Network Users Worldwide, 2007-2012]

Mobile Social Network Users Worldwide, 2007-2012 (millions)

	2007	2008	2009	2010	2011	2012
Mobile phone subscribers*	3,078	3,417	3,697	3,894	4,150	4,275
Mobile Internet users	406	490	596	757	982	1,228
Mobile social network users**	**82**	**147**	**243**	**369**	**554**	**803**
Mobile social network users % of mobile phone subscribers	2.7%	4.3%	6.6%	9.5%	13.3%	18.8%

Note: *data for 2007-2010 from European information Technology Observatory (EITO), March 2007; **registered users (identified by their mobile number) who create, edit and view personal content using their phone
Source: eMarketer, April 2008

094335   www.eMarketer.com

Furthermore, according to an online survey (survey conducted 2Q, 2008, of 500 users of online social networks) conducted by ABI Research[12], nearly half (46%) of those who use social networks have also visited a social network through a mobile phone. Of these, nearly 70% have visited MySpace and another 67% had visited Facebook. The market research company Informa Telecoms said in a report[13] that about 50 million people, or about 2.3 percent of all mobile users, already use the mobile phone for social networking, from chat services to multimedia sharing. The company forecast that the penetration rate would mushroom to at least 12.5 percent in five years. Most mobile social networks seek to capitalize on location information. The SpaceMe service from GyPSii[14], for instance, will show users where friends and other members are in real time. It is also interesting to note that so many mobile social networks originate outside the United States, which has dominated the Internet business. Japan, Korea and China have much higher usage of mobile social networks than Western countries, generally thanks to better mobile networks and data pricing (flat rate notably is widespread in Japan). Most of them are extensions of PC-based services, but others are pure mobile-focused offerings. Examples are Cyworld (South Korea, web+mobile) and Tencent QQ (China, web+mobile). In Japan where 3G networks achieved over 80% user penetration, numerous other mobile SNS have popped up. The reason why a variety of SNS providers show an interest in mobile SNS is because mobile SNS has

---

[12] A leading market research firm focused on the impact of emerging technologies on global consumer and business markets
[13] February, 2008
[14] A social-networking application for the iPhone based around one's mobile lifestyle. The application makes use of the iPhone's GPS, camera, and on-the-go connectivity.

become a very attractive market for advertising as SNS makes it possible to do target marketing thus enabling them to secure the advertising revenue.

A SNS phone that is equipped with a camera, an address book which has the connection feature to SNS, and other features is expected to make its debut in the near future.

Beyond a simple social networking service for building a relationship, SNS is now evolving into a "social networking platform" upon which a variety of new services are developed by exploiting SNS information. In other words, a variety of applications are provided or many services are coupled on the basis of SNS as a platform.

Evolving into a social networking platform, opening platform is currently one of the biggest issues in the SNS market. It is essential to open platform so as to transform a social platform to which a variety of services are coupled and then provided via the platform. Google OpenSocial came out as the Facebook's open platform known as "F8"[15] turned out to be successful. Third-party developers can actively develop applications and diffuse them rapidly, thus creating revenue through SNS open platform policy. This allows users to freely choose services they want and to use the services they choose.

Going forward, in a social networking platform, the nexus between SNSs or services will be revved up due largely to open platform such as OpenSocial. For this purpose, OpenID[16] will be widely used and data mobility will be disseminated. In addition, a variety of social services, such as social shopping, social search, and social music service, will be integrated into a social platform.

3.1.2 Value Network Analysis

It is necessary for a social networking platform to maximize network effects by providing value created by open platform to users rather than securing a great many people. It is also necessary to discover a business model exploiting by exploiting the foregoing. Thus, the positioning of each

---

[15] http://www.facebook.com/f8?v=app_7146470109
[16] http://en.wikipedia.org/wiki/OpenID

key player and the interplay between key players surrounding the social network platform and value that each key player can gain are analyzed through the value network analysis.

[Figure 9. Value Network of Social Networking Platform]
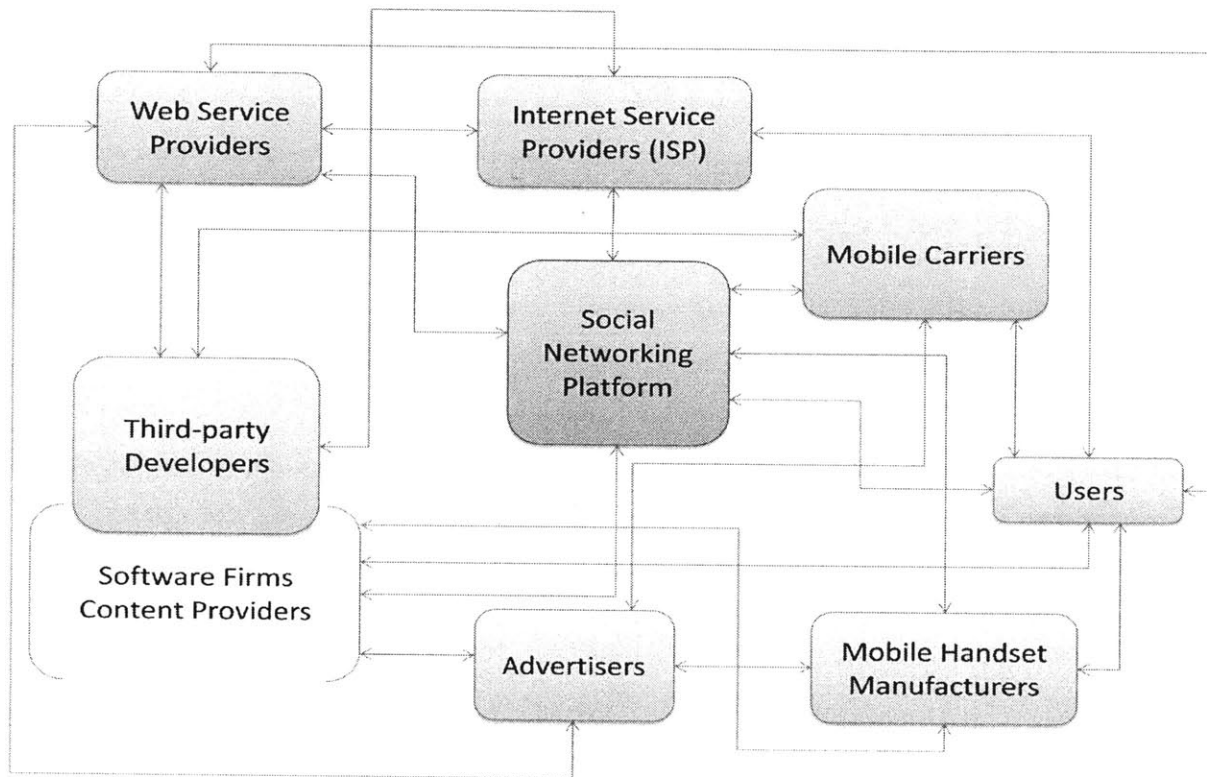
End Users

End users can enhance user experience by freely choosing among a variety of services provided on the basis of platform through a social networking platform. End users' convenience increase as a variety of applications and social services are provided in one place through social network platform. In the case of social shopping, end users can purchase products through a link provided after checking out product reviews of the products they wish to purchase by means of other users' sharing of their thoughts on the products. This is considered providing more reliable shopping information than the one-sided product reviews provided from already existing internet shopping

sites. Social music services by which sharing my favorite music with others, being connected with people who have the same taste as me, and enjoying the latest music through the list of music they like are also beneficial to users. As such, the reliability of service tends to increase as social features of the existing services are being strengthened by user participation and sharing.

The biggest value end users get through social networking platforms is that information sharing among people who already formed a network and forming a network with new people are relatively easy. End users can get hold of a change of condition of profile in real time as they can be notified not only by web but also by SNS providers through mobile when new threads are posted or new photos are uploaded onto his profile or friends' profiles. Not only that, end users can even expand social networks freely as sites participating in "OpenSocial" [17] are interconnected.

Social Networking Platform Providers

SNS can overcome its limitations as fragmentary services through a change into a social networking platform and can expand its influence. Platform providers take up some portion value created within the ecosystem, while operating the ecosystem that they created.

A platform that has many participants can bring in many third-party developers. The platform gets solidified as many developers provide a variety of applications. The level of satisfaction of end users increases if more and more applications can be provided under such kind of solidified platforms. That is, a virtuous cycle of "User-Platform Provider-Application Developer" is most likely to be established. Therefore, social networking platform providers need to formulate a program and a system for the participants of the ecosystem to be able to grow on a sustainable basis. To this end, it is essential for social networking platform providers to open their platforms. Platform providers must set up an environment that is necessary for third-party developers to be able to provide innovative applications and a variety of mashup services by opening their platforms. By doing so, platform providers can save time and efforts required of them to develop applications on their own, thus securing a variety of applications. Not only that, it is possible to

---

[17] OpenSocial defines a common API for social applications across multiple websites

43

extend the scope of connection to users who are active in other SNS by adopting a common API such as OpenSocial.

The major source of revenue for social networking platforms is online advertising. Viral marketing is possible for social networking platform providers due largely to a large number of members and word of mouth. The Marketing Evolution study found that more than 70% of the marketing value created by the social network marketing campaigns resulted from the "momentum effect" of these viral, pass-along elements spreading across the network. Consequently, a social networking platform has emerged as a very attractive online advertising channel where many new advertising techniques are being tested. A more evolved form of relationship-oriented target advertising than target advertising by demographics has become possible by means of SNS. SNS is contributing to the expansion of the market for advertising for SNS by introducing some new advertising techniques such as advertising utilizing profile page as well as existing search advertising, banner advertising. For instance, MySpace launched their Self-Serve advertising solution (now called myAds[18]) enabling online marketers to tap into self-expressed user information to target campaigns like never before. Another example is Facebook Ads. Facebook Ads accepts 2 types of ads, a Facebook Ad and a Social Ad. The Facebook Ad is a straight forward branded ad, linking to either an external site, a Facebook application or a Facebook Page.

A Social Ad is also a fully branded ad, but it ties in social interactions performed by user's friends with a brand. Facebook then uses that action as the headline of the creative for the Social Ad and displays it in their Mini Feed.

Third-party Developers

The biggest value third-party developers can gain through one or more social networking platforms is that they can take advantage of the huge customer base and the relationship between users. The customer base that any social networking platform has already secured provides a good place for opportunities for third-party developers to beta test before officially launching the

---

[18] https://www.myads.com/

newly developed services. It costs for third-party developers to beta test on their own and it's not easy for them to grab new users. They, however, can beta test and take a closer look at users' reaction to the newly developed services through a social networking platform without incurring large costs. In addition, third-party developers can even generate new revenue by making use of unique information of SNS, while exposing the services to a large number of users and diffusing the services by word of mouth. According to RockYou[19], the speed of diffusion is 7 times faster than simply exposing when the services are exposed to one's friends using the relationship of SNS, thus increasing the number of incoming new users.

It is important to note that open social networking platform of global SNS is a new window of opportunity for third-party developers to be able to advance abroad. It is now possible to enter the global market by participating in Facebook's open platform or OpenSocial rather than doing it on their own. If it is at all possible to develop competitive applications, it is possible to provide applications to global SNSs, such as Facebook and MySpace, who already have a huge customer base. However, the opportunity for third-party developers from around the world to be able to provide applications to global SNS does not necessarily mean that the success is guaranteed. The key to success is to secure the ability to develop competitive applications on a continuing basis.

Third-party developers can enhance the efficiency of development as it is possible for them to gain access to a variety of SNSs through a common API such as OpenSocial. However, an additional effort is required because each SNS has a different requirement and optimization is necessary for each SNS even though third-party developers develop applications based on a common API. Yet third-party developers can save time, effort and money. They can benefit from introducing applications and providing services by utilizing a huge customer base. Not only that, popular applications can even generate revenue through advertising.

---

[19] http://www.facebook.com/pages/RockYou/105477842818369

Others

A social networking platform is an attractive space for most advertisers as a large number of users are concentrated and viral marketing is possible, thus maximizing advertising exposure. The size of the market for SNS advertising is expected to grow year after year.

Currently, web service providers, such as portals and internet shopping sites, are not a direct rivalry with SNSs. They, however, are an indirect rivalry with SNS and can be a direct rivalry down the road. That's because users spending more time on SNS relatively spend less time on other web services. Web service providers can make their services look more attractive to users and advertisers by adding social networking features to their web services or connecting through an alliance with SNS. For web service providers, building up a close connection with SNS that have ascendency in the market is a safe way.

ISPs (Internet Service Providers) have been pursuing the services that can provide added value other than internet access service. Since ISPs have household customers rather than having individual customers, they can provide SNS focusing their target toward the household market rather than general SNS focusing their target toward individuals. Such SNS can be closely connected with the IPTV service of ISPs. Social networking and broadcasting views through IPTV can occur all at the same time. It's because users will want to discuss the program in real time while viewing the same program. In this respect, SNS has a potential for ISPs to provide a whole new service.

On the other hand, mobile carriers expect UGC (User-Generated Content) and SNS to become a new revenue source as they expect to see SNS will become the killer application of mobile broadband service. Mobile carriers therefore can consider offering a flat-rate data plan for the users to be able to use rich media, such as photos and videos, using their mobile devices without too much of a cost burden.

SNS is an attractive market that cannot be overlooked not only for mobile carriers but also for mobile handset manufacturers because it is possible for mobile handset manufacturers to be able to pursue differentiation and augmented value of mobile devices through SNS. Thus, some vendors including Nokia have been trying to enter the market by integrating their own SNS into their mobile devices and running the SNS on their own. It's because they can pursue

differentiation by loading SNS into mobile handsets, thus enhancing added value of mobile handsets they manufacture.

