

Summary

Executive summary

M2M is an abbreviation for machine-to-machine, or technology that supports wired or wireless communication between devices. The abbreviation is also sometimes used to stand for man-to-machine, meaning communication between a man operated device and a machine. Wireless M2M comprises all wireless network technologies, even though the term is generally used in reference to systems connected to cellular networks. This report is exclusively aimed at describing and analyzing wireless M2M based on commonly used wireless wide area network technologies such as GSM/GPRS/EDGE and WCDMA/HSPA.

GSM/GPRS is the leading technology for wide-area wireless M2M in Europe with almost complete market dominance. So far there has been little interest in UMTS/HSPA, due to high component prices, limited coverage and less reliability. Some of the characteristics of HSPA, such as lower latency and radically improved data uplink (HSUPA) are however attractive for many M2M applications – particularly video surveillance, but also for instance fleet management. If multimedia and entertainment is included in future passenger car telematics systems, HSPA could also become attractive within that segment.

There are billions of devices in Europe that could potentially be networked using fixed or wireless technologies. Generally, the cost of connecting a device to a GSM/GPRS network must be justified by the perceived value of the information it communicates. The most obvious cases are remote monitoring of mission critical equipment or tracking of high value assets. This type of applications however tends to be deployed in relatively small volumes. Mass market opportunities only exist in segments where valuable information can be generated by a large population of devices. Examples of this are found in the utility, transportation, security and retail industries. Europe has 345 million energy meters, 254 million motor vehicles, 8 million security alarm systems and 6 million POS-terminals. Altogether these segments represent a potential market of over 600 million wireless M2M connections.

The European wireless M2M market is in a solid growth phase with strong demand across a wide range of industries. Berg Insight estimates that deployments of wireless M2M units, defined as deployed and activated devices, reached 4.1 million units in 2006. Growing at a compound average annual growth rate of 42.9 percent, the market size is expected to reach 24.4 million units by 2011. In the medium term, the annual growth rate will however be more moderate. Not until after 2010 will the anticipated mass-market adoption of telematics by automotive OEMs push growth rates above 30 percent. Other key vertical markets are forecasted to see a more linear growth. Security alarms and POS-terminals are expected to reach their natural saturation point in a relatively near future, whereas the full growth potential for energy meters will remain far from realized even at the end of the period.

Mobile operators are positioning themselves differently in the M2M value chain. Most of them are actively or passively limiting their role to provide network connectivity services. Some such as Orange, Telefónica O₂, Telenor and TeliaSonera are participating directly in the market, whereas others like Vodafone have adopted an indirect approach with partner resellers. Telenor Sweden is arguably the most advanced mobile operator in the area and expects the number of wireless M2M connections expected to exceed regular handsets by 2008. The greater part of the connections derive from the regulation driven deployment of remote meter reading in Sweden that will result in 1 million electricity meters being connected to Telenor's GPRS network.

Several MVNOs and MVNEs have also established themselves as providers of wireless M2M connectivity services and solutions on the European market. Modes of operation range from reselling the network capacity of mobile operators to providing partial or complete network infrastructure via a hired air-interface. Value added resellers like Mobius Networks and Wireless Logic work closely with one or a few mobile operators, while international carriers like Jasper Wireless and Wyles seek to offer global coverage on a single communications platform. Rather than competing with traditional network operators, the wireless M2M communication providers are becoming a major distribution channel for mobile data services in large parts of Europe.

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Telematics is a broad term that may be applied to a wide range of automotive IT solutions. Berg Insight's definition of a car telematics solution in this report is an automatic system designed for passenger cars which incorporate some form of wireless communication via a wide area network. The history of car telematics can be traced back to the first stolen vehicle tracking systems based on RF communication using unlicensed frequency bands, which appeared on the market in the 1980s. Subsequently mobile networks have enabled true online connectivity with two-way communication at the same time as GPS technology has been commoditised to the extent that high-accuracy satellite positioning can be integrated into virtually any device. Today a standard telematics unit features GPRS, GPS and frequently also some kind of interface to the electronics systems of the vehicle. This kind of device may be used as a platform for one or several types of applications.

