LBS Research Series 2014

A complete set of five unique reports - offering in-depth analysis and unique insights into the mobile LBS market. This package offers more than 800 pages of excellent reading and comprises the following titles in Berg Insight’s M2M Research Series:

Mobile Navigation Services and Devices
Mobile Location-Based Services
LBS Platforms and Technologies
Location-Based Advertising and Marketing
People Monitoring and Safety Solutions

Please find below the summaries for each of the reports included in this package.
Summary

Executive summary

Navigation solutions for car and pedestrian navigation can be divided into multiple categories. Car manufacturers offer factory installed in-dash navigation systems as standard or optional equipment on a majority of their models sold in developed markets. Drivers that want to add a navigation system to their existing vehicle can choose among numerous aftermarket solutions, including in-dash navigation and infotainment systems, Personal Navigation Devices (PNDs) and navigation apps for handsets. At the end of 2013, there were 180 million dedicated car navigation systems in use globally, including an estimated 70 million factory installed or aftermarket in-dash navigation systems and 110 million PNDs.

Even though the share of new cars fitted with factory installed in-dash navigation systems will grow fast as prices decline, the penetration among vehicles in use will grow slowly. The average age of vehicles in North America and Europe has grown to 9 years. Aftermarket navigation solutions will thus account for a majority of navigation systems in use in the foreseeable future. Since the different solutions are tailored for slightly different use-cases, multiple navigation-capable device solutions can be expected to co-exist in the future. Many consumers are also likely to own and use more than one navigation capable device.

The PND device category is facing increasing competition from low cost in-dash OEM navigation systems, as well as aftermarket products ranging from in-dash systems to navigation apps for smartphones and tablets. Moreover, the penetration rate for PNDs is already high in many markets. Global shipments of PNDs fell 21 percent to 22 million units in 2013, which marks the fourth year of decline from the peak of 40 million units sold in 2008 and 2009. Even though some emerging markets are still showing growth, this will not compensate for the decline in mature markets. Berg Insight forecasts global PND shipments to decline to 10 million units in 2019. However, there are signs that the rapid ASP declines experienced in the past few years are slowing down.
The intense competition in the PND segment has led to market consolidation. Several vendors have exited the market – either in the most competitive markets or altogether, while others have acquired competitors. On a global level, the PND market is now dominated by the three vendors – Garmin, TomTom and MiTAC – that together hold 75 percent market share globally and more than 90 percent market share in Western Europe and North America. These companies have highly integrated operations ranging from hardware and software development to distribution. There are also some vendors that hold strong positions on a local or regional level such as United Navigation in Germany, Prestigio in Eastern Europe and Panasonic in Japan. As the market is declining, the leading PND vendors Garmin, TomTom and MiTAC, as well as the leading white-label PND software developers Elektrobit and NNG are increasingly focusing on developing in-dash navigation systems for the automotive industry.

Navigation services for mobile phones have been available since 2002, but have only become a serious threat to PNDs in the last few years as smartphone performance has improved and device adoption accelerated. The global active installed base of smartphones grew to 1.9 billion units at the end of 2013. Smartphone adoption – i.e. the share of all handsets in use – had reached about 35 percent worldwide, 67 percent in North America and about 58 percent in the EU27+2. Berg Insight estimates that the number of monthly active users of navigation apps for mobile phones was 180 million worldwide at the end of 2013.

The growing usage of mobile navigation apps has largely been driven by broader availability of free services. Starting in late 2009, all the leading smartphone platform and device vendors have introduced free navigation apps for end-users. Apple, Google and Nokia have developed their navigation apps in-house, while other device vendors such as BlackBerry, LG, Samsung and Sony Mobile cooperate with navigation app developers like Appello, Navmii, NDrive, ROUTE 66 and TeleCommunication Systems. Besides handset vendors, app developers also use distribution channels including app stores and mobile operators. As competition from free apps has intensified, app developers are increasingly focusing on freemium business models where the core turn-by-turn navigation service is free and users have the option to purchase additional content and features. Advertising is also gradually becoming a source of revenues for developers with large active user bases.
Summary

Executive summary

Mobile location-based services (LBS) are gradually achieving mainstream market acceptance along with increasing usage of smartphone apps. At the end of 2013, smartphone adoption had reached 67 percent in North America and 58 percent in the EU27+2. Berg Insight estimates that about 50 percent of all mobile subscribers in Europe were frequent users of at least one location-based service at the end of 2013. In North America where adoption of GPS-enabled handsets is still somewhat higher, an estimated 60 percent of all handset users now access location-based services regularly. The increase in usage of LBS and the number of active users has finally resulted in significant revenue growth, especially for leading companies like Google and Facebook. In 2013, total LBS service revenues in the EU 27+2 reached an estimated € 735 million and Berg Insight forecasts LBS revenues in the region to grow to € 2.3 billion by 2018. In North America, revenues are forecasted to grow from almost US$ 1.8 billion in 2013 to nearly US$ 3.8 billion by 2018. The main growth will come from increasing ad revenues in the social networking and local search segments. However, various enterprise and B2B services such as mobile analytics and location-based advertising are also forecasted to grow fast in both Europe and North America in the next few years.

