



European Mobile Data Services 2003: Where are the Promised Innovations?

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ABSTRACT

This paper presents the results of a study on Mobile Services conveyed in Switzerland in 2003 and compares them with the forecasted data in the positive M-Commerce outlook of EITO, the European Information Technology Observatory. The current deployment of mobile services within 294 Swiss businesses, their current investment plans as well as a confidence indicator are being analyzed. Additionally an exploratory question closes on the reasons, which hinder companies to deploy mobile services. Methodologically, the services under review are WLAN, Bluetooth, GPRS/UMTS, GSM and GPS based services. A second differentiation follows M.E. Porters distinction of Internet services into services improving operative effectiveness and services directly interacting with customers. The findings of the study are able to act as an indicator for the combined European Mobile market, due to the specific characteristics of Switzerland in general and its ICT development in particular.

THE CURRENT DILEMMA OF MOBILE DATA SERVICES

Ever since the Internet and telecom bubble crashed in the late 1990ies, businesses and customers alike are awaiting the much promised and much delayed mobile data service revolution. GPRS (General Packet Radio Service) was to give a foretaste of UMTS (Universal Mobile Telecommunications Service), due to start early this millennium, providing almost universal access to the internet and value creating services based e.g. on location information, personalization and multimedia capabilities so far unheard of. At the same time the WLAN (Wireless Local Area Network) or Wi-Fi (Wireless Fidelity) wave would jump the Atlantic, providing Europeans with a vast number of public and private hotspots to log their notebooks onto. At short distances Bluetooth and technologies alike would create WBANs (Wireless Body Area Networks) transforming human beings in an all wired, connected and ultimately flexible and productive cyber workforce.

Also private and public forecasters quickly regained their confidence. As recently as in its annual report 2003, EITO predicted a Compound Annual Growth Rate (CAGR) of 64 % for Internet commerce and a stunning 140 % for Mobile commerce. Their data forecast that Internet commerce is to multiply sevenfold between 2002 and 2006 (EUR 308,885 mill. to EUR 2,223,571 mill.) and Mobile commerce to multiply 37 times in the same period (EUR 561 mill. to EUR 18,752 mill.). But what are the sentiments on Mobile Data Services at the commercial user side like? Are they being accepted?

Intention and Composition

This paper aims to pinpoint the current situation of European Mobile Data Services on the basis of an empirical survey conducted in 2003 in Switzerland.

After reasoning briefly on why Switzerland can be validly used as a European indicator country, especially for the ICT (Information and

Communication Technology) sector, current deployment but also planned investment into Mobile Services including a confidence indicator will be descriptively presented in section 2. The results are based on a sample of 294 Swiss businesses.

Special intention has been given firstly, on the kind of technology used and secondly, on the character of services – following Porter's argumentation [1], services can be divided into two types: one concentrating on operational effectiveness and one on value to the customer. Depending on the choice, different strategic approaches can be derived.

Last but not least, the results of an exploratory section of the survey, based on a sample of 157 answers, shed some light on why Mobile services seem to just not take off in Europe.

Switzerland, an ICT Indicator Country for Western Europe

When asking to name an indicator country in Western Europe for the state of the art on ICT (Information and Communication Technology), most academics and professionals doing business in this sector would instantly come up with Finland and maybe the four big European countries, i.e. Germany, France, Great Britain and Italy; the former for its leading position in mobile and internet technology, the latter because of the sheer size of their markets. Though when looking at Europe considering market aspects, one has to keep the different cultural conditions in mind and consequently has to include all four big European countries to obtain a valid European picture. A third possibility, which has been largely left aside due to its reluctance to join the EU, is to take Switzerland as an indicator country.

There are three major arguments in favor of accepting Switzerland as a country to validly indicate the state of the art in European ICT-deployment and development.

Switzerland is ranked 4th worldwide in the Mobile Telecommunications and Internet Index

Based on the "Mobile Telecommunications and Internet Index, 2002" by the ITU (International Telecommunications Union), Switzerland ranks as number 4 worldwide, topping e.g. Finland (12th) or Germany (17th). In this report, the ITU "ranks more than 200 economies according to their performance in mobile telecommunications and Internet technologies, as well as their ability to take advantage of future developments in these fields. In all, 26 indicators covering the quality and extent of network infrastructure, network usage and market conditions were used to construct the ITU's index" [2].