3.1.3 Case Study – Facebook

Facebook is a social networking service and website launched in February 2004. Traffic to Facebook increased steadily after 2009. More people visited Facebook than Google for the week ending March 13, 2010. As of writing, Facebook has more than 500 million active users[20].

Facebook also became the top social network across eight individual markets - in Australia, the Philippines, Indonesia, Malaysia, Singapore, New Zealand, Hong Kong and Vietnam, while other brands commanded the top positions in certain markets, including Google-owned Orkut in India, Mixi.jp in Japan, CyWorld in South Korea, and Yahoo!'s Wretch.cc in Taiwan.

[Figure 10. Weekly Market Share of Visits to Facebook.com and Google.com based on US usage]
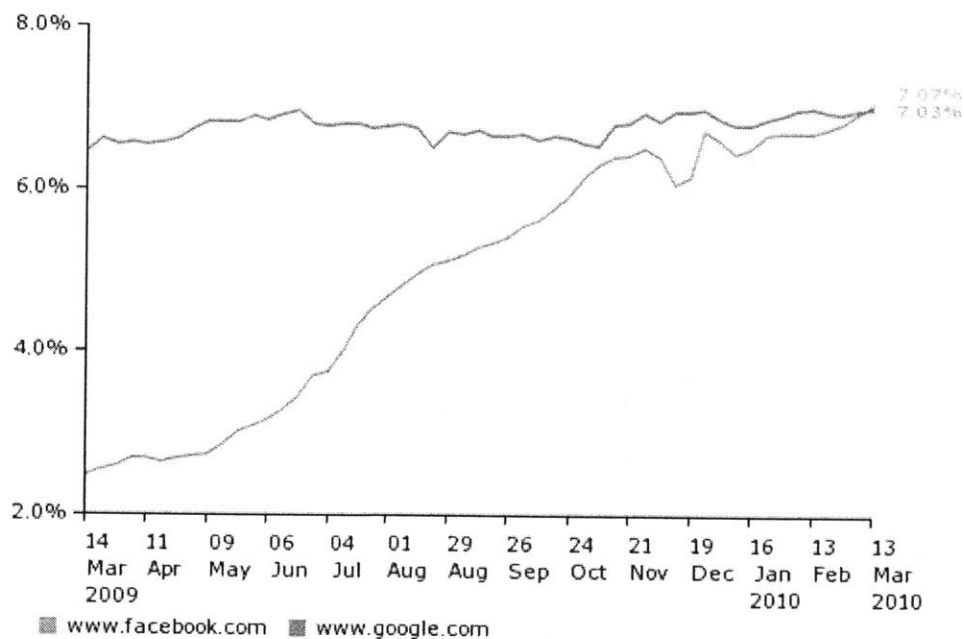
Source: Experian Hitwise US

---

[20] http://www.facebook.com/press/info.php?statistics

As shown in Figure 10, Facebook reached an important milestone for the week ending March 13, 2010 and surpassed Google in the US to become the most visited website for the week.

[Figure 11. Total Unique Visitors, Facebook]

TOTAL UNIQUE VISITORS (000)   ◯ comSCORE
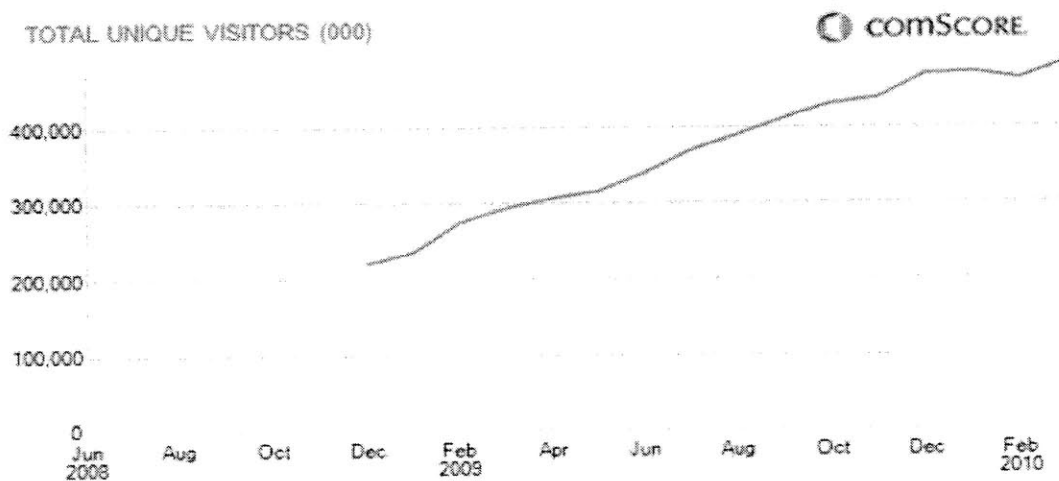
Source: comScore

As shown in Figure 11, Facebook is closing in on the 500 million monthly unique visitors[21] mark. The social network saw 484 million unique visitors worldwide in March, 2010, according to comScore's estimate. That number is up 64 percent from a year ago, and up 22 million from just February, 2010.

Facebook announced its new open platform in May, 2007, called "F8". What the company has done is invite third-party developers to create modules that plug right into the Facebook interface.

Facebook is the first among other SNSs to introduce an open platform called F8. The company also introduced techniques for advertising using user information, thus evolving into a social

---

[21] Unique Visitors represents the number of unduplicated (counted only once) visitors to one's website over the course of a specified time period.

networking platform ahead of others. This thesis therefore attempts to do analysis with reference to open platform, advertising platform, and data portability. This thesis also attempts to examine how Facebook monetizes its platform.

Open Platform

Facebook has been developed from the ground up using open source software which is considered a strategy to fight back to the "OpenSocial", an open source social networking platform backed by Google, Yahoo and MySpace. Developers building with Platform scale their own applications using many of the same infrastructure technologies that power Facebook.

Facebook has opened up its core functions to all outside developers. Anyone can develop applications and register them on Facebook using Facebook data and Open API by opening platform. Users just need to choose among the registered applications and add to their profile page for use. The API allows, for example, a third party developer to recreate Facebook Photos, the most used photo application on the web. Users could then remove the default Facebook Photos and install the third party version instead. Applications can serve their own advertisements and/or conduct transactions with users. Developers benefit from Facebook's open platform as it gives them the potential to broadly distribute their applications and even build new business opportunities. While revenue sharing was not available at launch, Facebook tried to look into ways to share advertising revenue with developers. Facebook's open platform lets developers monetize their applications as they like, whether they choose to offer it for free or build a business on their application. Developers can even include advertising on their applications' canvas pages, though no advertising will be allowed within the application boxes that appear within user profiles. On the other hand, with Facebook's open platform, users gain the ability to define their experience on Facebook by choosing applications that are useful and relevant to them. Now that they have access to a virtually limitless set of applications from outside developers, users have an unprecedented amount of choice. They can share information and communicate with their trusted connections in ways that would never have been possible before Facebook opened its platform.

In addition, as a result of the worldwide success of Facebook's translation system, Facebook has opened up the "Translation Application" to any developer using its open platform. Any Facebook developer can make their application available in any of the 20 languages that are currently available on Facebook, with many more coming in the near term. Developers can now access the Translation Application to either translate their applications themselves, or open up translation of their application to Facebook users around the world, who will work together to define it in their native languages.

New Advertising Platform

Facebook's advertising platform is a tool allowing the user to place small display type ads in the right sidebar of Facebook pages and profiles. Facebook uses the information that users enter into their profiles to target ads to them, but doesn't share user-specific data with advertisers.

Facebook's new advertising programs represent the beginning of what social media advertising may look like. These new programs include Facebook Pages and Social Ads.

Facebook Pages - It pays to have fans on Facebook if the user wants his ads to work there too, according to the study came out of the collaboration of Nielsen Co. and Facebook. The study of more than 800,000 Facebook users and ads from 14 brands in a variety of categories shows a marked increase in ad recall, awareness and purchase intent when home-page ads on the social network mention friends of users who've become fans of the brand in the advertisement.

Facebook has added a new "Pages" feature. The user can join a company Page by becoming a "fan" in the same way that he might become a "friend" on a person's profile. Becoming a fan adds that Page's icon to the user's profile page under the "I am a Fan of..." panel. As the company gains fans, the people within each fan's social network may see that they became a fan in their News Feeds. When they see this action it becomes a kind of online word of mouth recommendation. Additionally, if the company is running a Facebook Ad Campaign, they can choose to target "Social Actions" in their campaigns. With this feature enabled, those people who fan the Page may see the Ad listed among their News Feeds. Companies can also use the Facebook messaging system to communicate with their "fans."

It may seem that becoming a fan of a company Page is a one way street benefiting the company. But becoming a fan also allows the Facebook user to post to that Page's wall. This is a significant permission because everyone who views the page can see these comments. This is a gesture of openness from the company. The user can assume that the brands that set up pages will be paying attention to those individuals that are willing to identify themselves with their brand. And if the user every have a beef, he can always post it to his wall. These statements will carry a lot of weight with the brand, to be sure. This is conversational media in action.

Social Ads - One of the best things about Facebook advertising is the ability to select who sees the Facebook user's advertisement using a number of variables, including keywords. The user can target by geography, age, gender, education, relationship status, workplace and keywords.

Social Ads are very similar to Google AdWords except that rather than identifying and bidding on keywords, the user chooses the demographics and areas of interest to target for his advertisement. Like AdWords, the user can define a maximum spend per day and bid on the amount he will pay per click. He can also choose to buy impressions (views) rather than clicks. The advertisement format allows for a text title, a thumbnail image, and a brief text blurb. Facebook provides some basic performance reports and the user can pause or resume any particular advertisement at will. Google AdWords and other contextual ads, however, appear to be better than Facebook in terms of reaching users looking to buy things.

In August, 2008, Facebook also launched a new interactive marketing and advertising product called "Engagement Advertisements".

Rather than clicking on the ad and being whisked away to a branded microsite, these ads allow members to stay within the contained walls of Facebook and their social community. Engagement ads come in three major flavors:

Comment Style Ad: Members can leave comments on these advertisements, much like wall posts. Brands that are focused on entertainment, new product rollouts, autos and apparel are well suited. The ad can show up to 4 comments per object, and the activity spreads to the users' newsfeed.

Virtual Gifts Style Ad: Brands can create virtual items that users can share, spread to each other. This wildly popular behavior within applications and Facebook is suitable for consumer products, entertainment, and some media.

Fan Style Ad: A play off the Facebook pages, users with a persona affinity for a product (like Apple) can become a fan, triggering a notification to their network, and could then tie on social ads. This will work great for established brands, like guitar hero, passion products, luxury products, or any brand with a rabid customer base.

Data Portability

In the SNS world, "Data Portability" is about giving users the ability to take their identity and friends with them around the Web, while being able to trust that their information is always up to date and always protected by their privacy settings.

Not to be outdone by MySpace's "Data Availability" initiative, in November 2008, Facebook announced its own data portability strategy called "Facebook Connect" and it is now widely used by web services.

[Figure 12. Facebook Connect]

Source: http://7.mshcdn.com/wp-content/uploads/2009/01/regroup-facebook-connect1.jpg

Facebook Connect is a set of APIs from Facebook that allows Facebook members to sign in to participating third-party websites, applications, mobile devices and gaming systems with their Facebook IDs, thus further enabling its members to access Facebook user data outside Facebook itself. While logged in, users can connect with friends via these media and post information and updates to their Facebook profile. Developers can use these services to help their users connect and share with their Facebook friends on and off of Facebook and increase engagement for their website or application. With Facebook Connect the procedure of registering for the site, creating a profile and connecting with friends can be accomplished with just a click.

The users of Facebook Connect can connect their Facebook account with any partner website using a trusted authentication method. Whether at login, or anywhere else a developer would like to add social context, the user can authenticate and connect their account in a trusted environment. Facebook users represent themselves with their real names and real identities. With Facebook Connect, users can bring their real identity information with them wherever they go on the Web, including basic profile information, profile picture, name, friends, photos, events, groups, and more. With Facebook Connect, users can take their friends with them wherever they go on the Web. Developers can add rich social context to their websites. Developers will even be able to dynamically show which of their Facebook friends already have accounts on their sites.

As a user moves around the open Web, their privacy settings will follow, ensuring that the user's information and privacy rules are always up-to-date. For example, if a user changes their profile picture, or removes a friend connection, this will be automatically updated in the external website.

The brands can push their content into Facebook's viral channels by allowing the visitors post news feed stories, status messages, photos, events and more without having to leave the website.

Facebook Connect interaction can be used for meaningful exchange of content and not compelling the users to post to Facebook at every turn. If any website provides enough reasons for the users to post content to Facebook, it can do a world of good for the brand. This might result in a high Facebook traffic.

The bottom line is that when the brand is endorsed through Facebook Connect, the impression is that of individual product and not an ad tune-out.

The protection of user information is one of the most important issues in offering data portability as information sharing among social networks and social applications may reveal major flaws in data security. Facebook already experienced the mistake and failure related to privacy violations due to "Beacon[22]". The more popular and specialized social networks become, the more important data portability becomes. And, ultimately, the more important data security becomes.

How Facebook monetizes its platform / How Facebook generates revenue

Combining a large audience of web surfers with innovative online advertising has become a recipe for rapid revenue growth in the Internet business. Facebook is no exception.

Facebook's revenue growth has come as the number of users on its website has exploded. More people use Facebook and more companies out there want to advertise on Facebook. This certainly contributes to revenue growth of Facebook.

According to comScore, big brands such as AT&T Inc, Ford Motor Co and RIM (Research in Motion) all advertised on Facebook during the first four months of 2010. Facebook also allows smaller companies to craft their own targeted pitches on its site, using a web-based self-service advertising system. Accordingly, people get more relevant ads as Facebook has made it possible to have all those different ads in the system.