There are many alternative ways to categorise LBS. In this report, LBS are divided into eight service categories based on primary function: mapping and navigation, local search and information, social networking and entertainment, recreation and fitness, family and people locator services, mobile resource management, mobile advertising, as well as other enterprise and B2B services. The social networking and entertainment category is now the largest LBS segment in terms of number of users and revenues. It comprises a broad set of services that can be segmented into general social networking, chat and messaging apps, friendfinders and location-enhanced games. The mobile channel has become a priority for the leading social networks that see rapid growth in access from mobile devices. Many of these services have various forms of location support ranging from sharing geo-tagged content to location sharing and check-in features. Mapping and navigation is the second largest segment in terms of revenues and the third largest in terms of number of active users.
Although the number of active users of mapping and navigation services is still growing, revenues are only increasing slowly as competition from free and low cost services has intensified. More navigation service providers are now focusing on freemium apps where the core navigation service is free and users have the option to purchase additional content and features. Local search and information services is now the second largest LBS category in terms of unique users, driven by the adoption of handsets with improved capabilities and changing user habits. The recreation and fitness segment is also growing in terms of active users and revenues along with current trends of increasing attention to personal wellness. Recreation and fitness apps that turn smartphones into convenient substitutes for GPS devices and sports watches can cater to the needs of many outdoor and sports enthusiasts. Family locator services have been part of mobile operators’ LBS portfolios for many years – especially in the US – but are now facing competition from app developers.

Broader availability and declining costs of smartphones is also enabling increasing adoption of workforce management services that aim to improve operational efficiency for businesses. Many businesses are now adopting more standardised workforce management apps, even large companies that have previously used customised solutions, in order to reduce cost of IT system procurement and maintenance. Mobile advertising and enabling various forms of enterprise and B2B services still remains a focus area for many mobile network operators. Besides working directly with major customers, operators are also exploring opportunities to leverage their assets, for instance by opening their location platforms to third party developers and location aggregators that play an important role as intermediaries between mobile operators and developers. Network-based location data is valuable for developers and third parties that need to locate any device, not only GPS-enabled smartphones. Mobile operators can provide network-based location data for a wide range of services such as fraud management, secure authentication and location-based advertising. Some mobile operators have now started to use anonymous bulk location data to improve the performance of their networks or to support internal marketing campaigns, for instance to upsell mobile broadband services, as well as support external customers in the mobile advertising industry. Location analytics data is also being adopted for diverse purposes such as site selection in the retail industry, as well as for urban planning and traffic monitoring by public authorities and private companies.
Summary

Executive summary

The mobile channel is gradually strengthening its position in the marketing media mix as smartphones are becoming ubiquitous and drive mobile media usage. One of the key developments in mobile advertising is the increasing integration of location-sensitivity, which releases the full potential of the mobile channel. A notable divide can be made between static and real-time location-based advertising (LBA). Targeting by static variables involves using information which is part of user profiles such as place of residence and work. Real-time location targeting instead uses location information which is gathered when an ad is delivered to a mobile user. Such LBA campaigns leverage the same type of technologies to determine user location as other location-based services (LBS). Common methods include GPS, Cell-ID and Wi-Fi positioning which are all based on real-time information.

Targeting by location in combination with other contextual and behavioural segmentation greatly enhances the relevance of mobile advertising. It has been demonstrated that location-targeted ads generate considerably higher returns than conventional mobile advertising. The associated eCPM and CTR levels are several times higher. Berg Insight estimates that the total value of the real-time mobile LBA market worldwide was € 1.2 billion in 2013, representing 14.5 percent of the total mobile ad spend. Growing at a compound annual growth rate of 54.0 percent, the real-time LBA market is forecasted to be worth € 10.7 billion in 2018, corresponding to 38.6 percent of all mobile advertising and marketing. This means that location-based advertising and marketing will represent around 7 percent of digital advertising, or 2 percent of the total global ad spend for all media. Asia-Pacific is estimated to be the largest LBA market in 2018, followed by North America and Europe.