Highest European ARPU (Average Revenue Per User)

Switzerland consentingly scores high in terms of per capita spending on technology; esp. CT (Communication Technology) and IT (Information Technology) spending. Based on basic data from the EITO, Swisscom, the leading Swiss ICT carrier calculated the following ICT expenditures per capita 2002 in EURO: [3]

- *Switzerland* 2791 EUR
- *United States of America:* 2430 EUR
- *Japan* 2102 EUR
- *Finland* 1766 EUR
- *Western Europe* 1579 EUR

This directly translates into a 77% higher per capita spending on ICT in Switzerland compared to the Western European average, making Switzerland an attractive market to try out new products or services, esp. in B2B markets.

Proven test market since the 60's in terms of cultural diversity

Switzerland itself, though rather small represents itself as a tested and acknowledged test market for greater Europe. The United States Department of Commerce's Trade Information Centre states in its current Country Commercial Guide (CCG): "Switzerland is a small, highly developed, multilingual market situated at the crossroads of Europe. Its population of slightly more than 7 million people (including approximately 20% non Swiss) is culturally diverse, well educated and affluent. It consistently ranks high on quality of life indices, including highest per capita income, one of the highest concentration of computer and Internet usage per capita, highest insurance coverage per individual, high literacy and health care rates. For these and many other reasons, it also serves as an excellent test market for businesses hoping to introduce new products into Europe." [4]

THE SURVEY: FUTURE OF MOBILE DATA SERVICES

This section presents the 2003 result of the empirical survey of Swiss Businesses on their deployment of Mobile Data Service. After giving some general information about the underlying data and methodology the descriptive results will be presented: current usage of Mobile Services, planned investment in Mobile Services and barriers to implement Mobile Services.

General Information About the Underlying Data

The data presented in this paper originates from a survey of Swiss Businesses by the international institute of management in telecommunications (iimt) of the University of Fribourg /Switzerland. It aims to ascertain the state of the art and future outlook of mobile data services. It has been carried out in July 2003 as special part of the yearly conducted Swiss Telecom Guide Survey conducted by the same institution.

The Swiss Telecom Guide, published annually since 1998 targets at the CTO (Chief Technology Officer) of Swiss businesses. It aims to continuously track the subjective satisfaction of businesses with their ICT provider. It consolidates numerous questions into five dimensions: customer care, innovativeness, quality, price and flexibility. The outcome as well as secondary data are compared to the data of prior years in order to elaborate shifting trends over time.

The future of mobile data services, the add-on to this year's questionnaire, which results are being presented in this paper, consists of a brief introduction including a definition of the services and technologies in question, three nominal question sets to tick and an open question.

One particular facet of the survey is to differentiate between two types of mobile data services.

1. Mobile Services, which improve operational effectiveness (Type I)

Theses Services aim to advance the company's production process, ultimately, by reducing the costs inside the value chain. Any mobile service reducing the time or the costs to produce a certain physical output or intangible service falls into this category. Type I services improve the effectiveness of current activities.

2. Mobile Services, which interact directly with outside customers (Type II)

Services of this type may take the form of an entirely new service, or a supplementary service to create value-add to existing products and services. Basically all company mobile services, which generate a new,

direct contact to customers fall into this category. Type II services consequently approach new customers in a new way, or known clients via a new or partial new service.

Moreover, mobile services were differentiated via their base technology.

- WLAN (Wireless Local Area Network based on IEEE 802.11)
- Bluetooth(Short-range radio signal - wireless networking for devices)
- UMTS/GPRS(Packet Oriented Mobile Telephony Data Services)
- GSM (SMS) (Circuit Switched Mobile Telephony Data Services)
- GPS (Satellite based location Information)

The survey was answered by a valid total of 294 businesses. The response rate for this add-on equals 3%. The allocation of the sample in terms of size and sector (see below) resembles the Swiss market structure representatively. The data set has a certainty of 95% with a

confidence interval of $\pm 7.66\%$.

- 51.0 % were classified as small and medium and
- 33.7 % as big companies (15.3 % did not answer) [5].
- 40.1 % qualified as service and
- 51.4 % of the companies qualified as production or trading companies (8.5 % did not answer) [6].

The result of the study will be presented next.

Current Usage of Mobile Services

In the first part of the survey, businesses were asked to state whether they were currently using Mobile Data Services, and if so, which kind of services. The answers from the 294 businesses are converted to percentages.

