Location Based Services

Industry Research Whitepaper

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Industry research whitepaper

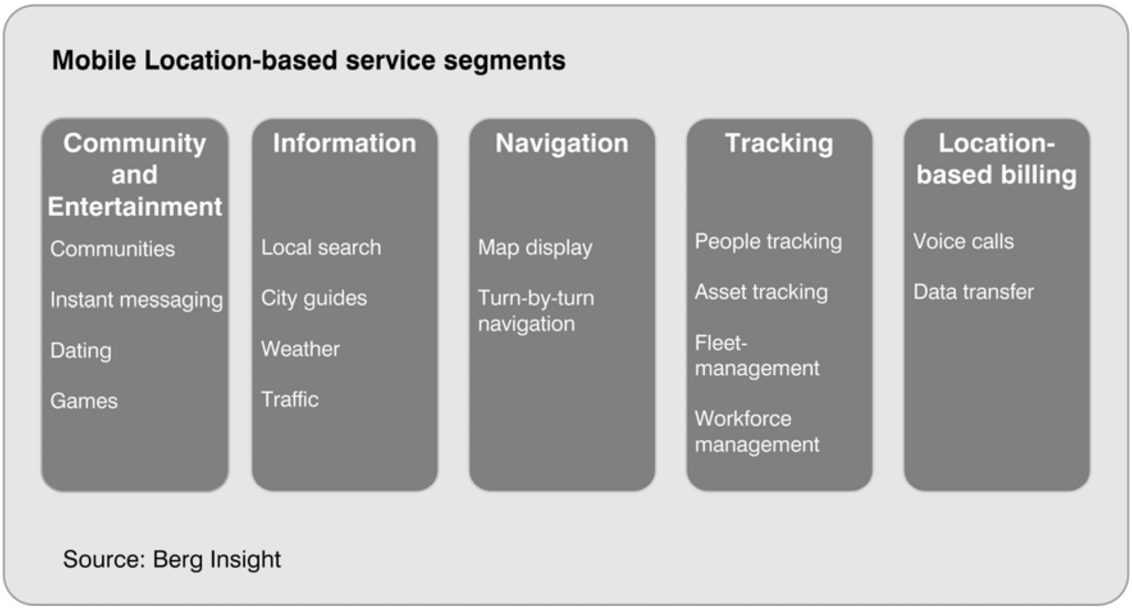
Location based services

Most European mobile network operators are experiencing declining average revenue per user (ARPU) as increasing competition and regulation have resulted in lower prices for voice calls and increasing usage of voice and data services have not yet fully compensated for the decline. Moreover, the subscriber growth potential is limited, as the penetration of mobile phone subscriptions has surpassed 100 percent in most European countries. To increase revenues from non-voice services, network operators increasingly focus on introducing value added services, ranging from instant messaging, e-mail, music, and mobile TV, to more general data transfer and Internet access services. Mobile location-based services are also part of many operators' service portfolios. However, these have generally not yet lived up to the market hype and expectations from the early 2000's when the first services were introduced. However, some services, for instance navigation services and location-based billing plans show much promise.

European mobile location-based services

Today, over 80 percent of the European mobile network operators provide or market some kind of location-based service beyond emergency call location. Many of these services, for example navigation services, target both corporate and consumer customers. There are also a range of services especially targeting the need of corporate customers mainly focuses on operational efficiency and safety of workers. Examples are tracking services such as fleet management, workforce management, and asset tracking. These services are often provided by third party application providers that use wholesale location data or GPS-based solutions to offer services across networks and countries. Some location-based services are purely targeted at consumer customers, for instance location-enhanced dating services and games. Overall, most LBS offered by European network operators can be divided into five broad segments: community and entertainment services, information services, navigation services, tracking services, and location-based billing plans.

Figure 1: Mobile location-based service segments



Community and entertainment services comprise location enabled chat and messaging applications, games, friend-finder services, and other services primarily designed for leisure or social contacts. Information services include local search services like “find the nearest” and other applications that provide localised information based on the user’s position. Navigation services incorporate all applications aimed at giving directions for drivers or pedestrians by displaying maps and instructions on the handset display. Tracking services include applications that are intended to enable remote tracking of people or objects. This segment includes asset tracking and fleet management applications for corporate customers, as well as services marketed towards consumer customers. Location-based billing plans include voice and data transfer services with location dependent tariffs.

Navigation services, ranging from basic map display of current surroundings, to GPS-based turn-by-turn solutions, are the most common location-based services offered by European operators. About 70 percent of the network operators with a LBS-portfolio offer some kind of navigation service. In the region of 65 percent provide location-enabled information services, roughly 50 percent offer tracking services and approximately 25 percent community services. In 2006, the total estimated revenues from these services exceeded € 200 million, of which tracking services accounted for more or less 40 percent, navigation services about 30 percent, information services 20 percent and community and entertainment services close to 10 percent.

