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Development of business models for WAP services

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Abstract

Mobile telecommunication is becoming web enabled assisted by ICT developments. The new Wireless Application Protocol (WAP) makes it possible to use existing GSM mobile devices and networks to surf on the Internet without being connected to a wire. This paper focuses on the development of business models for WAP services. The paper ends with the requirements for successful business in this mobile commerce field.

Introduction

A case study describing the business model aspects of introducing the Wireless Application Protocol (WAP) by the biggest mobile operator in the Netherlands, KPN Telecom, in November 1999 was used to discover patterns in the development of business models for WAP services.

This is part of a study with the following general research question: *How can we support the development of new business models in the converging Telecommunications, Publishing and Hard and Software industries to facilitate the decision making process?*

As a research strategy for the total study the inductive-hypothetic approach is followed (Sol, 1982).

What is WAP?

“The Wireless Application Protocol (WAP) is an open, global specification that empowers mobile users with wireless devices to easily access and interact with information and services instantly. The purpose of WAP is to enable easy fast delivery of relevant information and services to mobile users.” (<http://www.wapforum.com>). WAP works on the GSM network, a second-generation technology, with either SMS, CSD and GPRS. GPRS is not available on the Dutch market yet, but will soon be introduced. GPRS is about 5 times as fast as the current GSM speed of 9,6 kbit/s.

Third generation technology, i.e. UMTS, will bring broadband to the wireless networks (384 Kbits/s for mobile applications and 2Mbit/s for stationary applications when located near to a base station). This enables true multimedia communications without the bandwidth limitations of second generation. The ITU is expected to recommend five types of next-generation cellular phone global standards in May 2000. The

expectation is that almost every country in Western Europe will have implemented 3G networks by 2003.

For mobile Internet a customer needs a device that is prepared for WAP. Such a device must have a WAP browser and be able to interpret Wireless Mark-up Language (WML). A content provider offers its content on the Internet in HTML and on the mobile Internet in WML. WML takes into account the small screensize and limited graphical possibilities of WAP devices.

Mobile commerce business models

WAP is not a first step towards mobile commerce. The Short Message Service (SMS) has existed for years, however WAP has received extensive media attention and therefor business.

Mobile commerce is the mobile variation of electronic commerce, i.e. “the conclusion of transactions between market parties via [mobile-EK] electronic infrastructures under the condition that products must at least be purchased/ordered electronically and interactions between business and/or between businesses and consumers must be involved.” (Bouwman, Hertog, Holland, 1999). Related terms are ‘mobile business’ ‘wireless e-commerce’, ‘mobile Internet and ‘wireless Internet’. Lessons learned from the young history of the Internet and e-commerce can be applied on respectively the ‘mobile Internet’ and ‘mobile commerce’.

The search for new successful business models is central in the so-called ‘New Economy’. The question is if it is feasible to create new business models because of the openness and connectivity of the Internet. A business model consists of descriptions of the architecture of the product, service and information flows; the business actors and their roles; and the sources of revenues. (Timmers, 1998).

These elements are described for the “mobile commerce value chain” (see table 1). The value chain is a model that describes a series of value-adding activities connecting a company’s supply side with its demand site. A value chain consists of a physical value chain and a virtual value chain. By applying value-adding steps of the information world to each activity in the virtual value chain companies create new markets and new relationships with existing markets. (Rayport, Sviokla, 1995). WAP is clearly a new technology that offers opportunities to apply value-adding steps.

M-commerce value chain	Explanation	Examples of business actors operating in the Netherlands	Payer(s)
Content provider	The content owner offers content for information, communication, transaction and entertainment services. This party consists of a content producer (writer, musician) and (often) a publisher. In this definition also physical products offered for sale are part of the content.	KNMI (weather), ANP (news), Bruna (books), AND (direction) KPN Telecom itself and its ISP's like Planet with own content.	End-user Advertiser
Hosting Provider (Web / Portal hosting)	The content is hosted on a WML server; database applications may be added.	KPN, Worldonline	Content provider
Access Provider (for content provider)	This function takes care that the content is really accessible on the Internet. This company may have a proxy server.	Planet, UU-Net, Worldonline	Content provider
Transaction provider	Company who handles the financial transactions.	Banks, TTP's, KPN Telecom	Content provider Advertiser End-user
Content Organiser	Actor who organises content (in broadest sense, including i.e. products) for target groups in a Portal. They can integrate communication, transaction and content provision.	M-Info (mobile portal of KPN), Startwap	Content provider Advertiser End-user
Network Operator	Telecom Network Operators build and maintain the network. Their suppliers supply hardware and software.	KPN, Libertel, Telfort, Ben, Dutchtone	Mobile Service Provider
Mobile Service Provider	Company who offers access for the user on the mobile network. The customer gets a subscription, bills, and helpdesk, etc.	KPN, Libertel, Telfort, Ben, Dutchtone, Talkline, Debitel	End-user
End-user with a terminal	The customer, also called start-user, with a WAP handheld including a browser	Nokia, Ericsson, Alcatel, Motorola.	End-user (possible subsidised by the network operator)

Table 1. Mobile commerce value chain

Business actors and their roles

The table shows that vertical integration takes place. The Telecom Operator fulfils the role of value chain integrator, banks are merely content providers, and software companies become partners in the hosting provider business. "A Business-Web is an elaborate network of suppliers, distributors, commerce services providers, and customers that conduct business communications and transactions on the Internet and other electronic media in order to produce value for end-customers". (Tapscott, Ticoll, Lowy, 1999)

Next to vertical integration, horizontal integration takes also place, i.e. record company that starts organising pop concerts and a television producer that produces theatre plays. Both may also develop content for mobile Internet.