All the great applications built by third-party developers provide a service to users and strengthen the social graph[23]. The result is even more engaged Facebook users creating more advertising opportunities.

---

[22] Beacon was a part of Facebook's advertisement system that sent data from external websites to Facebook, ostensibly for the purpose of allowing targeted advertisements and allowing users to share their activities with their friends. Certain activities on partner sites were published to a user's News Feed. Beacon was launched on November 6, 2007 with 44 partner websites. The controversial service, which became the target of a class action lawsuit, was shut down in September 2009.

[23] The social graph is at the core of Facebook. It is the network of connections and relationships between people on Facebook and enables the efficient spreading and filtering of information. Just as people share information with

[Table 5. Facebook 2009 Revenue]

Revenue Stream	Rumored Run Rate, July 2009	Estimate, EoY 2009
Brand Advertising	$125,000,000	$225,000,000
Microsoft Advertising	$150,000,000	$50,000,000
Virtual Goods (Credits)	$75,000,000	$10,000,000
Performance Advertising	$200,000,000	$350,000,000
Total	*$550,000,000*	*$635,000,000*

Source: insidefacebook.com

As shown in Figure 5, Facebook's revenue stems from advertising, a search deal with Microsoft, and sales of Virtual Goods (Credits). Credits are an online currency unique to Facebook users. For example, members purchase ten credits for a dollar, then can use the virtual money to purchase online goods and play games. Facebook takes 30% of Credits revenue. More than ever, Facebook is making Credits a more relevant part of its developer platform. Facebook has gotten most big developers using the virtual currency as an option; it has also gotten one, CrowdStar, using Credits exclusively. One way it has done this is by giving games that use Credits prominence within the Facebook interface, appearing in the "suggested" window of its Games Dashboard, for example.

Brand and performance advertising benefit from being targeted on users' real-life data, from appearing in Facebook's engagement-rich environment, and from reaching its hundreds of millions of users.

Microsoft has extended their search deal with Facebook. The extended search deal includes a more robust "Bing[24]" search experience on Facebook. This appears to be something of a mutually beneficial situation, with both parties getting what they really need. For Facebook, it provides an opportunity to get to grips with their own advertising network and adjust it to better suit their users' requirements. It also enables them to create a larger revenue stream themselves without having to pass on their percentage to Microsoft. Facebook gets more control and clearer

---

their friends and the people around them in the real world, these connections are reflected online in the Facebook social graph.

[24] Bing is a web search engine from Microsoft.

revenue source and Microsoft gets added exposure for Bing. Bing handles searches and PPC (Pay Per Click) advertising within the web results returned for searches on Facebook.

Chapter 4: Analysis of Mobile Service Platform

4.1 Mobile Service Platform

4.1.1 Emerging Market Trends of Mobile Service Platform

The mobile market is forming a complex ecosystem involving a variety of market players such as mobile handset manufacturers, mobile carriers, platform providers, software firms and content providers. In addition, not only is the competition getting fierce due largely to market penetration by the players such as Apple and Google along with the integration of value chain but also the mobile market is getting more complex due to the change of business model, value chain and competitive landscape. Currently, in the mobile market, the competition of general-purpose operating systems is on track and the importance of softwares and services running on top of the general-purpose operating systems is stressed as the third generation (3G) of wireless technologies becomes mature and the fourth generation of wireless technologies emerges and the smartphone market grows rapidly. Therefore, the importance of the mobile service platform is getting more attention and the mobile service platform is now being vitalized and an open platform is the general trend. There are a lot of opportunities for both application developers and content providers as a variety of mobile services have been come out.

According to Gartner, the smartphone market is rising with a growth rate of 72% in 2010.among the 1.6 billion unit market of all types. Table 6 shows worldwide smartphone sales to end users by operating system in the second quarter of 2010.

[Table 6. Worldwide Mobile Device Sales to End Users by Company in 2Q10 (Thousands of Units)]

Company	2Q10 Units	2Q10 Market Share (%)	2Q09 Units	2Q09 Market Share (%)
Nokia	111,473.8	34.2	105,413.4	36.8
Samsung	65,328.2	20.1	55,430.1	19.3
LG	29,366.7	9.0	30,497.0	10.7
Research In Motion	11,228.8	3.4	7,678.9	2.7
Sony Ericsson	11,008.5	3.4	13,574.3	4.7
Motorola	9,109.4	2.8	15,947.8	5.6
Apple	8,743.0	2.7	5,434.7	1.9
HTC	5,908.8	1.8	2,471.0	0.9
ZTE	5,545.8	1.7	3,697.9	1.3
G'Five	5,208.6	1.6	NA	NA
Others	62,635.2	19.30	45,977.2	16.1
Total	**325,556.8**	**100.0**	**286,122.3**	**100.0**

Source: Gartner (August 2010)

[Table 7. Worldwide Smartphone Sales to End Users by Operating System in 2Q10 (Thousands of Units)]

Operating System	2Q10 Units	2Q10 Market Share (%)	2Q09 Units	2Q09 Market Share (%)
Symbian	25,386.8	41.2	20,880.8	51.0
Research In Motion	11,228.8	18.2	7,782.2	19.0
Android	**10,606.1**	**17.2**	**755.9**	**1.8**
iOS	8,743.0	14.2	5,325.0	13.0
Microsoft Windows Mobile	3,096.4	5.0	3,829.7	9.3
Linux	1,503.1	2.4	1,901.1	4.6
Other Oss	1,084.8	1.8	497.1	1.2
Total	**61,649.1**	**100.0**	**40,971.8**	**100.0**

Source: Gartner (August 2010)

.

[Figure 13. Smartphone Percentage of Total Shipments Worldwide 2002-2012]
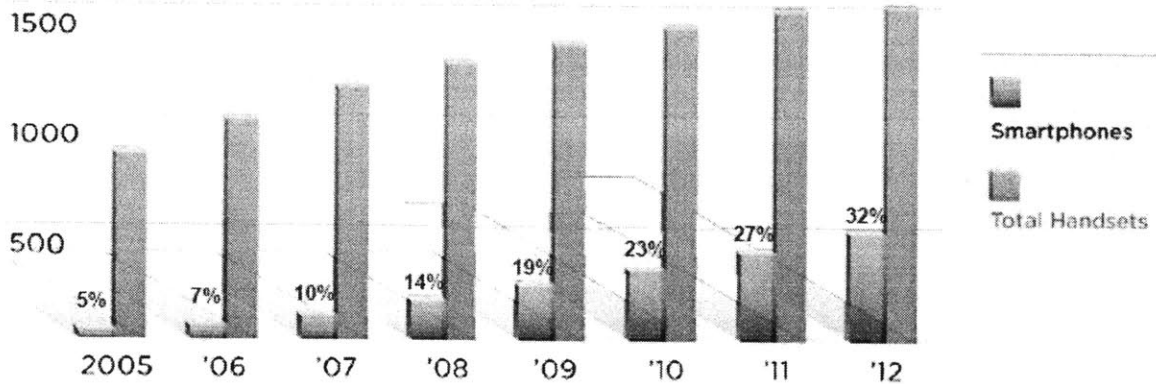
Sources: Smartphone Forecast - ABI - Smartphone and OS Markets (Q1 2008)

Total Handsets: Average of Strategy Analytics (July 2008), Gartner (Dec 2007), IDC (June 2008), Ovum (Mar 2008), Yankee Group (June 2008), WCIS (May 2008) and Forward Concepts (June 2008)

Speaking of "LiMo 4 Platform", LiMo Foundation is an industry consortium dedicated to creating the first truly open, hardware-independent, Linux-based operating system for mobile devices. Backing from major industry leaders puts LiMo at the Heart of the Mobile Industry and makes LiMo the unifying force in Mobile Linux.

The mission of the LiMo Foundation is to create an open, Linux-based software platform for use by the whole global industry to produce mobile devices through a balanced and transparent contribution process enabling a rich ecosystem of differentiated products, applications, and services from device manufacturers, operators, ISVs and integrators. The Linux based LiMo 4 Platform delivers complete middleware and base application functionality. LiMo 4 makes broad use of the leading open source technologies and is positioned to support the realisation of openness and choice within mobile consumer propositions. The key technologies within LiMo 4 include a flexible and poweful user interface, extended widget libraries, 3D window effects, advanced multimedia, social networking and location based service frameworks, sensor frameworks, multi-tasking and multi-touch capabilities. In addition, support for scalable screen resolution and consistent APIs means that the platform can deliver a consistent user experience

59

across a broad range of device types and form factors. LiMo 4 is designed to be hardware independent so that LiMo Foundation Member companies that create LiMo-powered handsets have the flexibility to choose any hardware solution to meet their needs. LiMo 4 makes extensive use of best of breed technologies from leading open source projects. LiMo's Open Source Policy also promotes strong bilateral engagement with these projects in the interests of maintenance efficiency and market access for future open source innovation.

4.1.2 Value Network Analysis

There are a variety of market players each having its own pros and cons in the fast-expanding mobile telecommunications industry. If each of the market players is not able to strategically position itself in the market, not only are they not able to generate revenue, they can even lose what they already have in a different field as well. A variety of applications and new business models are emerging as the mobile service platform is being vitalized. It is expected that the emergence of new business models will continue as the mobile telecommunications industry goes through continual disruption and reconstruction. In this section, the positioning, changed role and interaction of each key player surrounding the mobile service platform and the value the key players can gain will be analyzed through value network analysis.

[Figure 14. Value Network of Mobile Service Platform]
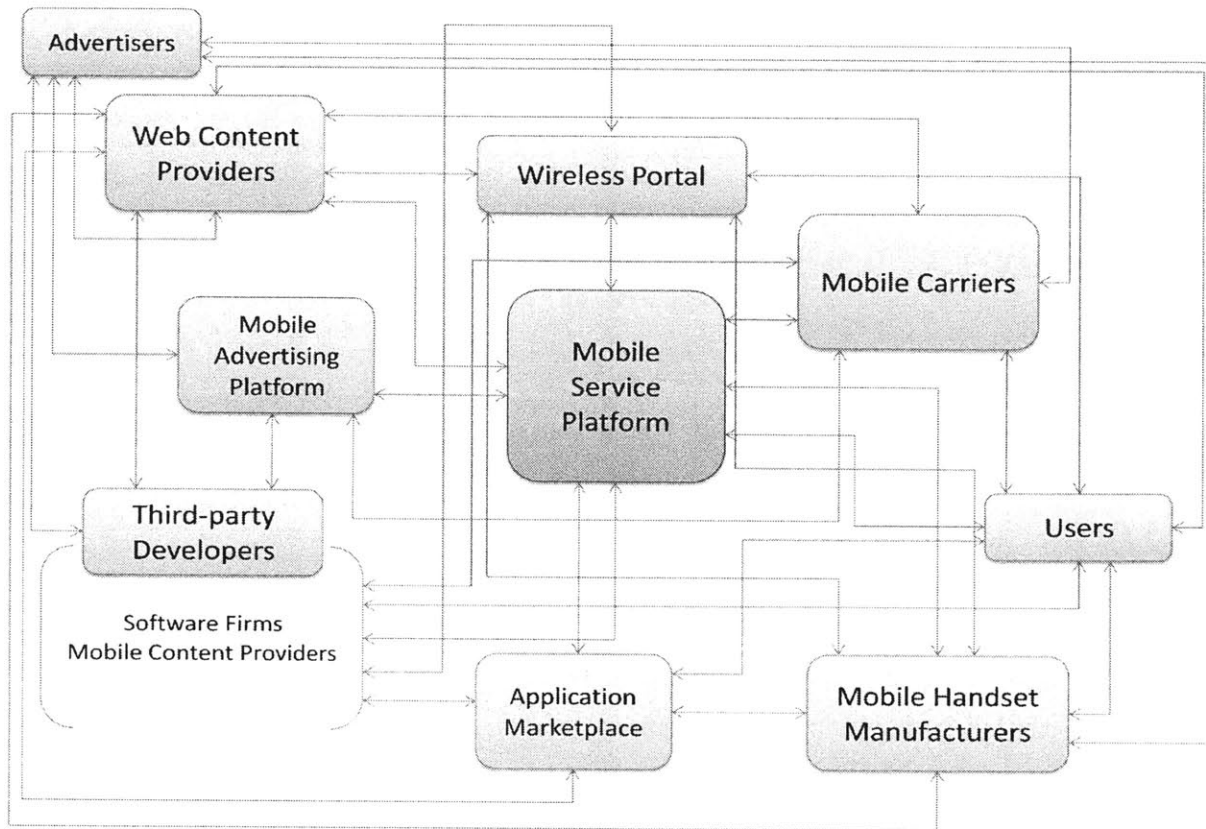
End Users

End users are demanding a more personalized, PC/internet-like mobile experience - one that includes flexible access to a diverse selection of applications and services that are updated regularly as tastes and market demands change. This end-user demand is creating the need for more flexible mobile application deployment models. Over-the-air application distribution, where applications are downloaded onto the device and managed remotely over the mobile carrier's cellular network, is a key capability for enabling mobile application stores.

A new consumption behavior is being induced as user convenience for the use of applications has been increased and the variety of options has been extended through the mobile service platform. End users can use applications that correspond to the applications being used at the PC level. Through an application marketplace, they can also freely purchase and use the applications

developed by third-party developers without worrying about data usage fees by downloading the applications onto their computers and transmitting to their mobile devices. They can even purchase high volume applications without worrying about data usage fees. As with the case of Android, user convenience will increase if the mobile service platform is used as an advertising platform as a new form of a variety of business models such as free mobile services will be provided using advertising.

