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ITP4612

Frameworks for Emerging Mobile Data Services: Proposed Survey of GSM Operators

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INTRODUCTION

Much is expected of the emerging mobile data services. Those mobile telephony companies – which have participated in 3G auctions and paid excessively for licensing – have indeed staked their future on the success of such services. However, this very future is still uncertain. The build-out of the 3G mobile infrastructure has been delayed by legal questions regarding licensing and by unmet deadlines for introducing network and handset equipment. Only recently have vendors of mobile handsets – PDAs, tablet PCs, mobile phones or combinations thereof – started to introduce devices that can be considered as appropriate for 2.5G and 3G mobile services. As the search for the killer mobile application continues, the expectation is that the coming months will bring a slew of new services.

This paper is a report on the early stages of a research project. In this project I have undertaken to study the process of introducing mobile data services by operators of GSM networks around the world. In October 2002, the GSM Association listed 660 such operators in 180 countries. The study is designed to take place in two phases. First, the largest operators in the most mobile-developed countries will be surveyed for the express purpose of validating proposed frameworks and for surfacing important research issues. Once this is accomplished, the second phase will expand the population of studied GSM operators to improve statistical validity and ability to generalize results. The results of conducted surveys should be available in time for the 2003 IRMA Conference, May 18-21, 2003.

LITERATURE REVIEW

The research stream focused on the subject of mobility and information systems is relatively new. Thus far few non-technical topics have been studied to any significant degree. It appears that the issue of culture and mobile-service use has generated a growing interest in the IS community. For example, Palen et al (2002) have studied the use of mobile phones in the context of cultural experience so users. Nurmi et al (2001), Aarnio et al (2002), Kim et al) and Carroll et al (2002) have studied adoption and use of mobile services in the Scandinavian, Australian and Korean contexts. Urbaczewski et al (2002) have proposed some reasons for the lower penetration and use of mobile services in United States when compared to Western Europe.

Hypothesis 1: Mobile data services which are location sensitive, time critical and customer initiated (pull) receive proportionally more attention both from service providers and customers than other categories of services in the service-dimension framework.

SERVICE-DIMENSION FRAMEWORK

Balasubramanian et al (2002) have proposed an interesting framework based on the concept of service dimensions: 1) location sensitivity, 2) time criticalness and 3) degree to which the service is initiated by the customer (pull) or by the provider (push). The three dimensions are used to generate eight different categories of services (Table 1). The conventional wisdom suggests the attraction of mobile services is directly related to the degree to which the service depends on location of provision, time-critical nature of service need and users ability to control what is delivered. Pursuant to this perception, the study will examine Hypothesis 1.

Table 1: Service-Dimension Framework (adapted from Balasubramanian, et al (2002)).

Dimension 1	Dimension 2	Dimension 3	Example
Location Sensitive	Time Critical	Pull	Safety services (roadside, medical)
		Push	Local traffic updates
	Time Noncritical	Pull	Mobile Yellow Pages
		Push	Satellite-based agricultural yield-mapping
Location Insensitive	Time Critical	Pull	Stock quote request
		Push	Stock price alert
	Time Noncritical	Pull	Downloads of MP3s
		Push	Availability of chosen entertainment sources

SERVICE-ORIENTATION FRAMEWORK

Based on review of popular press and this author's own observations a Service-Orientation Framework for Mobile Data Services is proposed. The framework is a derivative of the traditional method for service classification – that which categorizes services based on service –types and characteristics of customers. The description of this framework is contained in Table 2.

In this context the following hypotheses will be studied (again, based on common perceptions of the current condition). Hypothesis 2 stems directly from the popularity of I-Mode applications in Japan.

Hypothesis 2: Mobile data services focused on personal communication and entertainment applications receive proportionally more attention both from service providers and customers than other categories of services in the individual segment of the service-orientation framework.

The conventional wisdom among planners of telecommunications services is that in the early stages of new service provision, one ought to exploit the early-adapters who are relatively price-insensitive. For most service providers price-insensitivity is linked to corporate accounts and organizational customers. Hypothesis 3 will test the validity of this notion.

Hypothesis 3: Mobile data services offered to organizational customers receive more attention from service providers than individual customers.

CONDUCT OF THE SURVEY

To validate the described frameworks and to gain new insights into the emerging mobile data service regime, I propose to survey the web sites of accessible GSM operators and to interview available operator personnel. The

Table 2: Service-Orientation Framework

INDIVIDUAL		
Service Type	**Service Examples**	**Description (if needed)**
Personal Communication	Multimedia Messaging	Sending of messages containing a variety of data types, including audio, video, text and image
	Video Telephony	One to one communication using audio and video
	Enhanced Telephony	Ability to attach and view data files in addition to audio
	Emobile-Postcard	
	Enhanced Chat	Interactive sending of text supplemented by sounds and image
Entertainment	Interactive Games	On-line games vs. virtual or real opponents, such as cards, board games, various video games, etc.
	Audio streaming	Continuous listening to audio -- such as music or books-on-tape – from a mobile device
	Video Streaming	Ability to watch on-demand movies or TV news on a mobile device
	Gambling	Mobile on-line gambling transactions on e.g. up to the last minute sporting events
	Ringing Tones and Handset screen savers	Ability to download data files to accomplish specific handset functions
Information and Education	Tele-learning	Ability to participate in interactive, on-line tutorial sessions with instructors and other students
	White and Yellow Pages	Consulting various listings of individuals and businesses
	EMobile-Library	Access to books, periodicals and databases
	Tourist Guides	Accessing information about the area being visited
	Location-Based Reference	Navigation services and reference information related to subscribers' location. E.g. where is the closest gas station
	Remote Consultation	Ability to consult professionals on issues related to health, engineering of particular products
	EMobile-Periodical	Accessing newspapers and magazines on a mobile device
Banking and Financial	EMobile-Banking	Conducting banking transactions from a mobile device
	EMobile-Billing	Paying bills
	EMobile-Financial Markets Trading	Buying and selling of securities
	EMobile-Cash	Ability to pay using a mobile device at vending machines
Shopping	Virtual Shopping	
	EMobile-Auction	
	EMobile-Ticketing	
Residence Management	Remote Monitoring	
	Security and Surveillance	
Home Office Management	Wireless LAN	
	Virtual Secretary	
	Video Conferencing	
ORGANIZATIONAL		
Service Type	**Service Examples**	**Description**
Organizational Communication	Sales Force Connectivity	
	Dispatch Communication	
Telemetry and Tracking	Monitoring of Devices or Meters	
	Safety Monitoring of people / animals	
	Fleet and Cargo Management	
Retail and Distribution	POS Tracking	
	Mobile Credit Card Authorization	
	Inventory Management	
	Virtual shops and showrooms	

study will take place in two phases. First, the largest operators in the most mobile-developed countries will be surveyed for the express purpose of validating proposed frameworks and for surfacing important research issues. Once this is accomplished, the second phase will expand the population of studied GSM operators to improve statistical validity and ability to generalize results.

The surveys will attempt to identify which services have been introduced, which are in the planning stages, and which are not even considered. The results are likely to contribute our understanding of the emerging mobile services and their impact on the communications industry.

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