Machina Research

White Paper

The Global M2M Market in 2013

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Introduction: what is M2M?

Machine-to-Machine (M2M) is becoming an increasingly important feature in the telecoms and IT landscape. This White Paper draws on Machina Research's extensive knowledge of the M2M space to provide a guide to how we see the M2M market evolving in 2013 and beyond.

At its most basic level M2M relates to connecting remote sensing, monitoring and actuating devices. However, it is about much more than that. Specifically it concerns enabling new business models and processes through the application of connectivity. The addition of this connectivity can provide a diverse range of benefits:

- **Increase IT efficiency for business and government.** Public and private sector organisations can gain significantly in terms of automated business process management, enterprise resource planning (ERP) and streamlining of customer relationship management (CRM) processes.
- **Help products gain or maintain a competitive edge.** Connectivity can facilitate the addition of new features to products and services. For instance a consumer electronics equipment manufacturer can add a cloud storage solution for a camera, or an insurance company can offer a real-time usage-based insurance solution. The opportunities are endless.
- **Enabling companies to comply with regulation.** Certain national and multi-national (i.e. EU) regulation requires either explicitly (e.g. eCall) or implicitly (e.g. regular utility meter reading) some form of connectivity. These regulated applications provide the strongest growth push for M2M in the next 2-3 years.
- **Saving the planet.** M2M is concerned with the real-time dynamic management of existing processes. This typically allows the processes to work more efficiently. Take, for instance, car parking. Implementing a managed parking system utilising M2M can reduce the amount of time spent by drivers looking for a space, thus reducing carbon footprint.

With these opportunities in mind, this White Paper looks at how large the growth opportunity might be, what are the key issues defining the M2M market today and what is the prognosis for 2013.

About the Author

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The Global M2M Market: A USD1.2 trillion opportunity

Machina Research maintains the industry leading set of granular M2M market forecasts. In November 2012 we published our annual global forecast update on the total M2M market opportunity. This section provides the highlights of the research.

By 2022 there will be 18 billion M2M connections globally, up from approximately 2 billion today (as illustrated in Figure 1), an annual growth rate of 22%. Today approximately 23% of connected devices can be categorised as M2M, a figure that will grow to 61% in 2022.

The biggest sector in 2022 will be intelligent buildings with 37% of all connections, dominated by heating, ventilation and air-conditioning (HVAC) and security systems. Accounting for 32% of connections, the second biggest is consumer electronics, including games consoles, music players, cameras and white goods. These are followed by utilities (10%) and automotive (8%). Short-range technologies will dominate M2M, accounting for 73% of connections in 2022.

Cellular technologies will grow from 146 million devices at the end of 2011 to 2.6 billion at the end of 2022. Today M2M accounts for only around 2% of cellular connections. By 2022 it will account for 22%. Today, of course, M2M is dominated by 2G, in particular GPRS. By 2022 3G and LTE will between them account for almost 90% of connections, driven by requirements for higher bandwidth applications and demand for technology future-proofing.

Figure 1: Global M2M connections 2011-22 by technology [Source: Machina Research, 2012]
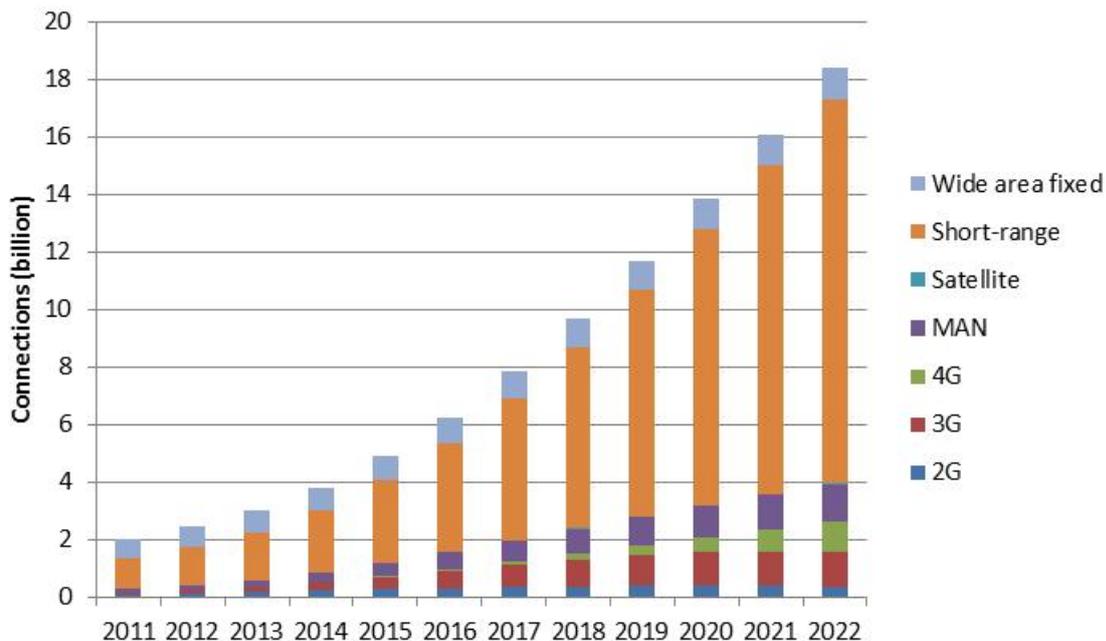
Total global M2M revenue will be USD1.2 trillion in 2022, up from USD200 billion today. Approximately 1/3 of M2M revenue is accounted for services, and 2/3 devices and installation. Service revenue is dominated by "Service Wrap", i.e. the actual service facilitated by the M2M connectivity. Only around 10% (USD39 billion) of the revenue comes from the connectivity and associated services. This connectivity services revenue is dominated by the service enablement platform, with only around USD9.5 billion accounted for by the actual provision of connectivity (see Figure 2).