Mobile Carriers

Unique location-based capabilities and user insight present mobile carriers with an opportunity to create a personalized user experience tailor-made for the mobile. Mobile carriers will have the opportunity to provide a differentiating service that can create new revenue-generating opportunities, build brand image and boost customer loyalty by offering subscribers a highly customized mobile internet environment.

The carrier portal is losing ground as established and new entrants to the mobile market are competing to define the mobile user experience.

Application stores from Apple, Google, Research In Motion, Palm and Windows have become the new address for mobile applications, content, and services, putting the carrier brand and position in the value chain at risk. Moreover, mobile carriers no longer have a monopoly on the mobile device market and retailers are becoming an increasing popular channel. In-Stat anticipates that, by 2013, only approximately 60 percent of all the Internet-connected mobile devices sold will be through mobile carrier channels.

A personalized mobile internet environment including customized services can be a strong differentiator for mobile carriers. With integrated social networking capabilities, content and promotions selected based on interest, opt-in ads for subsidized services and a fast and secure purchasing channel provided by the mobile carrier, consumers can benefit from a wide range of services with unique added value. By opening a new communication channel with their subscribers, mobile carriers can enable users to manage their service packages and quotas and even pay their bills using a mobile internet application. Self-service account management is

already deployed at Russia's CDMA carrier, Skylink, where subscribers in Moscow can select pricing plans based on the applications they use and the time of day. For instance, subscribers can choose access to unlimited social networks, email only at night or receive news in the morning and mobile video after work hours. Differentiated pricing reduces overall subscriber prices, thus increasing user adoption while resulting in more fair usage. This self-service application will enable subscribers to pay for the bandwidth they want when they need it. In addition to choosing which content is accessed and when, consumers who have immediate visibility to their expenses can avoid bill shock and can decide to add quotas on-the-fly based on their financial limits, providing maximum flexibility. The subscriber has more control over the mobile internet service, and network resources are more efficiently allocated based on need and a consumer's willingness and ability to pay.

There are obvious benefits for mobile carriers to stake a claim on the mobile internet. Mobile carriers can increase their value and brand visibility by providing a differentiated, unified and sticky user experience across multiple devices. They can attract users, generate revenues and increase adoption of mobile data services by promoting their own and their partners' content and services. In addition, with the ability to push information and notifications, mobile carriers can maintain a closer relationship with subscribers. Furthermore, subscribers can also benefit by taking full advantage of personalized and location-based services that make browsing on-the-go a unique experience that is more than a mere duplication of the desktop.

It is no wonder that mobile carriers are looking for options that will enable them enter the application store space directly. Mobile carriers have a number of important strengths that can help them build a robust and vibrant application ecosystem. One is that the mobile carrier maintains the primary relationship with an end user for wireless services. This means that a mobile carrier can market and promote an application store as a new service directly to its often quite substantial customer base.

Mobile carriers already have a range of critical systems in place - from billing and payment platforms to customer support systems as well as user information and usage data. These capabilities are critical elements to a successful mobile application store and can help a mobile carrier deliver a great user experience. The success of Apple's App Store is due largely to the seamless, easy-to-discover purchase, download and upgrade processes. Mobile carriers must

provide a similarly seamless, painless, hassle-free end-user experience at every step in order to generate more revenue, while advancing their competitiveness in the mobile space.

Mobile carriers can provide three types of content service. Firstly, a mobile carrier can provide its unique subscription-based content and services. Secondly, a mobile carrier can provide both its unique content and third-party content in the form based on advertising. Users can be subsidized for free content or the use of content on the condition that they receive advertising messages. Lastly, a mobile carrier can allow access to free internet-based content. It is not easy for mobile carriers to generate revenue by selling content. They, however, can expect revenue generated by allowing data access. These three types of content service are not completely independent. It is therefore required to strike a revenue balance between access and subscription-based content and content that supports advertising.

It is now the general trend for mobile carriers to adopt multi-platform strategy when it comes to selecting the service platform. To be specific, they secure the flexibility of mobile handset by means of loading a strategic platform onto high-end mobile handsets with a variety of high-priced services loaded and of loading an ancillary platform onto low-end mobile handsets targeting a niche market with fewer services loaded. Mobile carriers need to get out of the walled garden to reestablish the business model and to pursue a more open service strategy through a partnership with platform providers. They will also need to improve network infrastructure and data service plan to fully accommodate the increased data service.

Mobile Handset Manufacturers

Mobile handsets have been growing rapidly as they support mobile broadband access and data services. Due to the success of iTunes service and iPod, the "servitization of products[25]" has become a crucial differentiating factor in enhancing the competitiveness of mobile handsets. Virtually every product today has a service component to it. The old dichotomy between product and service has been replaced by a service-product continuum. Many products are being transformed into services.

---

[25] Products today have a higher service component than in previous decades. In the management literature, this is referred to as the servitization of products.

64

Apple unveiled a new form of business model vertically integrating even application sales through "App Store" which is application marketplace.

Mobile handset manufacturers can increase bargaining power against mobile carriers by reinforcing control authority through vertically systematizing the service platform into mobile handsets. Thus, it is required for mobile handset manufacturers to seriously consider transforming into service platform providers, while pursuing open policy so as to take the initiative in the rapidly changing mobile environment as there's a fair chance that the competitiveness of mobile handset manufacturers will be getting weaker if they remain the same and don't transform into service platform providers. Not only that, there's an urgent need for mobile handset manufacturers to provide for the rapid emergence of the business models utilizing a Moment of Truth. A Moment of Truth occurs anytime a customer comes in contact with any part of a company and uses that contact to judge the quality of the organization. In a Moment of Truth, customers form or revise their impressions about the company. Their feelings become more positive or reverse and head for the negative.

Mobile Service Platform Providers

In this thesis, "Mobile Service Platform" is defined as a middleware that facilitates the development and deployment of innovative services on the mobile device for clients located anywhere in the Internet.

Mobile service platform providers provide browsers, platform-related technologies and systems for developing a wide variety of applications and content for the users to be able to use the wireless internet and optional services.

Today, the mobile market is being vitalized with the advancement of 3G wireless communication networks and the rapid growth of smartphone market. Companies like Google, Microsoft, Apple, and Nokia are competing fiercely to dominate the mobile service platform market.

Mobile handset manufacturers, operating system developers, content providers and software firms are competing to take the initiative in the service platform. Service platform providers have been trying to build an ecosystem around themselves as platform providers have come to take up

hegemony as the added value of hardware itself has fallen as a result of applications or content being served as complementary goods for hardware. Mobile service platform providers can create more added value by getting users to come together by means of the service platform. New applications are loaded onto the platform and popular applications spread in a flash through the user base. The success of the mobile service platform entirely depends on how rich the mobile application developer ecosystem is. To this end, it is inevitable to open platform. "Open Platform" encourages application developers' innovation and the scale of innovation is proportional to the scale of the ecosystem. In addition, due to open platform, positive network effects apply and a virtuous cycle beneficial to all the participants is established as a result. The service platform providers can benefit from building a partnership with superior partners and create higher value. The mobile service platform providers therefore need to build a close partnership with third-party developers and to build a win-win business model and to persistently propose an incentive that can reinforce the relationship.

Third-party Developers

Third-party developers' status in the entire mobile market had been undervalued as compared to that of mobile handset manufacturers or mobile carriers. However, in addition to the expansion of distribution channels and the change in revenue models, their status in the value network of mobile service platform is being raised to a higher level due to the emergence of open service platform of application marketplace, such as Apple App Store or Google Android Market. That is, business environment has been changing to the advantage of third-party developers. The third-party participatory ecosystem is leading the overall change in the value network of mobile service platform as the ecosystem is becoming increasingly important.

The service platform providers have been trying to attract more third-party developers to build an ecosystem. The ability of third-party developers to become a superior partner within the ecosystem around a service platform provider can also be a core competency.

The emergence of the mobile service platform, such as iPhone iOS and Android, merges the market once divided by the mobile carriers into one single huge market, thus triggering third-party developers to realize the economies of scale.

Mobile Advertising Platform

The rapidly increasing reach of mobile advertising offers new opportunities for advertisers to reach their audience and for mobile content providers to monetize their content on mobile service platforms. Mobile content providers can offer a variety of services which are ideal for ad sponsorship. The services can be classified into:

- Entertainment services such as the download of video or audio clips to mobile handsets
- Information services via SMS, MMS, or some proprietary applications. For instance, daily weather forecasts, stock quotes, currency exchange rates, etc
- Alerting and notification services for breaking news, disasters, etc

A mobile advertising platform provides an opportunity for most advertisers as a large number of users nowadays are using smartphones, thus maximizing advertising exposure. The size of the market for mobile advertising is expected to grow year after year. A mobile advertising platform can offer advertising solutions for many mobile service platforms, inclusive of Android, iOS, webOS, and almost all standard mobile web browsers. Moreover, it enables the mobile carriers to convert their existing services (e.g. SMS, MMS, Mobile Web) into profitable advertising channels. On the other hand, it can allow advertisers to leverage these novel advertising channels by creating and managing campaigns targeted at specific mobile subscriber segments.

4.1.3 Case Study – Apple iPhone iOS vs. Google Android OS

4.1.3.1 Apple iPhone

iPhone iOS & App Store

In 2008, Apple introduced the epoch-making revenue model of "App Store" and "MobileMe"[26]. MobileMe automatically pushes email, contacts, and calendar events to the user's Mac or PC and over the air to his iPhone and iPod touch. So no matter where he is, his devices are always up to

---

[26] http://www.apple.com/mobileme/

67

date. MobileMe stores the user's email, calendar, and contacts on a secure online server, or "cloud". The cloud pushes the most current data to his iPhone, iPod touch, and computer so he is always up to date. And his email, calendar, contacts, photos, and documents are accessible over the Internet through a set of easy-to-use web applications.

The Apple App Store is an Apple application for application download on Apple's application-capable devices (the iPhone, iPod Touch, iPad and Mac), which allows users to browse and download applications from the iTunes Store that were developed with the iOS SDK or Mac SDK and published through Apple. Depending on the application, they are available either for free or at a cost. The applications can be downloaded directly to a target device, or downloaded onto a PC or Mac via iTunes. 30% of revenues from the store go instantly to Apple, and 70% go to the seller of the application(s). As of October 20, 2010, there are at least 300,000 third-party applications officially available on the App Store. As of January 18, 2011, the App Store had over 9.9 billion downloads, which was announced via the company's "10 Billion App Countdown". As of January 22, 2011, the 10 billionth app was downloaded from Apple App Store. The median revenue per application is estimated to be $8,700. The average price of non-free application is estimated between $3.5 and $4. The distribution of price follows a power law distribution (the Zipf–Mandelbrot law[27]): Although prices can be freely chosen, most sellers price their application at multiple of $5 (minus 1 cent)[28]. After the success of Apple's App Store, and the launch of similar services by its competitors, the term "app store" has been used to refer to any similar service for mobile devices.

---

[27] In probability theory and statistics, the Zipf–Mandelbrot law is a discrete probability distribution. Also known as the Pareto-Zipf law, it is a power-law distribution on ranked data, named after the linguist George Kingsley Zipf who suggested a simpler distribution called Zipf's law, and the mathematician Benoît Mandelbrot, who subsequently generalized it.

[28] http://innumero.wordpress.com/2011/02/16/distribution-of-price-on-the-apple-application-store/

[Figure 15. Apple App Store]
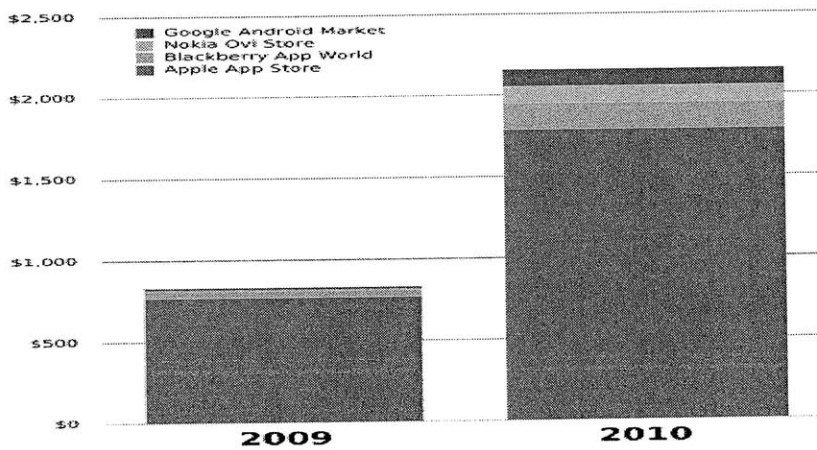

Source: Apple App Store

The chart (Figure 16) below shows downloads and available apps on the app store over time, since the App Store was opened in 2008. App Store application availability has increased in line with downloads over time.