Sources of revenues

In the last column of table 1 players who provide resources are identified: (1) the end-users, also called start-users or customers, and (2) business partners.

The end-users can be both consumers and businesses, they provide the following revenue sources:

- Revenue per subscriber: analogue to the Internet, this will be of minor importance. Access will be free, personal services on the other hand will be charged.
- Connection and airtime fees: these are types of income that will probably stay. The operator passes this income to the content suppliers.
- Content: the customer can also pay extra for the content. This can be on a 'pay-per-view' or on a 'pay-per-period' basis for a WAP session. Conversely the information can be accessed using a free 0800 number, and the information provider also pays for the telecommunication costs.
- Profit margin on sold products: the trader pays a commission to the intermediair.

Business partners provide a new type of income for the Mobile Operators and Mobile Service Providers:

- Advertisers pay to get attention for their brand, with or without an extra message. Advertisers may evolve into information providers because they have to establish their brand.
- The Mobile Service Provider can offer Internet access on the mobile network to third parties that can exploit mobile Internet services:
 - Multinationals that couple a WAP Portal on their corporate Intranet application.
 - Intermediaries who adds value to the market, for example because the company has knowledge of a niche market, these are in general small

companies who excel in rebalancing supply and demand. (Rayport, Sviokla, 1995)

The success factors

Keen mentions six values imperatives for defining effective business models for the new internet era: the fundamentals of logistics, long-term customer relationships, channels, capital and cost structures, branding and niching. (Keen, 1999).

The question is if and how these value imperatives relate to mobile Internet. The next basic requirements have to be fulfilled first.

- The mobile network technology has to improve, i.e. GPRS and UMTS.
- More WAP enabled devices have to come on the market, mobile phones but also PDA's like the Palm VII and other next generation smart PDA phones become WAP enabled.
- Applications directed to use in a mobile context have to be introduced. The market response to SMS and mobile email is growing. Business applications like the 'mobile office' (functions like agenda and addressbook) and connection of ERP systems to WAP are under development.
- Standardisation: for all three above-mentioned factors standardisation is important. Due to the GSM standard Europe is ahead of the USA in Mobile Commerce. Standardisation of user interfaces is also necessary for faster acceptance of new technology in the market.

If these basic issues have been dealt with, we can look to the development of business models. Obviously there is no standard methodology for developing new business models. (Keen, Earl, 2000). Mobile commerce will be a major component of new business. It is not there yet but there is evidence that it will be, i.e. the initiatives of telecommunication companies (NTT Docomo, Japan; T-Mobile, Germany; BT Cellnet, UK; Sprint PCS Wireless Web, USA, and the already mentioned KPN Mobile, Netherlands) and Internet companies (Freeserve, E*trade and Yahoo). The mergers around mobile telecommunication have business models that incorporate mobile commerce.

The entire Internet business is based on a client server which relies on a combination of a standard operating system, Internet browser and middle ware. Mobile commerce redefines the architecture because it begins with the customer tool. Returning to the drivers of business models, the hypothesis is that most importantly is control over the customer and customer relationship management.

The Mobile Service Provider has control over the customer: the company offers the subscriptions and prepaid cards for mobile services, sends the bills and offers helpdesk services. In the Netherlands, most often, the Network Operator also fulfils the role of the Mobile Service Provider.

At this moment the Mobile Service Provider owns the customer, but what IF the content becomes the most important driver for the Mobile Internet? The content organiser can personalise the content for the user and keeps the one-to-one relationship with the customer. In imitation of companies like Amazon and Yahoo this is a business in which a lot of new (mobile) Internet companies will arise.

A third option is that the company that handles the financial transaction keeps control over the customer relationship. Transaction services are not yet sufficiently developed, but they want to be the party on which the customers will depend for all kind of transactions. End-to-end security solutions are therefor essential.

Preliminary conclusion

Some basic requirements have to be fulfilled before WAP and mobile commerce can take off. There is enough initiative to work on that. Due to WAP other kinds of Mobile Commerce, for instance SMS, are also stimulated, and consequently it can be expected in the long run that mobile will become part of every day business.

Further research issues are:

- Which lessons learned from the young history of the Internet and e-commerce can be applied on the mobile Internet and mobile commerce?
- A further exploration of the value matrix: the business actors, their roles and strategies;
- Which business models drivers, besides customer relationship, are important?
- What is the design approach for developing mobile commerce business models?

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List of abbreviations

CSD	=	Circuit Switched Data
GSM	=	Global System for Mobile telecommunication
SMS	=	Short Message Service
UMTS	=	Universal Mobile Telecommunications System
WAP	=	Wireless Application Protocol
WML	=	Wireless Mark-up Language