Figure 2: Global M2M connectivity revenue, 2022 [Source: Machina Research, 2012]
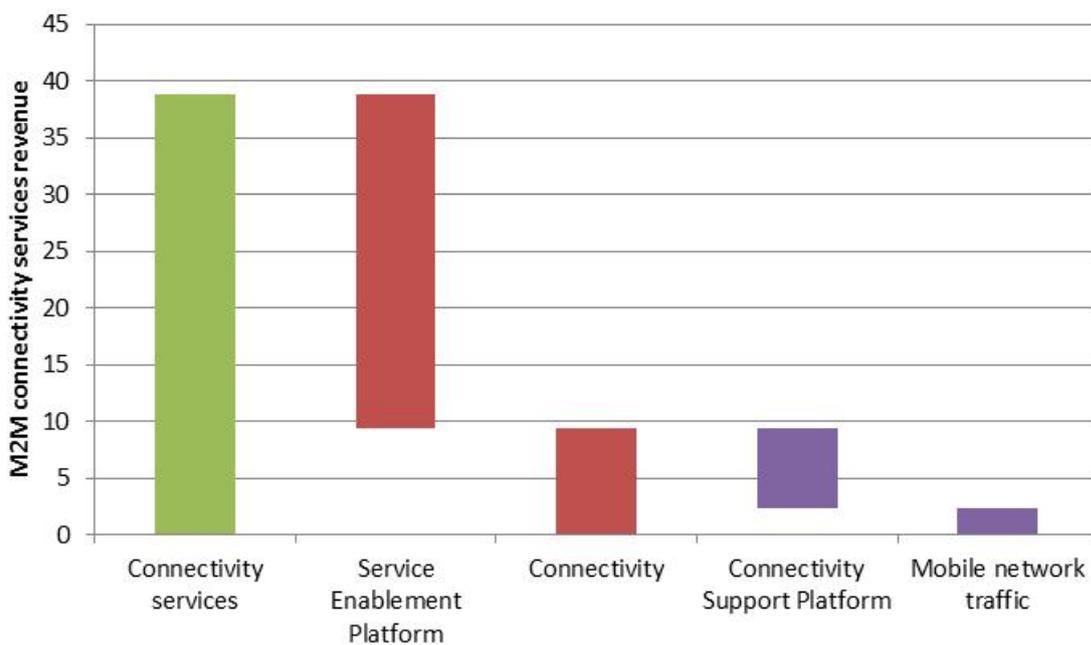
China and the US will be the biggest global M2M markets in 2022. The US will account for 20% of revenue and 19% of connections, while the equivalent figures for China are 17% and 20%. The next biggest markets are Japan, Germany and Russia.

In terms of traffic, there is little concern that M2M devices will over-run operator networks. M2M accounts for around 2% of cellular traffic today, falling below 1% in 2022. Growth in M2M traffic will be dwarfed by growth in mobile broadband data traffic.

Any reader wishing to get further information on the Machina Research global M2M forecasts should check the webinar that we delivered on the subject in November 2012. For a full replay please visit www.machinaresearch.com/webinarnov12.html

Key industry issues in M2M

The M2M market is in a state of flux. Across the entirety of the value chain fundamental change is occurring in how different players do business. The vast majority of these changes are positive and have the net effect of improving the M2M ecosystem, but nevertheless it is critical that different players understand the impact on their business. This section outlines just a few of the changes that are occurring presently.