[Figure 16. Apple App Store Downloads and Available Applications]

Apple App Store - Downloads and Apps

Source: http://en.wikipedia.org/wiki/File:AppleAppStoreStatistics.png
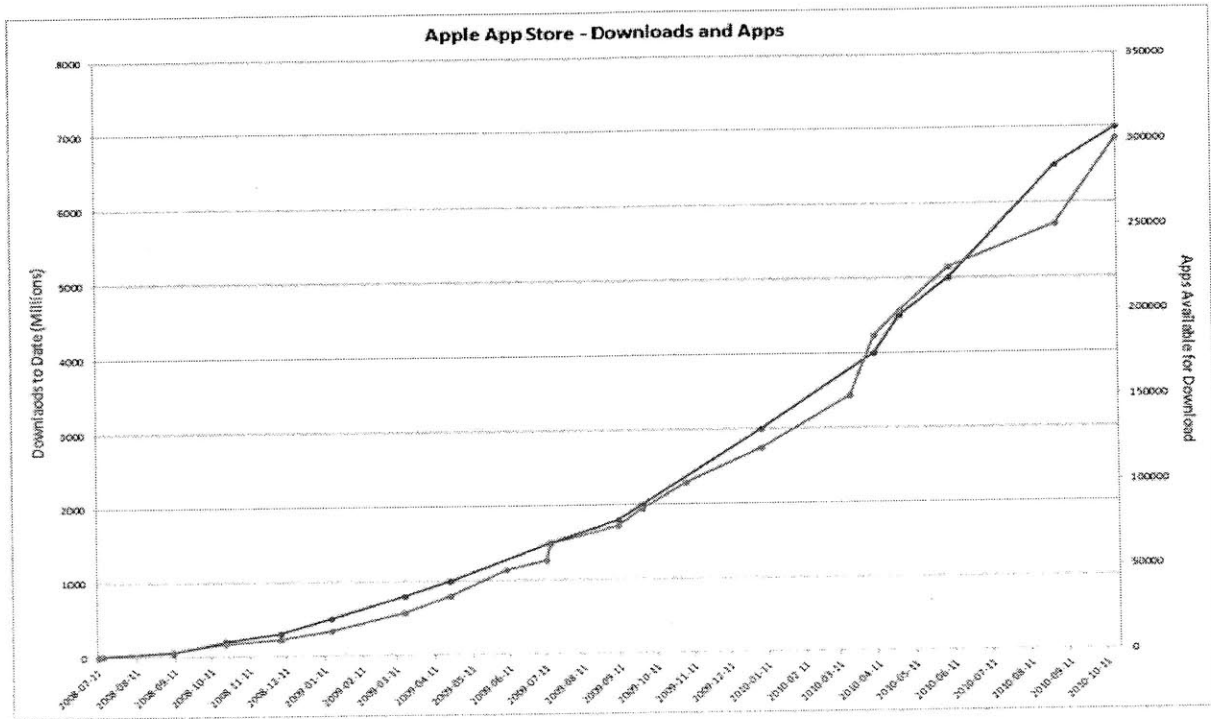
[Figure 17. Global Mobile Application Store Revenue in Millions of US Dollars]

Google Android Market
Nokia Ovi Store
Blackberry App World
Apple App Store

2009   2010

Source: IHS Screen Digest

70

[Table 8. Global Mobile Application Store Ranking in 2009 and 2010]

(Ranking by Revenue in Millions of U.S. Dollars)

2010 Rank	Store	2009 Revenue	2009 Share	2010 Revenue	2010 Share	Year-Over-Year Growth
1	Apple App Store	$769	92.8%	$1,782	82.7%	131.9%
2	BlackBerry App World	$36	4.3%	$165	7.7%	360.3%
3	Nokia Ovi Store	$13	1.5%	$105	4.9%	719.4%
4	Google Android Market	$11	1.3%	$102	4.7%	861.5%
	Total	$828	100.0%	$2,155	100.0%	160.2%

Source: IHS Screen Digest

The Apple App Store in 2010 generated nearly $1.8 billion in revenue, giving it 82.7 percent share of the total market, down from 92.8 percent in 2009. Revenue for the Apple App Store rose 131.9 percent from $769 million in 2009.

Global revenue for the total mobile application market in 2010 increased by 160.2 percent to reach $2.2 billion, up from $828 million in 2009.

A key driver of growth of the global mobile application market is the "freemium" business model, wherein a basic application is offered free of charge but fees are charged for premium features.

According to IHS Screen Digest, freemium purchases will count for around half of all North American app revenues by 2014, up from 24 percent in 2010. Freemium's share will be even higher for games. Games remain the dominant category for mobile application stores, accounting for 52.2 percent of revenue in 2010.

The iOS SDK (formerly iPhone SDK) is a software development kit developed by Apple and released in February 2008 to develop native applications for iOS. The SDK allows third-party developers to make applications for the iPhone and iPod Touch, as well as test them in an "iPhone simulator". However, loading an application onto the devices is only possible after paying an iPhone Developer Program fee, which is $99.00. Third-party developers are able to set any price above a set minimum for their applications to be distributed through the App Store, of which they will receive a 70% share. Alternately, they may opt to release the application for free

and need not pay any costs to release or distribute the application except for the membership fee[29].

The SDK itself is a free download but in order to release software, one must enroll in the iPhone Developer Program—a step requiring payment and Apple's approval. As of January 2010, cost of enrollment in the iPhone Developer Program is US$99 per year (the cost varies from country to country) for the standard program. Signed keys are provided to upload the application to Apple's App Store. Applications can be distributed in three ways: through the App Store, through enterprise deployment to a company's employees only, and on an "Ad-hoc" basis to up to 100 iPhones. Once distributed through the App Store, a developer can request up to 50 promotional codes that can be used to freely distribute a commercial application he or she has developed.

The initial success of Apple's App Store was based on the securement of the user base of iPhone 2G (1st Generation) and iPod Touch. For marketing, it is advantageous to show new services to the existing customers than showing the services to new customers. Apple's service operation know-how accumulated from running iTunes store also contributed to the smooth operation of the App Store. As mentioned earlier, the success of the App Store is due largely to the seamless, easy-to-discover purchase, download and upgrade processes.

Apple is positioning itself as a service platform provider by vertically integrating handsets, platform and applications. Apple used the success of the integrated model of iPod-iTunes as a steppingstone toward being a service platform provider. The success of iPhone and the App Store triggered the actual competition of the mobile service platform market. Consequently, mobile carriers, such as China Mobile, Vodafone and T-Mobile, launched application marketplace as well not to mention their competitors, such as Google, Microsoft or RIM.

---

[29] http://developer.apple.com/programs/ios/

[Figure 18. iPhone Platform]
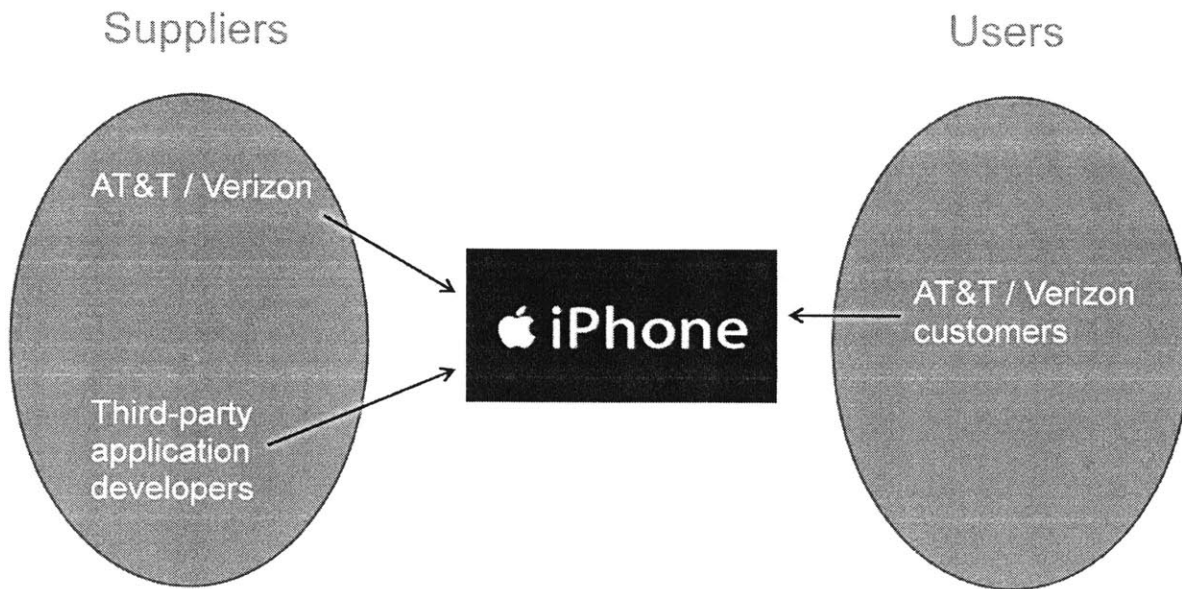
In essence, the carrier subsidizes the price of the phone and the device manufacturer offers the phone to the carrier. Apple also extracts subsidies from the carriers. AT&T subsidizes the cost of the 3G iPhone, bringing the price down for customers who sign two-year contracts.

Verizon, the nation's largest carrier, recently announced the availability of the iPhone on their network. Reportedly, Verizon may end up spending anywhere between $3 and $5 billion in subsidies in 2011.

According to Bloomberg, AT&T, on track to sell 6 million iPhones in 2011, will see the subsidy it pays to Apple go down from $400 to $350 per device in light of the termination of its exclusivity contract with Apple. As a result, AT&T's total subsidy for the Apple device will drop to about $2.1 billion in 2011, from $6 billion.

Significance of iPhone & App Store to Users

It has been convenient for users to use the mobile web and applications, thus leading to heavy wireless data usage. Through App Store, users can also freely purchase and use the applications

73

developed by third-party developers without worrying about data usage fees by downloading the applications onto their computers and subsequently transmitting to their iPhones. Users can even purchase high volume applications without worrying about data usage fees. This is very appealing to users who had to purchase mobile applications only through a mobile carrier's web portal where the number of mobile applications is limited compared with Apple App Store.

Significance of iPhone & App Store to Mobile Carriers

The most well-known commercial application ecosystems or app stores have been created by mobile device and service platform manufacturers, including Apple, Nokia, Google, Microsoft, Palm and RIM. The success of Apple's App Store, which served up more than 35,000 different applications and registered more than a billion downloads in just the first 9 months after launch, serves to illustrate how the combination of advanced devices, increased bandwidth, a well-leveraged and vibrant developer community and a well-managed application distribution model can quickly drive up mobile application uptake and with it, mobile data usage and revenues.

Mobile carriers are looking for options that will enable them enter the application store space directly. Mobile carriers have a number of important strengths that can help them build a robust and vibrant application ecosystem. One is that the mobile carrier maintains the primary relationship with an end user for wireless services. This means that mobile carriers can market and promote an application store as a new service directly to their often quite substantial customer base.

Another advantage that mobile carriers have is a range of critical systems already in place – from billing and payment platforms to customer support systems as well as user information and usage data. These capabilities are critical elements to a successful mobile application store and can help a carrier deliver a great user experience. Again, the success of Apple's App Store is due largely to the seamless, easy-to-discover purchase, download and upgrade processes. Carriers must provide a similarly seamless, painless, hassle-free end-user experience at every step in order to generate more revenue, while advancing their competitiveness in the mobile space.

Mobile carriers must get over some challenges so as to succeed with this model. To reach the biggest addressable market, a carrier-led mobile application ecosystem must work across all of the key devices in the carrier's portfolio, must function across multiple application environments and device operating systems, and must support millions of devices and thousands of device types/models.

In addition, to ensure a vibrant ecosystem, carriers must attract a network of developers to write applications for their store. It is important to ensure that barriers are not created for the application developer as the ecosystem grows - this includes everything from ensuring that application certification is kept simple, to reducing the cost of porting applications within a carrier's device portfolio. Transparent revenue-sharing models that provide incentives to the application developers are also key to making an application ecosystem work.

Apple has had a built-in advantage with its extensive network of experienced application developers who are familiar with its development environment. To get early buy-in, Apple proactively targeted members of its development network with its SDK, and solicited early submissions. Mobile carriers may have more of a challenge in this regard.

One strategy mobile carriers can employ to attract application developers is to provide access to a broader audience than vendor-led application stores can. For example, Vodafone plans to make their application store available across all of their worldwide markets. Vodafone also intends to align with partners, such as China Mobile, Softbank and Verizon, to further scale the opportunity. The plan is to provide a single developer program, complete with SDKs and APIs that work across all of the devices in all of these carriers' markets. If these carriers can execute successfully on this strategy, it would represent a very large and very attractive addressable market for an application developer. Vodafone and its partners alone can provide access to more than 700 million subscribers around the world.

One key to meeting these challenges will be the carrier's advanced mobile device management (MDM) solution. An MDM solution enables carriers to support the distribution of mobile applications. In addition, an MDM platform can be used to resolve any application setup or configuration issues that come up during the distribution process, hiding any complexity in the process and ensuring that it is seamless to the user. Finally, if the user has any issues with a

mobile application at a later point, the MDM solution enables the customer care and support staff to help the subscriber over the air and in real time, ensuring a consistently excellent user experience throughout.

Mobile applications offer a huge opportunity for mobile carriers to drive up data usage and revenues. The challenge for the mobile carrier is to create an application ecosystem that offers incentives for developers while keeping the delivery process simple and providing the broadest possible reach across heterogeneous device portfolios. At the same time, these stores must be fun to use and must provide a compelling end-user experience that hides any underlying technology complexity. In many respects, the enabling technologies mobile carriers need are available today; the challenge is in coordinating all of the technology pieces, and more importantly, the participants, into a vibrant and exciting new mobile application store-ecosystem.

Significance of iPhone & App Store to Mobile Handset Manufacturers

From the perspective of mobile handset manufacturers, the success of iPhone and App Store implies that it is necessary for mobile handset manufacturers to extend their business capabilities to a service platform provider. Software is one of the most important differentiating factors for any mobile handset. For instance, Samsung has recently been trying to transform itself into a service platform provider by having its own app store called "Samsung Apps" in an effort to build an ecosystem in which third-party developers can participate. Samsung Apps is accessible from various smartphones and even from connected televisions. It has now served over 100 million downloads globally less than one year after launch.

Samsung "bada" is a smartphone platform, which is created for wide range of device, unveiled in 2010. bada can accommodate the various applications created by developers. As bada is the one of major smartphone platform of Samsung, Samsung plans to roll out additional bada-based smartphones and continue to support bada developers in making and marketing high-quality applications. As shown in Figure 19, bada supports full ecosystem from users to developers.