Key drivers for LBA include the growing adoption of both outdoor and indoor location technologies, as well as the increasing consumer acceptance of LBS in general. The market is favoured by the recent entry of a number of major enterprise players. Big-box retailers can leverage LBA to combat both online and physical competitors. LBA further opens up the
mobile channel for new advertisers such as local merchants. The fact that LBA has higher performance has moreover translated into premium rates. The main barriers to adoption are related to the inherently limited reach of LBA which acts as a mental hurdle for advertisers. Education of advertisers and new methods for campaign performance evaluation are thus called for. Privacy issues can further not be ignored, but can be beneficially handled by privacy control options beyond simple opt-in mechanisms. The demand for geo-targeting remains comparably limited, but is bound to increase given the proven results such campaigns generate. The quality of location data is moreover expected to gradually improve.

The LBA value chain is still forming and there are a large number of players involved in the ecosystem. The industry remains fragmented and far from mature. Many different companies are involved, ranging from LBA specialists such as Verve, Placecast and xAd, to LBS players including Intersec, Telenav and Waze, and operators such as AT&T, SFR and the UK joint venture Weve. There is furthermore an abundance of location-aware applications and media which serve geo-targeted ads, with examples such as Foursquare and Shopkick. Other stakeholders include coupons and deals providers including Yowza!! and COUPIES, search solutions such as YP, Hibu and Yelp, and proximity marketing providers like Proxama, NeoMedia and Scanbuy. A number of traditional mobile advertising players are also active in the LBA space, for example Millennial Media, Madvertise and Smaato, as well as major digital and telecom players such as Google, Facebook and Apple. The latter is together with a range of other players pushing for BLE beacon adoption which is expected to take off this year.

There are a number of key takeaways from the current trends in LBA. Geo-targeting improves the performance of mobile marketing and greater shares of ad budgets are devoted to LBA. High-precision real-time geo-targeting is still sparsely used but is expected to get a boost in the near term. Best practices for LBA furthermore include the use of sound opt-in procedures and individual privacy measures, as well as ensuring that location data is combined with additional contextual and behavioural data to increase relevance. Current important high-volume LBA formats include mobile search and SMS campaigns. New developments moreover include real-world retargeting and mobile attribution solutions. The latter can prove the effectiveness of LBA by quantifying the impact on in-store visits and purchases. Berg Insight anticipates that geo-targeting gradually will become ubiquitous and available across the entire mobile channel.
Summary

Executive summary

People monitoring solutions that enable third parties to locate a person were introduced in the late 1990s. Today, most people monitoring solutions rely on GNSS and mobile communication technologies to determine the location of a person and transmit the data to a third party. Technological advancements have enabled dedicated battery powered GPS locator devices suitable for the mass market to become a reality. There are also a vast number of people locator apps that leverage the growing installed base of GPS-enabled smartphones.

Consumer-oriented people locator solutions range from family locator services that provide peace of mind for parents of children and teenagers, to solutions that assist caregivers of seniors and people suffering from various medical conditions. Family locator services that have been part of mobile operators’ LBS portfolios for many years – especially in the US – are now facing competition from free apps. The willingness to pay for operator services is declining as consumers' awareness of free people locator apps has increased significantly in the past few years. Operators are therefore looking for additional revenues from related services, such as device management apps that monitor voice, data and app usage on children’s handsets. Besides family locator services, there are many location sharing services that have similar functionality but focus on slightly different needs and use cases by enabling the user to control exactly when the location is shared, with whom and for how long. There were an estimated 35 million active users of family locator and location sharing apps in Europe and North America at the end of 2013.

Over the years, many companies have launched GPS-based locator devices for parents that want to locate their children and teenagers. The market has been slow to take off, initially due to low awareness, poor performance and high cost. Today, a handful companies have launched locator devices for small children that do not yet use mobile phones. Several of the new devices focus on ease of use and are designed to appeal to children. Another consumer-oriented segment with large potential is pet monitoring. There are more than twice as many
pets in Europe and North America as there are children aged 0–18 years old. Most pet owners are very passionate about their animals and consider them as part of the family. There are now a handful companies that develop GPS-based locators aimed at creating peace of mind for owners of dogs and other larger pets. Many of these locator devices in addition measure the pet’s activity to enable health monitoring. The product category still suffers from lack of awareness among potential customers. The number of active users in Europe and North America reached about 100,000 at the end of 2013.

Several device vendors have started to address the needs of people caring for persons of all ages suffering from various medical conditions such as autism and other cognitive limitations, epilepsy and cardiac problems. Many of these companies are also addressing the market for systems that assist seniors living at home or in care homes. The assistance systems are commonly called telecare systems or social alarms in Europe and Personal Emergency Response Systems (PERS) in the US. Berg Insight estimates that there are already 6.7 million users of the first generation telecare systems in Europe and North America. The addressable market for the next generation mobile telecare systems is therefore large, even though the number of mobile telecare systems in use in Europe and North America had only reached an estimated 200,000 units in Q2-2014.