Modules/devices

The cost of connectivity modules within the M2M device is naturally critical to the adoption of M2M. Prices have been in perpetual decline as the scale of the market grows. However, recent years have focused a lot of attention on exactly the speed with which prices will fall. The dominance of GSM/GPRS modules is increasingly challenged by 3G due to requirements for increased bandwidth and the need to future-proof new deployments (see number 8 in the "What's in store for 2013?" below). This fragmentation has the potential to limit the decline in 2G module costs, albeit with a consequential faster fall in 3G costs. It could be that the ultimate convergence on LTE will provide a much greater scale, pulling prices down further. The other key influence on price comes from the supply side. As the scale of the opportunity grows it becomes increasingly interesting to manufacturers such as Huawei and ZTE who seek to apply scale to the market and have the potential to drive prices down considerably, as they did in the USB mobile broadband dongle market from 2007 onwards.

Other than cost, the main area in which the 'device' is evolving is with respect to a switch from physical SIM cards to embedded component SIMs (eUICC) and eventually softSIMs (see number 4 in the "What's in store for 2013?", below).

Modules/ devices	Networks	Service providers	Customer/end user
• Falling price points • More vendor competition • SIM to embedded • Short range vs WAN	• Technology rationalisation • New arrivals • Standardisation (e.g. OneM2M) • Pressure to minimise costs	• Roles in the value chain • SIMs/IMSIs/ roaming • Software platforms • Global alliances	• Changing demands/ expectations • National vs global • Privacy & security

Networks and technologies

There is a divergence in approaches to rationalising cellular technologies. While it is generally recognised that it makes little sense for MNOs to support three RANs (typically GSM/GPRS/EDGE, W-

CDMA/HSPA, and LTE), there is little consensus over the pace of change. AT&T has made its decision, but others have yet to make more than a commitment to maintain 2G to the end of the decade. Some MNOs are even considering refarming 3G, rather than 2G. All this occurs at a time when customers require certainty about technology choices so they can be sure they aren't backing the wrong horse. See number 8 in the "What's in store for 2013?" section below.

It is also by no means certain that cellular networks represent the only option for M2M connectivity. There are a number of new, and not-so-new alternatives, including White Space, DSRC (Dedicated Short Range Communications), Mesh networks of various types, and powerline communications (PLC, both in-building and wide area).

Another area cutting across all aspects of technology is standardisation. Several different bodies are trying to build M2M standards including ETSI and the ITU . The challenge here for MNOs is what the standards should include and whether they should really wait for standards when faced with potential rivals who may not, such as Google and Apple.

Operators and service providers

The last two years has seen a noticeable increase in jockeying for position in the value chain as different players seek to expand their position. Most noticeable has been MNOs interest in directly addressing customers, bypassing the traditional M2M service providers (although the latter do have a major role to play). We note that mobile network operators are increasingly keen to strengthen their position in vertical sectors, for instance through acquisition, such as the purchase of Hughes Telematics by Verizon in July 2012, or through strategic alliances such as Telefonica with fleet management specialists Masternaut in September 2011.

At the same time as MNOs engage in vertical integration we also expect them to move in the direction of more horizontal integration. This is unlikely to take the form of direct M&A between MNOs, and if it does it is hard to envisage that M2M will be a major driver. It instead takes the form of more alliances between MNOs. We have already seen a number of these emerge. See number 1 in our "What's in store for 2013?" section for more details.

Customers

Jockeying for position in the value chain is not limited to MNOs and service providers. Another trend we expect to see materialising is a more active role being taken by the customers themselves. It is conceivable that major users of M2M services could be willing to adopt more of a role as their own service provider. There are a number of mobile virtual network enablers (MVNEs) that are able to support automotive OEMs or utilities wanting to effectively establish themselves as MVNOs.

Customers are also becoming more sophisticated in terms of their demands. More and more are demanding multi-national deals with SLAs and greater requirements for fault resolution. Dealing with these requirements through traditional roaming arrangements will be increasingly difficult for MNOs who will have to start looking to build stronger ties with other MNOs.

Furthermore the users of M2M connectivity are becoming more adept at identifying and taking advantage of the benefits delivered by M2M in terms of, for example, enterprise resource planning (ERP), of which there are many.

What's in store for 2013 in M2M?

Every year Machina Research makes its predictions about what the coming year holds in the world of machine-to-machine and the internet of things. Here are our predictions for the big developments in 2013.

1. **Operator alliances will expand and their roles become clearer.** To support global M2M offerings MNOs are increasingly forming into alliances. The most prominent currently are Vodafone with its Partner markets, and two groupings that emerged during 2012: the Global M2M Association (Deutsche Telekom, Orange and Telia Sonera) and the grouping around the Jasper Wireless platform (including NTT DOCOMO and Telefonica), the "J-7". During 2013 we expect a lot more operators will join these emerging alliances and that the roles of these organisations will become a lot more apparent, e.g. with joint bidding, IMSI-swapping (see below), and SLAs.