[Figure 19. bada Ecosystem]

Source: http://www.bada.com/whatisbada/ecosystem.html
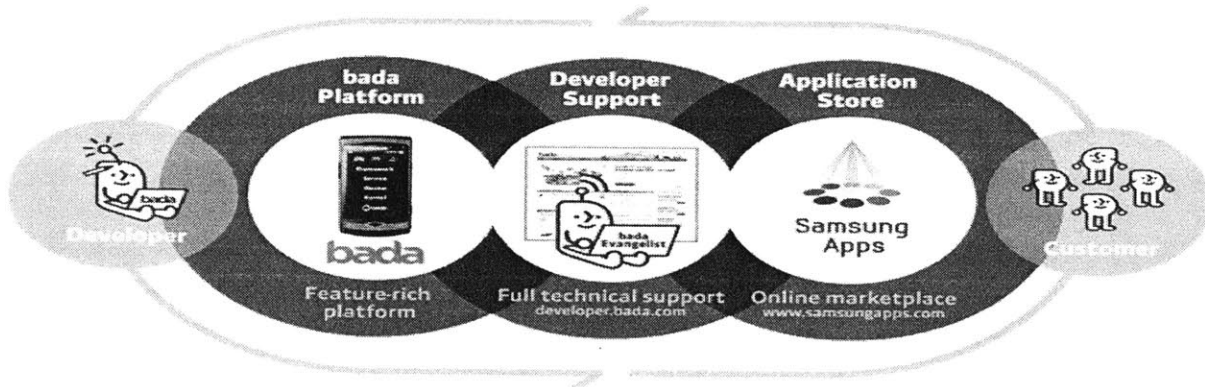
Significance of iPhone & App Store to Third-party Developers

From the perspective of third-party developers, the distribution of applications tends to lie at the mercy of mobile carriers and the distribution channels were limited. However, due to the App Store, their distribution channels have been expanded and they have come to freely sell their applications through Apple's approval process. Apple's iPhone is an attractive game device and the App Store is a new distribution channel for mobile games. Moreover, the entry barrier for developers is lower compared to the development of other online games or portable games. The App Store is a whole new window of opportunity for third-party developers as it enables them to raise their brand visibility and awareness, thus providing the opportunity to secure potential customers.

4.1.3.2 Google Android

Android OS & Android Market

Android is a mobile device platform powered by the Linux kernel. Google marketed the platform to mobile handset manufacturers and mobile carriers on the premise of providing a flexible,

upgradable system. Google had lined up a series of hardware component and software partners and signaled to mobile carriers that it was open to various degrees of cooperation on their part.

Android's purpose is to establish an open platform for developers to build innovative mobile applications. Android has a large community of developers writing applications that extend the functionality of the devices.

With the exception of brief update periods, Android has been available under a free software/open source license since October 21, 2008. Google published the entire source code (including network and telephony stacks)[30] under the Apache License[31], a free software and open source license. Google also keeps the reviewed issues list publicly open for anyone to see and comment[32].

The Android OS can be used as an operating system for cell phones, netbooks, tablets, smart TV and other devices. The first commercially available phone to run the Android OS was the HTC Dream, released in October 2008[33]. In early 2010, Google collaborated with HTC to launch its flagship Android device, the Nexus One. This was followed later in 2010 with the Samsung-made Nexus S.

A preview release of the Android SDK was released in November 2007. The Android SDK includes a comprehensive set of development tools. The SDK is downloadable on the android developer website. Enhancements to Android's SDK go hand in hand with the overall Android platform development. The SDK also supports older versions of the Android platform in case developers wish to target their applications at older devices. Development tools are downloadable components, so after one has downloaded the latest version and platform, older platforms and tools can also be downloaded for compatibility testing.

Google acquired Android Inc. in August, 2005, making Android Inc. a wholly-owned subsidiary of Google Inc.

---

[30] http://www.eweek.com/c/a/Mobile-and-Wireless/Google-Open-Sources-Android-on-Eve-of-G1-Launch/
[31] https://sites.google.com/a/android.com/opensource/posts/opensource
[32] http://code.google.com/p/android/issues/list?q=status%3AReviewed
[33] http://www.htc.com/www/press.aspx?id=66338&lang=1033

Google supplies Android to a range of mobile handset manufacturers, such as Samsung and Motorola, while Apple manufactures and maintains strict control over the handsets that run its software.

On the November 5, 2007, the Open Handset Alliance (OHA), a consortium of several companies which include Broadcom Corporation, Google, HTC, Intel, LG, Marvell Technology Group, Motorola, Nvidia, Qualcomm, Samsung, Sprint Nextel, T-Mobile and Texas Instruments unveiled itself. The goal of the OHA is to develop open standards for mobile devices[34]. On the same day, the OHA also unveiled their first product, Android. On December 9, 2008, 14 new members joined, including ARM Holdings, Atheros Communications, Asustek Computer Inc, Garmin Ltd, PacketVideo, Softbank, Sony Ericsson, Toshiba Corp, and Vodafone Group Plc.

Google will benefit if AT&T starts to more heavily promote Android devices now that its exclusivity with the Apple iPhone has ended, even though AT&T is not a member of the OHA. For instance, Motorola has rolled out through AT&T its Android-based smartphone equipped with a dual-core processor, capable of handling more tasks simultaneously.

Android Market is the online application store developed and run by Google for Android devices. An application program called "Market" is preinstalled on most Android devices and allows users to browse and download applications published by third-party developers, hosted on Android Market, though applications can also be downloaded from third-party sites.

Google announced the Android Market in August 2008, and it was available to users in October 2008. Application developers keep 70 percent of the revenue, and the remaining amount goes to mobile carriers and billing settlement fees. Of course, Google is hoping to capitalize on the growing mobile advertising opportunity on the phone. According to ABI Research (2008), the mobile advertising market is expected to grow to over $24 billion by 2013. Application developers have to register and pay a one-time $25 application fee in order to upload their applications to the storefront. Once the developer is registered, the applications are available to users without further validation and approval. Support for paid applications was available from February 2009 for US and UK developers[35], with additional support from 29 countries in

---

[34] http://en.wikipedia.org/wiki/Open_Handset_Alliance
[35] http://android-developers.blogspot.com/2009/02/android-market-update-support-for.html

September 2010. In February 2011, the Android Market was made fully accessible on the web, allowing users to browse and pick up applications using their PCs, send them to their mobile phone and make comments on them. All this functionality was previously accessible only from mobile phone devices[36]. Unlike Apple, Google allows independent app stores to operate for Android[37].

[Figure 20. Android Market]

Source: https://market.android.com/apps/

With the growing number of Android handsets, there has also been an increased interest by third-party developers to port their applications to the Android OS. The rapid growth in the number of Android-based phone models with differing hardware capabilities makes it difficult for the developers to develop applications that work on all Android-based phones[38].

---

[36] http://googlemobile.blogspot.com/2011/02/introducing-android-market-website.html
[37] http://www.wired.com/gadgetlab/2010/06/independent-app-stores-take-on-googles-android-market/
[38] http://www.wired.com/gadgetlab/2009/11/android-fragmentation/

How Google generates revenue from the Android platform

Google makes money by licensing the Google Apps that come on most Android phones, but not all. Apps like Gmail, the Android Market, Google Search, and others come in something called GAPPS. The Market is really where Google is interested. Sure, the other GAPPS add value to the phone (hence why carriers license their inclusion on Android-powered phones), but Google is making money with every app sold through the Market.

Even free apps make Google money. Developers have to pay to have an account to list their apps under. Google charges $25 for signups as developers, then keeping a share of paid app's price.

The ads revenue is not just driven by webpage ads but also in-app ads. 50% of the free apps in the Android Marketplace are ad-supported and can fetch billions of page views every single day.

Even ad-sponsored apps are likely using Google Mobile Ads[39], so Google's getting revenue from that source as well.
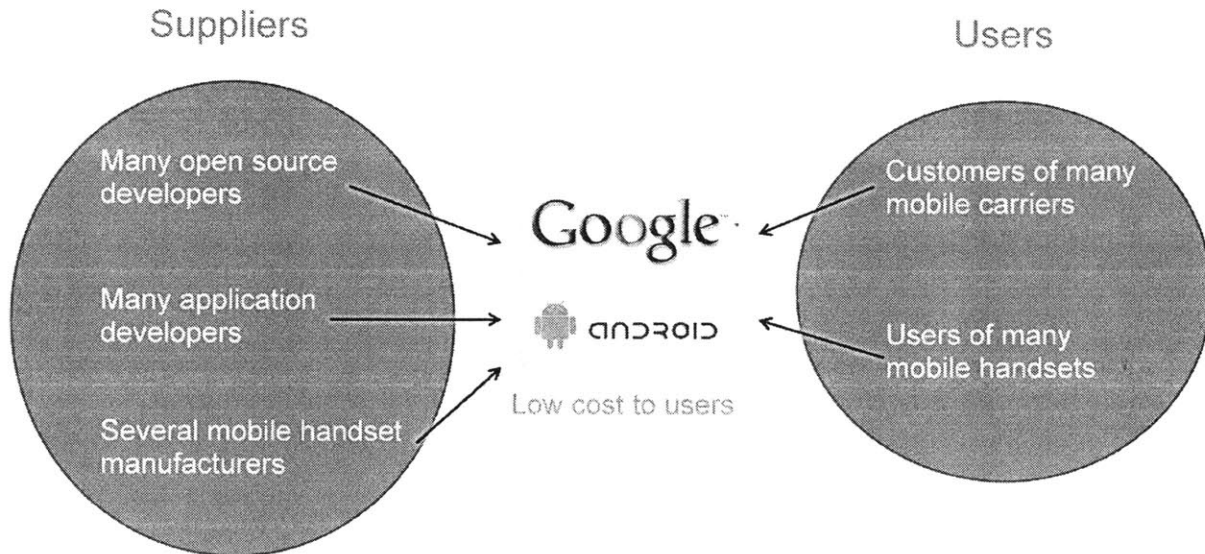
While Google generates revenue from ads on mobile handsets running various operating systems, inclusive of Apple's iOS, it benefits more from widening use of Android. That's because it keeps part of the sales of downloadable apps for the devices and the operating system helps Google bolster ties to handset manufacturers and service providers that may be more likely to use its search engine and other revenue-generating services.

On the other hand, Google has signed revenue-sharing deals with the major mobile carriers who support Android phones. Google has a revenue sharing deal with mobile handset manufacturers as well. The revenue sharing deals appear to be advertising revenue shared with mobile carriers that support Android. For mobile handset manufacturers, the revenue comes in when they include Google applications like search, Google Maps, Gmail which is not a requirement for Android phones.

---

[39] http://www.google.com/mobileads/

[Figure 21. Android Platform]

Suppliers   Users

Many open source
developers

Customers of many
mobile carriers

Google

Many application
developers

andRoid

Users of many
mobile handsets

Several mobile handset
manufacturers

Low cost to users

Significance of Android Platform to Users

Users benefit from using Android phones as they provide user-friendly interface and services. It is expected that users will have a broader selection of the use of mobile applications as more and more user-friendly mobile mashup services will be provided in addition to the existing services, such as Google Search, Gmail, and Google Maps.

Significance of Android Platform to Mobile Handset Manufacturers

Mobile handset manufacturers can save cost of developing handsets through cost savings of software. High-end mobile handset manufacturers can save money on the license fee when adopting Android OS, thereby enabling them not only to save development costs but also to enter the market more quickly. This may be more appealing to second-tier mobile handset manufacturers than to mobile handset manufacturers, such as Nokia, Motorola, Samsung, LG or RIM. Mobile handset manufacturers can also expect to receive insight into Google's strategy without entailing high upfront investment costs. They, however, may have difficulty determining

the number of mobile handsets onto which Android OS must be loaded mainly because mobile carriers have not yet firmly determined whether to adopt Android OS for all the handsets they make for their platform strategy.

Significance of Android Platform to Mobile Carriers

It is expected that Android will serve to accelerate the growth of mobile internet, thereby leading users to use mobile internet services more often. Mobile Carriers can even share the mobile advertising revenue with business partners such as Google who generates mobile advertising revenue by leveraging mobile carriers' subscriber information and behavior data[40]. One of the main reasons why Google is willing to share advertising revenue with mobile carriers is because Google wants more interest in Android OS to be drawn from the mobile carriers. On the other hand, the influence of mobile carriers on content providers and application developers who were subordinate to the carriers will be decreased gradually.

Significance of Android Platform to Third-party Developers

Third-party developers are the ones who benefit greatly from Android as Android, in essence, is an open, market-friendly platform for application developers. With the growing number of Android handsets, there has also been an increased interest by third party developers to port their applications to the Android OS. To date, even though application developers provide the exact same applications, they have kept changing the source code as mobile carriers and mobile handset manufacturers adopted different platforms. Not only that, application developers also had to do porting[41] every time a new handset is released. However, for Android-based handsets, once an application is developed by developers, the application can run on a wide range of devices and networks. Third-party developers can leverage media attention to Android and can

---

[40] http://googlemobile.blogspot.com/2009/02/calling-all-carriers-introducing.html
http://connectedplanetonline.com/wireless/news/google-shares-mobile-ad-revenue-0211/#
[41] Porting is the process of adapting software so that an executable program can be created for a computing environment that is different from the one for which it was originally designed (e.g. different CPU, operating system, or third party library). The term is also used for when software/hardware is changed to make them usable in different environments.

even develop a sincere relationship with mobile handset manufacturers and mobile carriers who are a member of the Open Handset Alliance (OHA).