People locator solutions addressing the needs of business customers are available from companies in industries such as fleet and asset tracking, as well as IT and LBS specialists. Mobile workforce management services aim to improve operational efficiency and focus on managing individual employees. Cost savings can be achieved through better routing of employees as well as more efficient time verification and data collection in the field. Mobile workforce management is frequently part of fleet management solutions for commercial vehicles. However, many companies now adopt more or less standardised workforce management apps and services for smartphones. Industry sectors leading the adoption of workforce management solutions include construction, distribution and field services. Lone worker protection services primarily focus on ensuring the security of employees. Many lone worker protection services rely on dedicated GPS location devices featuring alarm buttons and man down detection sensors. Berg Insight forecasts that the number of users of workforce management and lone worker protection services in Europe and North America will grow from 1.6 million in 2013 to 5.2 million in 2020.
Summary

Executive summary

Mobile location platforms enable three categories of location-based services (LBS): public safety, national security and law enforcement, as well as commercial services. Over 70 percent of all emergency calls are placed from mobile phones and it can often be difficult for callers to convey their location to first responders. Location platforms can not only reduce the time to find the location of the caller, but also enable more efficient handling of simultaneous calls from people reporting the same incident to distinguish single accidents from multiple events. Another use case is public warning systems that locate and send messages to all handsets within a geo-fenced area. Government agencies can use location platforms and data mining systems for infrastructure protection and location-enhanced lawful intercept.

Location technologies can be divided into handset-based technologies (such as GPS) with intelligence mainly in the handset, network-based technologies (for instance Cell-ID, RF Pattern Matching and U-TDOA) with intelligence mainly in the network, as well as hybrid technologies (for instance A-GPS and OTDOA) with intelligence in both the handset and the network. Several new hybrid location technologies are in development, aiming to improve the performance of global navigation satellite systems (GNSS) in difficult environments. In pure indoor environments where GNSS is unavailable, the most common location technologies rely on Wi-Fi location using RF Pattern Matching or multilateration, augmented with data from sensors in the handset such as accelerometer, gyroscope, compass and barometer.

The Federal Communications Commission’s (FCC) E911 mandates for location of mobile emergency calls released in 1996 was a major driver behind the development of location platforms for the North American market. In most parts of the world, governments and telecom regulators are gradually introducing emergency call and lawful intercept regulations that require at least basic location platforms. Although most regulators have not yet imposed any specific location accuracy requirements, more accurate location information may well be demanded in the future as technologies mature and costs decrease. In the US, the FCC has already published proposed updates to its E911 rules that would require delivery of accurate
location information – including vertical location information – for calls placed from indoors. In Europe, as well as in other developed countries such as Japan and South Korea, early deployments of location platforms focused on supporting commercial services due to the lack of a clear mandate for emergency services. In the first deployment phase, lasting from 2000 to 2003, operators invested in platforms and services. Overall, the results did not live up to the expectations in terms of uptake or usage and many operators therefore lost interest in LBS as a mass-market proposition. Mobile advertising and enabling various forms of enterprise and B2B services still remains a focus area for many mobile network operators. Network-based location data can for instance support various forms of fraud management and secure authentication services as well as location analytics services.

A broad set of actors are developing indoor location technologies and platforms that enable use-cases ranging from emergency call location to commercial applications like navigation, customer engagement and analytics. The commercial indoor location market is still at a relatively early stage and has not yet reached mass adoption. The market has suffered from a lack of cross-platform solutions and confusion among venue owners over which positioning technologies to use. Understanding of the value of indoor location and analytics services is now growing among retailers and venue owners, at the same time as uncertainty over which technologies to deploy decreases. However, remaining challenges include how to motivate end-users to download the venue owner’s app, as well as how to bring customer value that encourages continued use of the app on a regular basis.

Berg Insight estimates that over 300 mobile network operators worldwide have deployed at least some type of basic location platform. Additional deployments and updates of existing platforms to support new technologies and features can be expected in most markets in the coming years. The primary driver remains government mandates. Increasing operator interest in advertising and analytics services will also contribute to future growth, especially for passive location platforms and data visualisation tools. However, the market for mobile network location platforms is becoming mature. Berg Insight forecasts total global annual revenues for GMLC/MPC, SMLC/PDE, SUPL A-GNSS and passive location platforms will grow from € 200 million in 2013 at a compound annual growth rate (CAGR) of 6.0 percent to € 300 million in 2020. These revenues comprise licenses for new deployments, as well as capacity and technology upgrades, maintenance and support services for existing platforms.