2. **Data analytics seizes the M2M agenda.** Relevant to M2M and also to the wider telecoms market is data analytics, or so-called "big data". During 2012 there were a few tentative moves in this direction such as Telefonica's Dynamic Insights business unit, but 2013 will see many of the issues crystallise. Machina Research believes that a huge amount of the value of the M2M market lies in the analysis and manipulation of the data generated by diverse sources.

3. **Standards…who cares?** In 2012 there were a lot of initiatives around open standards. M2M is a fragmented field with numerous different technologies, industry-specific standards and a diverse range of stakeholders. As such, it is likely that standardisation in 2013 will achieve modest objectives rather than developing an all-encompassing set of M2M standards. Many companies won't wait for standards.

4. **Programmable SIMs/eUICC will start to take off and several operators won't wait for standardisation.** One area where standards are important and should be finalised in 2013 is eUICC. There is a lot of interest in remote SIM management for M2M and we expect pre-standardisation commercial deployments in 2013. Several issues need to be resolved to see full-scale inter-operator IMSI swapping, not least the Subscription Manager role. During the course of 2013 there will naturally also be a lot of discussion around how the concept of reprogrammable SIMs might affect the wider industry (i.e. handsets and mobile broadband).

5. **Modules will become more fit-for-purpose.** Machina Research believes that the cellular M2M module value chain is not delivering devices optimised for M2M. Effectively the industry is getting over-engineered products appropriate for smartphones or high-spec M2M devices. During 2013 we expect to see a lot more fit-for-purpose M2M devices, driven by two factors: greater volumes of devices and an underwriting of device volumes by MNOs. This will help to drive down the costs of deploying cellular M2M. We will also see an increasing number of M2M devices fitted directly with M2M-oriented chipsets, rather than using a dedicated module.

6. **Module vendors, under more competitive pressure, start to compete with MNOs.** The M2M module market is becoming more competitive, pushing module OEMs to find new ways to

differentiate and compete other than simply cost. During the last year or two we have seen all of the major module vendors (Cinterion/Gemalto, Sierra Wireless and Telit) launch cloud-based device management platforms, with a view to providing end-to-end services for potential users of M2M services. They are in a very good position to provide simple one-stop-shop for devices and connectivity, particularly for smaller contracts. However, it is dangerous for vendors to overstep the mark and start competing directly with their MNO customers.

7. **More M&A in M2M.** The last couple of years have seen a flurry of M&A activity in both software and hardware sectors, including a substantial consolidation in the module sector. What has not happened to date is a serious set of M&A in the services space. The one stand-out example from 2012 was the acquisition by Verizon of Hughes Telematics for USD612 million. There have been a number of interesting acquisitions by MNOs of niche companies with particular expertise, such as AT&T's purchase of Xanboo and Vodafone completing the acquisition of Zellitron. Acquisitions have been the exception rather than the norm in the services sector of M2M: in these straitened times, the focus seems to have been more on partnerships. Machina Research expects many more acquisitions in 2013.

8. **More diversity in RAN technology.** During the next 12 months we expect to see more fragmentation of the radio access market in M2M. The dominance of 2G will be broken. During 2012 we saw the beginning of the end for 2G. AT&T and Verizon Wireless both broke cover this year and announced the switch-off of GSM (2017) and CDMA (2021), respectively. The reasoning is clear: other technologies offer a significantly lower cost-per-bit than 2G. Ultimately, all MNOs will look to refarm their 2G spectrum. We expect more announcements in 2013. Perhaps not in terms of complete 2G switch-off, but certainly continuing substantial refarming. Also, other new technologies are also starting to compete with 2G, for example using white space spectrum.

9. **More focus on delivery and profitability (and verticals).** During 2012 there was a significant ramp-up in M2M business done by mobile network operators. In some cases there was an approach of 'win the deal and hang the expense'. In looking to gain scale some MNOs accepted low, or non-existent, margins on new business. The key to M2M success is efficiency and MNOs will shift their approach to drive out that inefficiency implicit in the win-at-all-costs model. During 2013 MNOs will adopt a more mature approach, focusing on winning business that is profitable and ensuring that solutions work properly and are profitable. We will also see MNOs focus more attention on vertical sectors, with more sector-specific solutions.

10. **Usage-based insurance will take off, particularly in Europe.** Usage based insurance is a market that has flattered to deceive. It is the perennial 'next big thing' of M2M. Machina Research's view is that all is set for a substantial growth in this sector in 2013. In particular, growth in the EU will be stimulated by the European Court of Justice ruling that insurers will no longer be able to take the sex of the applicant into account when setting premiums. Many MNOs are focusing specific attention on this area. Telefonica, for instance, announced an agreement with Generali Seguros in November 2012 to develop a solution . It is not just in Europe that momentum is growing. In the US Allstate and Liberty Mutual now have UBI products, while Ford and State Farm have recently expanded their Drive Safe & Save UBI model based on connectivity from Ford SYNC.