Several categories of car telematics applications are today offered on a commercial basis. These include eCall and driver assistance, SVR, motor insurance telematics, leasing and rental fleet management and vehicle diagnostics. eCall and driver assistance applications deliver value in the form of improved safety and better convenience when travelling. SVR facilitates recovery of the car in case of theft and frequently entitles the owner to insurance benefits. Motor insurance telematics combines SVR with innovative business models such as PAYD (Pay-As-You-Drive). Leasing and rental fleet management gives owners better control over hired-out vehicles and enables new forms of contracts. Vehicle diagnostics allows car manufacturers, dealers and workshops to improve their service offering to car owners.

The automotive industry has two traditional tracks for new innovations to reach the market. One is the car manufacturers (OEMs) who can offer new functionalities as factory-installed standard or optional features. The other is aftermarket vendors that develop products which can be installed by car-owners regardless of brand or model. In many cases there is a parallel development of both OEM and aftermarket products. Currently the European car telematics

market dominated by aftermarket products with most OEMs showing very limited interest in developing any services by themselves. Outside Europe there is significantly more OEM activity, with GM OnStar in the US being the prime example.

The leading providers of aftermarket vehicle tracking solutions in Europe are a mix of national players with very strong positions on their local markets and pan-European players, operating directly or through resellers on several markets. Companies in the first category include the LoJack distributors TRACKER, Traqueur and Detector in the UK, France and Spain and Central Eastern European players such as AutoGuard, Caesar Satellite and SECAR in Poland, Russia and the Czech Republic. Trafficmaster in the UK also ranks as a significant player on that market. The second category comprises Italy's three leading GSM/GPS telematics providers Cobra, MetaSystem and Viasat which have all expanded into foreign markets through direct representation or distributors. In addition to the companies mentioned above there are numerous players of all sizes offering vehicle tracking products in individual countries.

OEM telematics propositions have so far largely failed to make a significant impression on the European market. Availability is still restricted to a handful of brands and models on selected markets. PSA and BMW are the most active players in the market, bundling telematics services with navigation, audio and Bluetooth handsfree products. Volvo Cars continues to expand its service offering to new European countries even though customer demand has proven weak. The Fiat Group has shown renewed interest in the telematics market with the Tema.Mobility initiative and can be expected to launch new services on the platform when it becomes available. Premium brands such as Porsche, Jaguar and Land Rover are focusing their telematics efforts on OEM SVR solutions.

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Fleet management is an ambiguous term used in reference to a wide range of solutions for different vehicle-related applications. Berg Insight's definition of a fleet management solution is vehicle-based systems that incorporate data logging, satellite positioning and data communication to a backoffice application. The history of fleet management solutions goes back several decades. On-board vehicle computers first emerged in the 1980s and were soon connected to various satellite and terrestrial wireless networks. Today mobile networks can provide ubiquitous online connectivity at a reasonable cost and mobile computing technology delivers very high performance, as well as excellent usability. All of these components combined enable the delivery of vehicle management, transport management, driver management and mobile workforce management applications linking vehicles and enterprise IT systems. Furthermore the same technology platform can also be used for electronic toll collection.

Berg Insight is of the opinion that the European fleet management market has entered a period of solid growth that will last for several years to come. There is a general sentiment of optimism in the industry, underpinned by increasing awareness of the benefits with telematics among fleet owners. With penetration coming from a low level it will take considerable time before the market reaches a point of saturation. Currently, Berg Insight estimates that nearly 30,000 European businesses with more than 50 employees – over 12.5 percent of the total – now using the technology on at least parts of their vehicle fleets. This means that fleet management has now entered the early majority stage of the innovation adoption curve among large businesses. Ultimately Berg Insight expects that virtually all new commercial vehicles sold will be equipped with some form of mobile network connectivity.

Approximately 27.4 million commercial vehicles are owned by enterprises in Europe, with another 1.4 million vehicles being owned by public entities. About 20 percent of the light commercial vehicles and 5 percent of the medium and heavy trucks are in private ownership, which includes vehicles owned by private persons but used for business purposes. Altogether enterprises and public entities own approximately about 19.9 million light commercial vehicles, 6.8 million trucks and 0.7 million buses and coaches in Europe. Furthermore Berg Insight estimates that there are about 2.5 million heavy trailers or semi-trailers, 2.0 million construction equipment units and 3.0 million agriculture equipment units. Between 2007 and 2012, Berg Insight forecasts that the penetration rate for fleet management in Europe will increase from 2.8 percent to 11.3 percent at the end of the period.