Value Network of iPhone iOS vs. Value Network of Android OS

[Figure 22. Value Network of iPhone iOS]
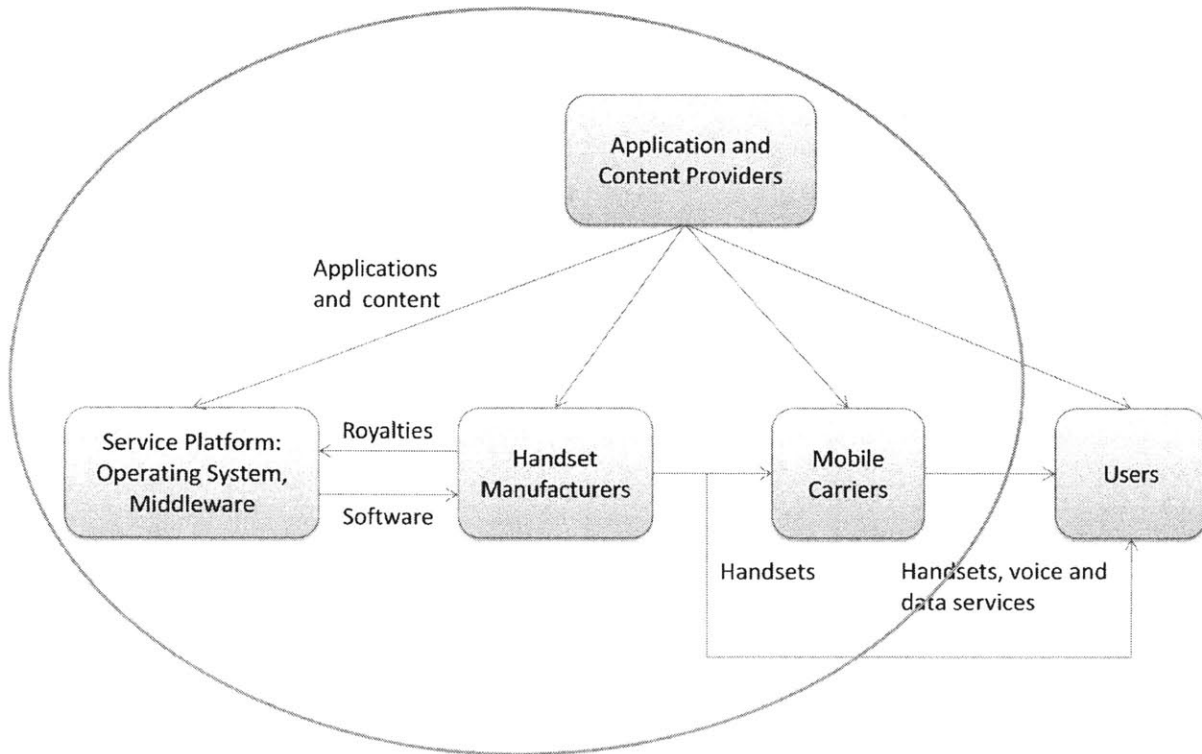
As shown in Figure 22, Apple has chosen to control everything within the circle. Even the application developers don't have full autonomy since every new application has to be approved before it shows up on App Store. The advantage to taking a position like this in the value network is that it is easier to coordinate the system.

[Figure 23. Value Network of Android OS]
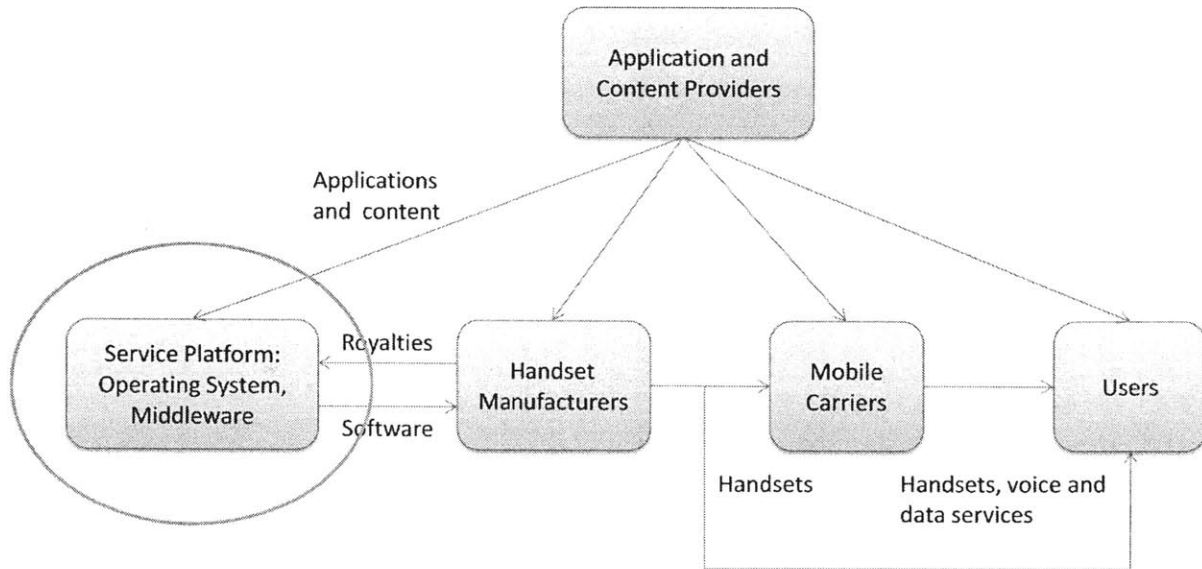
As shown in Figure 23, Google controls only the operating system directly.

iOS Platform vs. Android Platform

Although both iPhone iOS and Android OS are considered an innovative mobile service platform, there's a difference between these two platforms in terms of the degree of openness and the way the application marketplace is operated. Hence, the difference between the two mobile service platforms will be discussed in the following section in terms of the degree of openness and market expansibility.

Degree of Openness

Apple has long been criticized for operating its app store as a "walled garden", that is, implementing a tight approval process so as to have better and more secure applications, at the cost of excluding certain applications and developers. Further, Apple has been known to block applications that compete with its core businesses and applications.

Apple approves iOS applications only after they have gone through a strict process, whereas Google's Android Market simply warns the user that an application needs permission to perform certain functions during the installation. iOS applications must be signed by an Apple-created certificate, which means that malicious developers have a harder time distributing malware anonymously.

Google's Android platform has been known as "the open alternative" to Apple's iOS. It carries fewer restrictions and a more open application environment as compared to Apple's iOS. The openness, however, has become a concerning aspect, and even Google has realized that this can be a problem. This is evident in several of Google's recent decisions, such as their decision to "combat fragmentation" by requiring approval of third-party developer's future development plans before they are granted access to pre-release development builds of future Android updates.

Market Expansibility

Apple iPhone targets consumers who need to store information and communicate or people who want entertainment on the go. Specifically, as shown in Table 9, Apple iPhone's target segments consist of professionals, students, corporate users, entrepreneurs, and medical users.

[Table 9. Apple iPhone's Target Segment]

Target Segment	Consumer Need	Corresponding Feature/Benefit
Professionals	• Stay in touch while on the go • Record information while on the go	• E-mail, instant messaging, and phone • Applications from Mac OS X for notes and record-keeping
Students	• Perform many functions without carrying multiple gadgets • Style and individuality	• iPod, phone, video, TV shows, Internet, PDA • Apple branding as fashion statement
Corporate Users	• Input and access critical data on the go	• Applications from Mac OS X for notes and record-keeping • Compatible with widely available software
Entrepreneurs	• Organize contracts, access contracts, and schedule details	• Wireless access to calendar and address book to easily check appointments and contacts
Medical Users	• Update, access, and exchange medical records	• Wireless access to calendar and address book to reduce paperwork and increase productivity

Apple can even consider targeting the business productivity market who wants an all in one computing solution. But as technology advances and smartphones get cheaper, companies also have a great opportunity to target people who want entertainment. Hence, Apple will want to attract these consumers and get iPod users to upgrade to iPhones.

Apple can double its addressable market by expanding to new mobile carriers that don't sell the iPhone yet. Apple can more than double the addressable market by offering a device that does not require a data plan. Currently if one uses an iPhone with AT&T, he/she is required to have a data plan attached to that line of service.
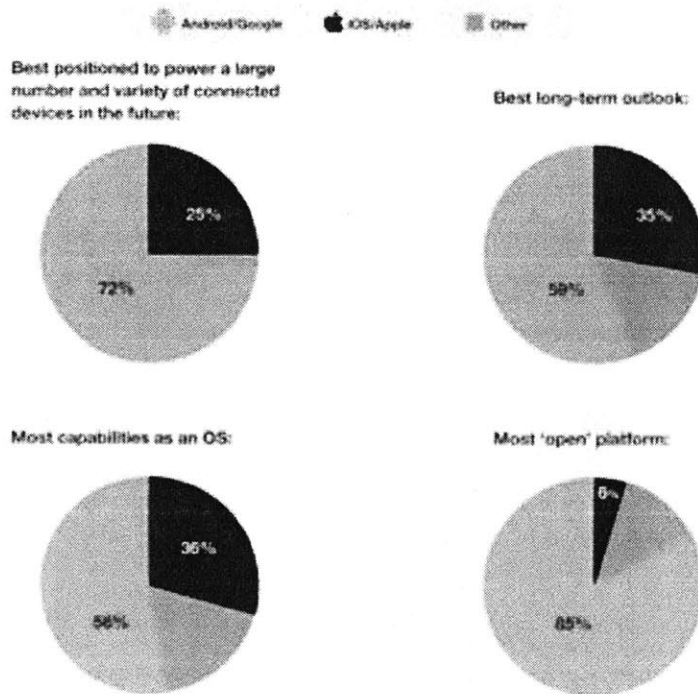
Apple can collaborate with many powerful global mobile phone companies to flood the market with iPhones, which reduces costs in marketing and increases revenue through long-term agreement deals. Apple can also partner with large enterprise software firms where information is critical to the end user. In addition, Apple may do a better job than Google in helping get more Verizon users to switch to a smartphone for the first time. According to the Yankee Group, a consulting firm in Boston, about 38 percent of AT&T customers use a smartphone, compared with about 30 percent of Verizon's. IPhone users' bills are about $120 a month, compared with about $40 to $80 for users of a regular feature phone. If Apple can get people who are currently on feature phones to upgrade, that would be huge because smartphone users pay a lot more.

On the other hand, Google has been trying to have many people use the Android platform by having it loaded onto as many handsets as possible around the members of the OHA rather than targeting a specific market. Google, however, will need to specify its target market for successful market positioning.

As yet, Google Android platform and its marketplace seem to have an advantage over iPhone iOS platform in terms of market expansibility as Android-based phones are released by the mobile handset manufacturers who adopted the Android platform.

[Figure 24. A Window of Opportunity for Google]

Source: http://www.readwriteweb.com/mobile/2010/09/mobile-developers-more-optimistic-about-android-over-ios.php#

Chapter 5: Service Platform Strategy

5.1 Strategy for Service Platform Providers

5.1.1 Open Platform Strategy

The success of the service platform depends entirely on the richness of the ecosystem of application developers. To achieve this, it is inevitable to open the platform. Building an ecosystem by opening platform for third-party application developers to join while minimizing restrictions on them has recently been a key issue for service platform providers. Representative examples include Facebook's F8 and Google's OpenSocial & Android. Nokia has made Symbian open source as well.

NTT DoCoMo, one of the Japanese mobile carriers, added a new application platform to its "i-mode" handsets last year as it tries to catch up with Apple's runaway iPhone success. In addition, DoCoMo allowed third-party individuals to develop applications for the company's 50 million "i-mode" users.

DoCoMo revolutionized Japan's mobile phone market with the 1999 launch of its i-mode service, which brought internet services to mobile phones. However, DoCoMo restricted the number of application developers, citing quality control issues. But the recent emergence of open platform systems, such as Google's Android and Apple's App Store for the iPhone, has prompted DoCoMo to loosen its controls and allow third-party individuals to easily develop and offer applications and services.

Facebook has grown rapidly in recent years as it also chose to adopt open platform policy. This tells us clearly how important it is to open platform. It is necessary for service platform providers to expand their ecosystem through opening platform as openness is no longer a threat to service platform providers. Rather, it is an opportunity for them.

Although using a common API under open platform, a great many applications that are not the same are being developed and another service can be created through this. A virtuous cycle is

formed not only because openness begets trust among participants in the ecosystem but also because trust and community attract people. It is necessary for service platform providers to build up a certain size of network in advance in order to maximize the first mover advantage. This is because a company who is ahead of the game early on in the network market where increasing returns of scale and positive feedback applies has a fair chance of winning standards in the market and continuously making profits by increasing market share at an accelerating rate. It is therefore necessary to extend the network through opening platform. However, a second mover can offset the first move advantage through opening its platform. For example, Facebook, the second mover in the SNS world, has overtaken MySpace, the first mover by opening its platform.

Under open platform policy, a great many players enhance services through competition and innovation. Accordingly, the entire ecosystem is enhanced. A virtuous cycle that is beneficial to all the participants of the ecosystem is formed as the size of innovation gets larger and positive network effects are applied when the ecosystem grows bigger and bigger. Therefore, service platform providers need to solidify the ecosystem around them by opening platform and thus attracting as many players as possible to the ecosystem.

5.1.2 Securing Platform Leadership

Players who participate in a platform can be a potential complementary good as they enhance the platform values as a product or service provider. An innovative ecosystem is formed as a platform leader emerges and mingles with firms who provide complementary goods and services. The value of the innovative ecosystem is multiplied when more and more people adopt the platform and complementary goods through the ecosystem.

Not all products or technologies can become a platform. Two conditions must be met at the very least in order to become a platform. First, if the entire system does not work without a specific product or technology, then this can become a platform conducting core functions. That is, as with Microsoft's operating systems or Intel's microprocessors, it is required to conduct at least one core function to become a platform. Second, it must be easy to connect between products, technology developers or participants. In other words, it must be easy to build an ecosystem that

includes third-party developers around a platform. In addition, a platform must easily be expanded when absolutely necessary, thus leading to an increase in user lock-in or stickability.