The descriptive results for Services Type I are presented in Fig. 1 The data for Services Type I suggests, that, with the exception of

Figure 1: Current Usage of Mobile Services Type I in percentage (operational effectiveness)

- YES
- NO
- no answer

<i>Mobile Services Type I, currently in use (N=294)</i>			
Technologie	YES	NO	<i>did not answer</i>
WLAN	28.6	62.6	8.8
Bluetooth	19.7	70.4	9.9
UMTS/GPRS	25.9	63.6	10.5
GSM	62.6	31.6	5.8
GPS	19.0	69.4	11.6

Figure 2: Current Usage of Mobile Services Type II in percentage (customer interaction)

YES
 NO
 no answer

Technologie	YES	NO	did not answer
WLAN	12.2	76.2	11.6
Bluetooth	4.4	82.7	12.9
UMTS/GPRS	12.9	74.1	12.9
GSM	39.8	50.0	10.2
GPS	8.8	77.2	13.9

Figure 3: Planned Investment in Mobile Services Type I in Percentage and Investment Confidence Indicator in Absolute Terms (operational effectiveness)

trend, in absolute terms
 YES
 NO
 no answer

Technologie	YES	NO	did not answer	trend
WLAN	30.6	60.2	9.2	1
Bluetooth	12.9	74.8	12.2	-30
UMTS/GPRS	16.7	70.7	12.6	-15
GSM	20.1	68.4	11.6	-21
GPS	13.9	74.1	11.9	-23

GSM based services, about 20-30% of Swiss businesses are currently using some kind of Mobile Data Service.

A rather gloomy picture presents itself when the same question is asked for services Type II in Fig. 2.

It is obvious, that Mobile services, which create a new or improve an existing contact with a customer are much less en vogue. Still, GSM based services are fairly in use but services based on other technologies are only deployed in 4-13% of the questioned companies.

Before questioning the results more closely, the current investment mood will be presented.

Planned Investments in Mobile Services

The second interesting finding results out of the following question: Businesses were asked whether or not they intent to further invest in Mobile Services during the next fiscal year.

Additionally, they were asked, if those investment plans had been revised up- or downwards, in relation to the current fiscal year. Since only some of the 294 companies chose to answer this little delicate question (58-87, depending on the kind of service), a different way to analyze has been chosen. Instead of giving a percentage, which reflects the whole sample, a simple trend indicator is shown, summing up the positive (x=1) or negative (x=-1) decisions to revise, thus representing investment confidence.

It is calculated in the following way:

$$\sum_{i=1}^i x_i$$

While the Investment Confidence Indicator clearly points to a negative direction, there are, when compared to the already deployed services (Fig. 2, page 7) actually more investments planned in WLAN, Bluetooth and UMTS/GPRS services, when. This indicates at least an interest in Mobile Services Type II, even so it starts from a very low base.

Figure 4: Planned Investment in Mobile Services Type II in percentage and Investment Confidence Indicator in Absolute Terms (customer interaction)

trend, in absolute terms
 YES
 NO
 no answer

Technologie	YES	NO	did not answer	trend
WLAN	16.7	71.8	11.6	-13
Bluetooth	6.1	79.3	14.6	-35
UMTS/GPRS	12.9	74.1	12.9	-25
GSM	17.0	70.7	12.2	-14
GPS	6.8	79.9	13.3	-30

Interim Results - Where is the Source of Growth?

When comparing the ambitious forecast of 140% annual growth for mobile commerce between 2002 and 2006 made by EITO (see page 2) and the results from the survey as presented in the last few sections of this paper, one begins to question the positive forecasts. An extraordinary change in demand and business activities is needed to reach the fare stretched goals.

Basically, for a company to achieve a lasting competitive advantage, Mobile Data Services can have two directions of impact [7]. Type I services can support a cost-leadership/price strategy. Unfortunately for this strategy, advantages, as developments in the Internet show, are short lived, since competitors are usually able to obtain the same services on the market, thus rendering the advantage useless. The achieved higher level of competitiveness will eventually diffuse into the entire industry. Market growth for Mobile Services of this Type I are based on clearly communicated cost savings, e.g. by installing a WLAN instead of laying cable in new buildings. Disruptive innovations and the creation of entire new markets are rather less likely. Unfortunately, as the study showed, the European demand on those Mobile Services does not seem to pick up.