A diversity of solution providers compete for the top positions on the European fleet management market. Companies range in size from GE Equipment Services – a part of one of the world's largest corporations – to GPS-Buddy, a start-up company thriving on a partnership with GPS product vendor Garmin. Leading technology companies like Qualcomm and TomTom are also active market players, as well as the infrastructure group Abertis through its French motorway operator Sanef's subsidiary Masternaut. Cybit, Minorplanet and Navman Wireless have emerged as leaders from the advanced UK market, while Transics and Punch Telematix originate from Belgium. Two South African companies – Digicore and TeliMatrix/OmniBridge (best know for the VDO Fleet Manager range) – have also risen to prominent market positions backed by a strong domestic market and international reach. Furthermore truck OEMs including Mercedes-Benz/Daimler, Volvo Trucks and Scania are significant players in the heavy truck segment.

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Metering is a fundamental business enabler for companies in the utility sector. At the beginning of 2006, there were approximately 246 million electricity meters; 101 million gas meters and 3 million district heating meters in EU23+2. Electricity reaches virtually every household and business in the whole of Europe, while gas is most widely used in the Netherlands, the UK, Italy, Germany, France and Poland. Metering practices are undergoing radical changes in the wake of the liberalisation of the European energy markets. The new situation will require that the utility meters of tomorrow are connected to data communication networks.

Automated meter management (AMM) is a generic term for intelligent metering services based on two-way data communication. AMM could be considered as the third generation of metering technology. Manually read meters have been around since the advent of the utility industry in the late 19th century. Over the last three decades, automated meter reading (AMR) based on one-way or two-way communication has evolved, particularly in the US where radio-based AMR is widely used. AMM broadens the scope of AMR beyond just meter readings with additional features enabled by two-way real-time data communication.

There are numerous drivers, as well as barriers, which influence the developments on the European AMM market. Macroeconomic factors such as energy consumption patterns and tax policies play a major role. The regulatory and competitive environment in each country is also important for regional markets. Technology development is a fourth factor influencing market developments. Electricity prices and electricity consumption levels are strong factors influencing whether AMM is deployed or not in different markets. The European countries with the highest market activity are those with the highest electricity consumption per household – Norway, Sweden and Finland, and those with the highest electricity retail prices – Denmark, the Netherlands and Italy.

Northern Europe became the hotspot for AMM in Europe in 2003 when Sweden announced the decision to require monthly readings of all electricity meters by 2009. Soon activities spread to the other Nordic countries. Vattenfall, Fortum and E.ON decided to deploy AMM in Finland as well as in Sweden, as the leading industry players in both countries at the time. Developments in Denmark took off in 2004 with several ambitious projects being announced by the country's largest utilities. Norway has taken a more cautious stance, but in June 2007 the Norwegian energy authority NVE declared that it would recommend new legislation requiring smart meters to take effect in 2013. As of August 2007, almost all of the DSOs in Sweden had signed contracts for AMM solutions. In Finland and Denmark, the share of metering points under contract was 23 percent and 15 percent respectively. Norway was lagging behind with just 6 percent. Altogether contracts for nearly 8 million smart meters are still open in the Nordic region.

Energy market reforms and growing public interest in energy conservation has also set the Western European market for AMM-solutions in motion. While deployments in Italy are nearing completion, other countries are becoming increasingly active. The Netherlands is set to follow the Swedish example and introduce legislation requiring smart metering by the mid 2010s. Governments in Austria, Ireland, Spain and the UK are also encouraging AMM in various ways. At the same time the market is driven forward by the initiatives of leading energy industry players which are increasingly confident that advanced metering technology is needed to improve efficiency. In August 2007, large-scale deployments of AMM had been announced by Enel, ACEA, AEM-Torino and ASM Brescia in Italy, Endesa and Enel Viesgo in Spain, LINZ STROM in Austria, as well as Oxxio and Nuon in the Netherlands.