Two principal strategies for becoming a platform leader are coring (creating a new platform) and tipping (winning platform wars). To become a platform leader, companies need to address both the business and technology aspects of platform strategy[42].

Gawer and Cusumano (2008) suggested "Coring" and "Tipping" as a strategy for securing platform leadership.

Coring is the set of activities a firm can use to identify or design an element (it can be a technology, a product or a service) and make this fundamental to a technological system as well as to a market. From a functional or technological point of view, an element or a component of a system is "core" when it resolves technical problems affecting a large proportion of other parts of the system[43].

Tipping is the set of activities that helps a company "tip" a market toward its platform rather than some other potential one. Examples of tipping include Linux's growth in the market for Web server operating systems[44].

---

[42] http://sloanreview.mit.edu/the-magazine/2008-winter/49201-2/strategic-options-for-platformleader-wannabes/

[43] Annabelle Gawer & Michael A. Cusumano, Strategies for Platform-Leader Wannabes

[44] Annabelle Gawer & Michael A. Cusumano, How Companies Become Platform Leaders, MIT SLOAN MANAGEMENT REVIEW, Winter 2008, pp. 28-35

[Table 10. Strategic Options for Platform-Leader Wannabes]

	Technology	Business
Coring How to create a new platform where none existed before	▪ Solve an essential "system" problem ▪ Facilitate external firms' provision of add-ons, e.g., through provision of open IP on connectors ▪ Keep IP closed on the innards of your technology	▪ Create and preserve complementors' incentives to contribute and innovate, e.g., by subsidizing them and reducing their risks ▪ Protect your main source of revenue and profit
Tipping How to win platform wars by building market momentum	▪ Tip across markets: absorb and bundle technical features from an adjacent market	▪ Provide more incentives for complementors than your competitors ▪ Rally competitors to form a coalition

Source: Annabelle Gawer & Michael A. Cusumano, Strategies for Platform-Leader Wannabes

Many firms often fail to turn their products and services into an industry platform as their strategies fail to handle sufficiently both business and technology from the aspect of platform leadership. Hence, this thesis suggests strategies necessary for firms to secure the platform leadership from the perspectives of business and technology.

First, from the perspective of business, platform providers need to incentivize third-party developers to be able to develop a market momentum and to develop an innovative products and services. A platform leader needs to provide economic incentives so that ecosystem participants can invest in innovative complementary applications over a long period of time. A platform leader also needs to safeguard the ability to generate revenue through innovation. It is difficult to strike a balance between protecting the platform provider's sources of revenue and intellectual property and assisting complementors to generate adequate revenue. It is crucial to develop and maintain innovative momentum for third-party developers within the horizontal structure of ecosystem. As we can see from the case of Apple App Store or Facebook, it is crucial for the success of a platform to develop developer momentum.

Second, it is necessary to invest in building a brand asset as well as manufacturing, distribution, and service capabilities that support a platform. Eventually, to become a platform leader, it is necessary to develop an exceptional vision of the future as well as to develop the ability to create a lively ecosystem that can lead a business model for both the platform leader and potential partners.

Lastly, it is necessary to build relationships through trust as the partnership with ecosystem participants is crucial. This is because high quality applications can be developed when better firms enter into the platform. An individual firm can earn higher revenue than acting independently when they participate in an ecosystem centered on a platform and this ecosystem evolves. Implementing platform strategies require a coherent implementation of what Gawer and Cusumano call the Four Levers of Platform Leadership. The four levers are as follows.

- Scope of the Firm
- Product Technology
- Relationships with External Firms
- Internal Organization and Processes

From the perspective of technology, it is necessary to design the right architecture and interface and to reveal the intellectual properties selectively in order to ease third-party developers' development efforts. In other words, there's a strong need to provide functionalities that are helpful to third-party developers through API and to provide development tools that will make it easier to develop applications. Furthermore, the cost for using this kind of service needs to be kept to a minimum for the extension of the platform.

5.2 Strategy for Third-party Developers

The business environment is changing to third-party developers' advantage as a variety of service platforms are emerging and the competition for securing the platform leadership is getting fierce. Under such conditions, third-party developers need to develop a strategy to actively enjoy the advantage of the favorable changes in the business environment. The business environment has shifted in a direction that is favorable to the developers. It is critical that third-

party developers actively capitalize on the service platform to expand the scope of their business opportunities as the market is being expanded and various and innovative applications are being increased in demand.

Apple's App Store shows clear evidence of the possibility of success of application sales. The market for third-party applications will become more vitalized as a marketplace [45] for applications developed by the third-party developers gets vitalized. Therefore, it is essential for third-party developers to strive to target the niche market, while developing differentiated applications in order to be the beneficiaries of the expanded application market. Furthermore, third-party developers must also put some effort into discovering a business model to create a win-win situation for them and the service platform providers.

As with application marketplace, there are lots of opportunities out there for third-party developers in social networking platforms, such as Facebook and OpenSocial-enabled social networks, as users can freely select third-party applications. Thus, it is essential for third-party developers to consider fully taking advantage of social mashups to create social applications that can interact with users.

Third-party developers can also consider the following.

- Integrating mashups into social networking platforms which provide a huge user base with profiles and social graphs data.
- Enabling mashups for mobile service platforms which expose interesting new kinds of information such as location and rich profile data.

---

[45] Google's Android Market, RIM's BlackBerry Application Center, Microsoft's SkyMarket, etc

Chapter 6: Conclusion

A service platform led to a shift of power in the industry in the internet sphere of simple web sites or the established digital device market in which hardware manufacturers had taken the initiative. The service platform providers have come to take the hegemony as the added value of hardware itself has decreased and applications or content serves as a complementary product for hardware. The service platforms, such as Amazon Open Platform, Google "OpenSocial", and Facebook Open Platform, have emerged as the core value of the future of businesses.

The general situation in the mobile market is that the service platform has been vitalizing due largely to smartphone penetration, and an open platform is quickly becoming a key issue leading to providing a whole new business opportunity to both software companies and content providers together with the emergence of a variety of mobile services.

In order for businesses to well adapt to a paradigm shift driven by digital convergence and to secure competitive advantage, they need to build a strong network of users, providers, and partners. The competition among businesses striving to take the initiative in the service platform keeps getting hotter.

As discussed in chapter 5, it is important for the service platform providers to capitalize on the platform leadership strategy together with the open platform strategy. If the size of the ecosystem centered on the service platform providers gets bigger, it will benefit all the market players. In the open platforms, the players develop and advance their services through competition and innovation, thus moving the entire ecosystem forwards.

In this thesis, case studies are conducted regarding the social networking platform and the mobile service platforms. This thesis tried to analyze the social networking platform and mobile service platforms through the value networks that analyze the interaction among the participants for creating value. As shown in the value network analysis of iPhone and Android, Google controls only the service platform (operating system/middleware) directly, whereas Apple has chosen to control everything inclusive of service platform, application developers, content providers, mobile handset manufacturers and mobile carriers. Even the application developers don't have

full autonomy since every new application has to be approved before it shows up on App Store. The advantage to taking a position like this in the value network is that it is easier to coordinate the system. Based on this analysis, this thesis suggests key strategies that the key players of the service platform value networks need to adopt.

First of all, mobile handset manufacturers need to secure the platform leadership to maintain their current competitiveness in the mobile market. They need to attract as many third-party developers as possible to the ecosystem under their strong leadership in order to maintain solid relationships, and they also need to find a way to grow together with third-party developers. In addition, they need to diversify the risk by supporting the various mobile service platforms inclusive of Linux and Windows Mobile. SNS is an attractive market that cannot be overlooked not only for mobile carriers but also for mobile handset manufacturers because it is possible for mobile handset manufacturers to be able to pursue differentiation and augmented value of mobile devices through SNS. Secondly, mobile carriers need to position themselves as platforms that enable delivery of applications and content without discrimination. They also need to use the mobile service platform to expand their network value. To do so, they have to depart from the walled garden type of business practices and expand their services based on the service platforms, while supporting the third-party developers by building an open service infrastructure and by opening non-mobile carrier portals. That is, mobile carriers need to offer APIs to help third-party developers build services around core network features such as voice, messaging, user authentication, location and presence. They can also consider providing billing and hosting platforms for third-party applications and content. Mobile carriers also have the option of working with mobile handset manufacturers in customizing their devices to ensure easier access to applications and content from the carrier as well as its partners. This strategy not only offers scope for significant revenue uplift, it retains carrier control over a significant part of the consumer service delivery experience as well. Mobile carriers stay at the forefront of innovation in the mobile ecosystem by working in close collaboration with third-party application developers and content providers in identifying and monetizing newer revenue streams. However, mobile carriers will need to invest significant resources in building capabilities around platforms and developer communities. Thirdly, SNS providers need to evolve quickly from the simple SNS to the social networking platform. They need to transform their products and services into the social networking platform. They also need to open the platform and to provide a variety of

programs and support needed so that the participating players can grow, thus making the platform evolve. Lastly, third-party developers need to capitalize on the opportunity that has been expanded due in large part to the service platform. They need to establish partnerships with a variety of platform providers. The ability to act as an effective partner in an ecosystem may be a key capability. A strategy of identifying and targeting niche markets is also required.

This thesis leaves for future work. The value network analysis framework could be extended and verified with other case studies. This thesis can serve as a prototype for a larger study.

It should be noted that more research on platform strategy is expected to be done going forward as new cases of social networking and mobile service platforms are being released almost every day.

Bibliography

Kothandaraman, Prabakar; Wilson, David T. (2001): The future of competition: Value-Creating Networks, Industrial Marketing Management, Vol. 30, No. 4, pp. 379-389.

Joe Peppard & Anna Rylander, From Value Chain to Value Network: Insights for Mobile Operators

C. F. Maitland, J. M. Bauer, J. R. Westerveld (2002) The European Market for Mobile Data: Evolving Value Chains and Industry Structure Telecommunications Policy, 26 (9/10), 485-504.

Verna Allee, Value Network Analysis and value conversion of tangible and intangible assets

Elisabeth A.M. van de Kar, Guidelines for Designing Mobile Information Service Systems in a Value Network

Joel West and Michael Mace, Value Creation in the Mobile Internet: The Impact of Apple's iPhone (February 14, 2008)

Remco Gaykema, Fostering development in vertical mobile-supply chain integration and the effects on their value network

Feng Li and Jason Whalley, "Deconstruction of the telecommunications industry: from value chains to value networks," Telecommunications Policy, Volume 26, Issues 9-10, October-November 2002.

Tatsushi Takata, Platform Strategy Selection Criteria and Application in Mobile Business

Chen, Kai and Tse, Edison T., Dynamic Platform Competition in Two-Sided Markets (February 19, 2008).

Mikolaj Jan Piskorski, Thomas R. Eisenmann, David Chen, Brian Feinstein, Facebook's Platforms

Annabelle Gawer and Michael A. Cusumano, Platform Leadership: How Intel, Microsoft, and Cisco Drive Industry Innovation

Annabelle Gawer & Michael A. Cusumano, How Companies Become Platform Leaders, MIT SLOAN MANAGEMENT REVIEW, Winter 2008, pp. 28-35

Michael A. Cusumano & Annabelle Gawer, The Elements of Platform Leadership, MIT SLOAN MANAGEMENT REVIEW, Spring 2002, pp. 51-58

Annabelle Gawer & Michael A. Cusumano, Strategies for Platform-Leader Wannabes

Eisenmann, Thomas R., Parker, Geoffrey and Van Alstyne, Marshall W., Opening Platforms: How, When and Why? (August 31, 2008). Harvard Business School Entrepreneurial Management Working Paper No. 09-030.

Eisenmann, T., Parker, G. and M. Van Alstyne (2007), 'Platform Envelopment,' Harvard Business School working paper 07-104.

Michael A. Cusumano, Staying Power: Six Enduring Principles for Managing Strategy and Innovation in an Uncertain World

R. Amit, and C. Zott, Value creation in e-business. Strategic Management Journal, Vol. 22, No. 6/7, pp. 493-520, 2001.

David S. Evans, Andrei Hagiu and Richard Schmalensee, Invisible Engines: How Software Platforms Drive Innovation and Transform Industries

Don Tapscott and Anthony D. Williams, Wikinomics: How Mass Collaboration Changes Everything

Amrit Tiwana, Benn Konsynski, Ashley A. Bush, Platform Evolution: Coevolution of Platform Architecture, Governance, and Environmental Dynamics

http://en.wikipedia.org/wiki/Value_network

http://ebusiness.mit.edu/research/papers/232_VanAlstyne_NW_as_Platform.pdf

http://knowledge.wharton.upenn.edu/article.cfm?articleid=254

http://www.capgemini.com/insights-and-resources/by-publication/mobile_20_strategies_for_operators_in_an_open_mobile_ecosystem/

http://en.wikipedia.org/wiki/Generation_Y

http://en.wikipedia.org/wiki/Digital_native

http://en.wikipedia.org/wiki/Peer_production

http://en.wikipedia.org/wiki/Prosumer

http://www.pcmag.com/encyclopedia_term/0,2542,t=platform&i=49362,00.asp

http://en.wikipedia.org/wiki/Ovi_(Nokia)

http://en.wikipedia.org/wiki/Social_network_service#Emerging_trends_in_social_networks

http://en.wikipedia.org/wiki/Hypertargeting

http://www.facebook.com/pages/RockYou/105477842818369

http://www.looppa.com/Services_FacebookConnect.aspx

http://www.limofoundation.org/

http://www.mobilemarketer.com/

http://www.insidefacebook.com

http://www.telecoms.com/

http://www.businessweek.com/

http://weis2010.econinfosec.org/papers/session3/weis2010_anderson_j.pdf

http://www.mactrast.com/