Type II services on the other hand, seem to be able to create new markets, satisfying formerly unmet needs and disrupting formerly stable industries. Amazon, ebay and google are probably the best current examples from the Internet nexus. By creating niche markets based on technological advantage or customer satisfaction Type II strategies tend to last and are often the first step to attack the incumbent later on from higher ground. However, in order to implement such success stories, companies need the strategic intent to discover and create the new value chain down to the customer. As the presented survey shows (see page 7) this intention seems to be rather limited to a few companies. The disruptive evolutions needed to achieve a 140% annual growth in the industry seems to be far away.

Barriers to Mobile Services, esp. Type II

To understand what factors are actually hindering mobile growth, exploratory open questions have been included in the survey. Businesses were asked to state the three major factors, which pose as the most important barriers for the creation of mobile services, regardless of the underlying technology? [8]

11 categories were derived from the answers. Next two researchers classified the stated reasons independently. In case of conflicting placements, a third, independent expert opinion was taken into account. Figure 5 portrays the results.

By far the most commonly mentioned reason for the non-implementation of Mobile services were costs; followed by some diffuse non-technical security/trust concern and the inability to either see or communicated the benefits of Mobile Service.

Interestingly, technical problems were mentioned only secondarily. Missing end devices, a reason often heard among ICT companies do not seem to matter. Moreover, legal concerns or the not too bullish economic outlook does do not have much impact.

Figure 5: Barriers to the implementation of Mobile Services (N=157, in absolute terms, multiple answers possible)

The results of this exploratory question suggest, that the major reason not to implement Mobile Service is the inability of business planners to estimate a cost – benefit equation of a service including a security/trust variable. If e.g. marketing planners are not able to calculate or estimate this, they are not able to build a comprehensive business plan, thus effectively blocking the deployment of new and creative mobile services. One possibility to overcome this problem would be to educate business planners on mobile technology so that they can concentrate on two simple questions:

What does my client need (products, services, solutions, improvements)? Which Mobile Technology fits best to deliver those needs?

This scenario could help to change European Mobile Services from a technology push to a demand pull situation, towards a customer-need driven market as demonstrated e.g. by Japanese NTT DoCoMo.

CONCLUSION - EUROPE HAS A LONG WAY TO GO

The presented 2003 results of a Swiss survey on Mobile Services firstly imply, that the bullish outlook on the European Mobile Commerce industry as it is offered not only by private forecasters but also European institution such as EITO is excessively positive. The current usage of mobile services, when compared to the planned investment and current confidence level implies a much bleaker picture – 140% European Compound Annual Growth Rate between 2002 and 2006 seems undeliverable.

Secondly the research shows, that the majority of deployed Mobile Services are of cost cutting nature. The possibility to span and create whole new markets, to upside-down the current industry rules or the attack dormant sectors in an innovative way is rarely used. The research suggests that the likely reason is not of technological nature but the inability to come up with an executable business plan, which takes the benefits, the costs and the emotional state of the customer towards the technology into account.

Europe cannot help tackling those questions in order to overcome the innovation barriers in mobile commerce or its formerly leading position in the mobile world is a thing of the past.

REFERENCE

- [1] Porter M.E. (2001): Strategy and the Internet; in: HBR, March 2001.
- [2] Economist, 26.09.2002, markets & data: http://www.economist.com/markets/PrinterFriendly.cfm?Story_ID=1338194
- [3] Meyer M. (2003): ICT-Security Telekommunikation macht flexible – aber auch verletzlich, SICTA (Swiss Information and Communication Technology Association) Lunch Forum, 19.10.2003, Bern, Switzerland.
- [4] Switzerland Commercial Country Guide FY 2002, the US Commercial Service, US Department of Commerce: <http://www.usatrade.gov/website/ccg.nsf/CCGurl/CCG-SWITZERLAND2002-CH-00552A0C>
- [5] Companies with more than 50 TBD employees are considered big, companies with fewer employees are considered small and medium.
- [6] Companies were categorized using the Swiss Federal Statistical Office official classification in categories: Nomenclature Générale des Activités Economiques (NOGA) which equals the general classification for economic activities in the European Community (NACE).
- [7] The following considerations are based on Porter's assumptions about strategy and competitive advantage in relation to the Internet. As mobile data Services strongly resemble the options created by the Internet plus mobility and location as extra dimensions, the theoretical groundwork will be assimilated.
- [8] Of the 294 businesses in the survey, 157 participated.

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