Location-based billing plans for voice calls and data services are a good example of services that are *enabled* by location, not *based* on location. Only the promotion, packaging and differentiation of the service are altered by adding location information, not the functionality. Operators in Denmark and Germany were the first to offer voice plans with location dependent tariffs. These plans allow the subscriber to make cheaper calls from predefined zones, for instance the home or a vacation house. Outside the zone, calls are usually charged according to the normal price plan. In 2006, estimated revenues from location-based tariff plans for voice and data services in Europe exceeded € 630 million. These revenues include the monthly subscription for the location-based tariff plan, but exclude possible revenues from voice calls or data transfer beyond that included in the monthly service fee for the service.

Although location-based services have been available in many European countries for several years, overall usage has for several reasons increased slowly. The consumer awareness of what services exist has been low because of little marketing. Other barriers have included poor usability, high prices, lack of relevant content, and for some services, absence of interoperability between service providers within and between countries. Moreover, in contrast to for instance the North American market, very few network operators in Europe have deployed high-accuracy location technology. Since most handsets sold in Europe until now have not been equipped with GPS receivers, services have to rely on external GPS revivers or less accurate network based positioning technologies. For many corporate services, such as fleet management and asset tracking, the requirement of external GPS receivers has not resulted in lower adoption. However, or many consumer services, the extra cost and inconvenience has resulted in slow service uptake.

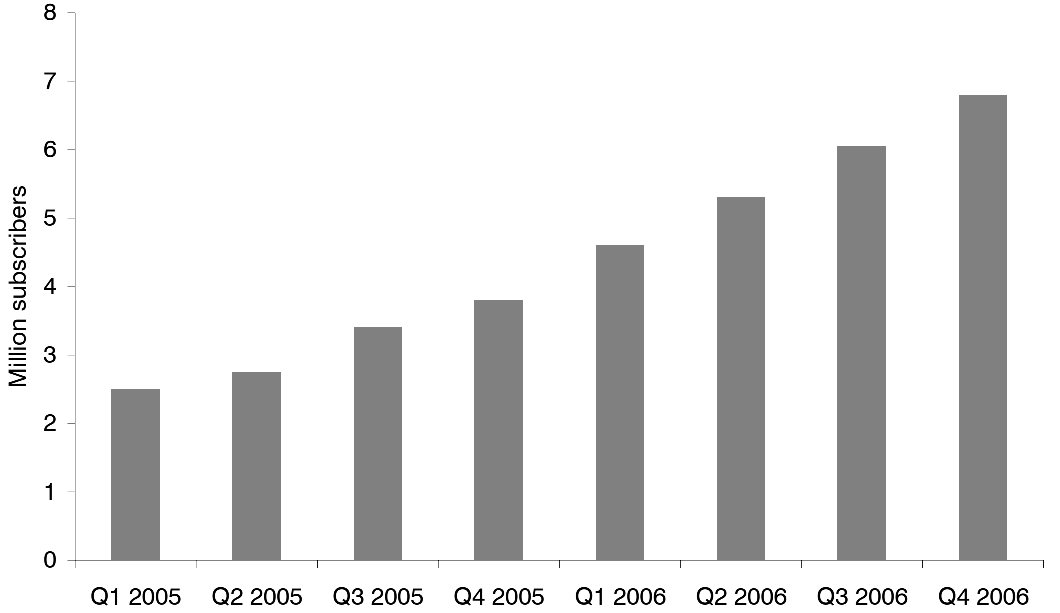
The increasing penetration of GPS-based navigation solution for cars, including in-dash systems and especially Personal Navigation Devices, accompanied by growing marketing efforts by navigation solution providers have led to higher consumer awareness of mobile navigation solutions in particular, but also for LBS in general. Mobile navigation services, especially turn-by-turn navigation services, require high accuracy position data. As more and more GSM and 3G WCDMA handsets with integrated GPS receivers become available, the European navigation market is likely to grow substantially.

The existing network based positioning technologies deployed by most European operators, usually Cell-ID or Enhanced Cell-ID, provide a position accuracy of a few hundred metres to a few kilometres depending on the cell size of the serving network base station. This accuracy is not sufficient for turn-by-turn navigation services or many tracking services, but good enough for many location-based services, such as information and basic map display services. What is more, some services, notably location-based tariff plans, even offer greater customer value when the position accuracy is low. The low position accuracy of Cell-ID enables customers to profit from lower tariff in a much larger geographic area than the home because the service provider cannot accurately determine the exact position of the handset.

Location-based billing plans for voice calls and data services

Mobile network operators in Denmark, Germany, Greece, Portugal and Hungary have launched location-based tariff plans for voice calls and data services to stimulate usage and increase revenues. These plans offer customers lower call rates for calls made from a zone with 2-kilometre radius from the home or other predetermined address. Usually the service includes a fixed-net number for incoming calls and free calls to the mobile voicemail inbox. So far, location-based tariffs have gained widest adoption in Germany, where three out of four network operators offer such plans. In 1999, O_2 became the first German mobile network operator to launch location-based billing plans. Vodafone, the second largest operator in the country, followed in early 2005 and the incumbent, T-Mobile, one year later. At the end of 2006, nearly seven million subscribers had opted for a location-based billing plan from O_2, T-Mobile or Vodafone.

Figure 2: Location-based billing plan customers in Germany, Q1 2005 – Q4 2006



Source: Berg Insight

O_2 Germany

O_2 Germany is part of the O_2 Group, which was acquired by the Spanish Telefónica Group in October 2005. At the end of 2006, the O_2 Group had 35.2 million wireless subscribers in the UK, Ireland, the Isle of Man, Germany and the Czech Republic. In Germany, O_2 is the smallest network operator with 11 million subscribers and a market share at about 12 percent. However, the ARPU of € 24 per month in 2006 was € 3 higher than that of Vodafone in second place. The high ARPU can largely be attributed to the successful Genion location-based billing plans first launched in 1999. Since then, about 3.9 million O_2 customers in Germany, or roughly 71 percent of the current post-paid subscriber base has chosen a Genion subscription. Moreover, approximately one in two new post-paid subscribers opts for a Genion subscription. In the last quarter of 2006, O_2 launched the Genion S, M and L post paid tariff plans. The current pricing can be found in figure 3 below. Genion L is not actually a location-based tariff since the price is valid nationwide.

Besides voice calls, there are also several Internet@home location-based data tariff options available for Genion subscribers. For occasional users, the Internet@home-Pack-S provides Internet access through the O2 3G mobile network for € 0.03 per minute without a fixed monthly cost. For € 10 per month, the Internet@home-Pack-M includes 1,000 MB data within the home zone. There is also an Internet-Pack-L option, including 5,000 MB data per month for € 35 nationwide.

Figure 3: Examples of current O_2 location-based voice plans, May 2007

Examples of O_2 Genion voice tariff options			
	Genion S	Genion M	Genion L
Monthly subscription fee	€ 10	€ 20	€ 35
Price per minute to fixed networks	€ 0.03	Free	Free
Price per minute to the O_2 network	€ 0.19	Free	Free
Price per minute to other mobile networks	€ 0.19	€ 0.19	€ 0.19

Source: O_2

T-Mobile Germany

T-Mobile Deutschland is the leading German mobile network operator. The company is part of the T-Mobile communications business area of the incumbent telecommunications provider Deutsche Telekom. T-Mobile had over 81 million subscribers to mobile services in ten European countries at the end of 2006, including 31.4 million in Germany. T-Mobile@home is a range of voice tariff options featuring location-based billing. The basic option costs € 4.95 per month on top of an existing T-Mobile subscription. Calls made within the home zone to the fixed network in Germany cost € 0.04 per minute, and calls to the voicemail are free of charge. At the end of 2006, over one million customers had signed up to the service that was launched in the beginning of the year.

Figure 4: Examples of T-Mobile location-based billing plans, May 2007

Examples of T-Mobile@home voice tariff options		
Examples of T-Mobile@home voice tariff options		
	Single	Family&Friends
Monthly subscription fee	€ 4.95	
Price per minute to fixed networks	€ 0.04	
Price per minute to the T-Mobile network	According to basic call plan	
Examples of web'n'walk@home data tariff options		
	web'n'walk@home 40	web'n'walk@home 100
Monthly subscription fee	€ 20	€ 30
Included usage	40 hours	100 hours
Additional usage	€ 0.2 per 10 minutes	€ 0.2 per 10 minutes

Source: T-Mobile Deutschland

The Vodafone Group

With a proportionate subscriber base of 198.5 million customers at the end of 2006, the Vodafone Group is one of the largest mobile operator companies in the world. At the time, Vodafone had over 113 million mobile subscribers in 14 European countries. Vodafone is currently focusing on fixed to mobile substitution service to address new revenue sources. Vodafone At Home services, ranging from location-based billing plans to fixed-line DSL offerings, are currently available in Germany, Italy, Portugal, Greece, Hungary and the UK. At the end of 2006, about 2.6 million subscribers had signed up to location-based billing plans in Germany and Italy. In January 2007, Vodafone Germany surpassed two million subscribers to Zuhause services. Vodafone launched "Zuhause" (at home) tariff plans in the beginning of 2005. The basic voice tariff option, "ZuhauseOption", costs € 5 on top of a regular Vodafone mobile subscription, and calls to the fixed network in Germany cost € 0.04 per minute. The "ZuhauseFlatrate" option, which cost an additional € 15, includes unlimited calls to the fixed network and Vodafone mobile network in Germany. Vodafone also offers Zuhause data tariffs for 3G data cards. Similar location-based price plans are also available in Italy and Portugal.

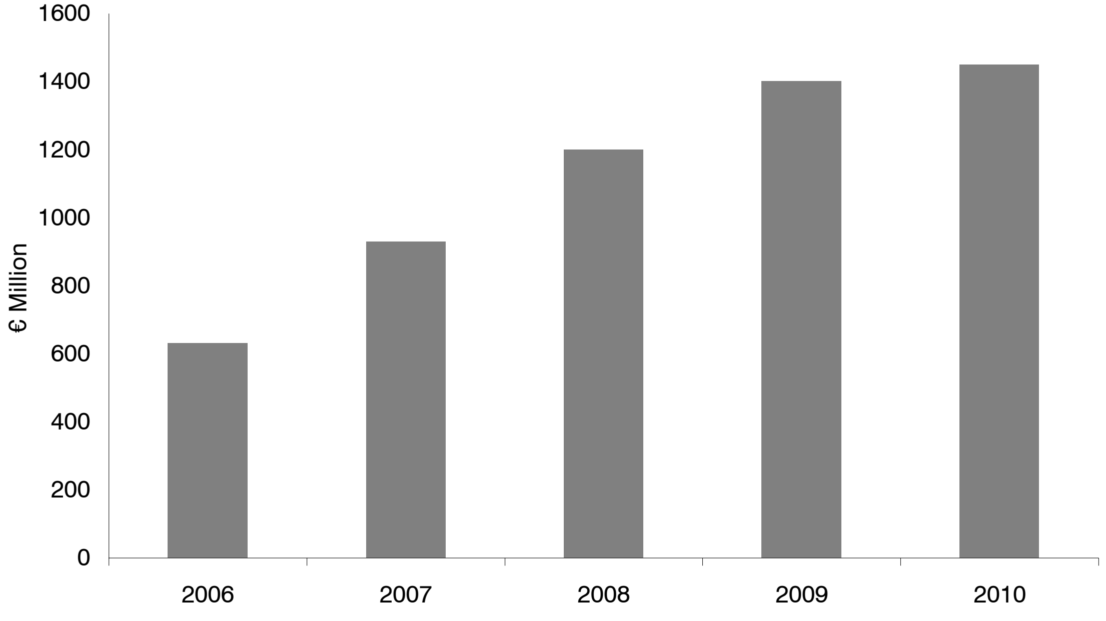
Figure 5: Examples of current Vodafone Zuhause plans, May 2007

Vodafone Zuhause Voice tariff options			
	ZuhauseOption		ZuhauseFlatrate
Monthly subscription fee	€ 5		€ 15
Price to fixed networks	€ 0.04 per minute		Free
Price to the Vodafone network	According to basic call plan		Free
Vodafone Zuhause Data tariff options			
	WebOption	Web Volume	Web Time
Monthly fee	€ 5	€ 29.95	€ 29.95
Included usage	-	5,000 MB	60 hours
Usage beyond included	€ 0.04 / minute	€ 0.26 / MB	€ 0.26 / 10 minutes
Usage outside the home zone	€ 0.19 / minute	€ 1.91 / MB	€ 1.91 / 10 minutes

Source: Vodafone

In 2006, total revenues from monthly charges for the tariff plans, but excluding call minutes and data usage beyond that included in the plan, reached about € 630 million in Europe. As more operators launch similar subscriptions, subscription revenues can well exceed € 1,400 million in 2010. Operators without fixed networks are interested in driving fixed to mobile substitution to increase revenues, whereas operators with fixed network operations may launch services to take advantage of the ongoing trend. However, not all operators in Europe are likely to launch similar services. In several countries, fixed to mobile substitution has already progressed far and a large portion of the subscriber base already makes nearly all voice calls using mobile phones. Moreover, as the price ratio between mobile voice prices and fixed line voice prices decline and flat rate subscriptions are launched in greater number, the appeal for location-based tariffs is likely to decline. Nevertheless, mobile data usage has generally not progressed far in Europe. Thus, most mobile operators still have an untapped opportunity for new revenues from mobile data services, including location-based billing plans.

Figure 6: Revenues from location based voice and data plans, Europe 2006–2010



Source: Berg Insight

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