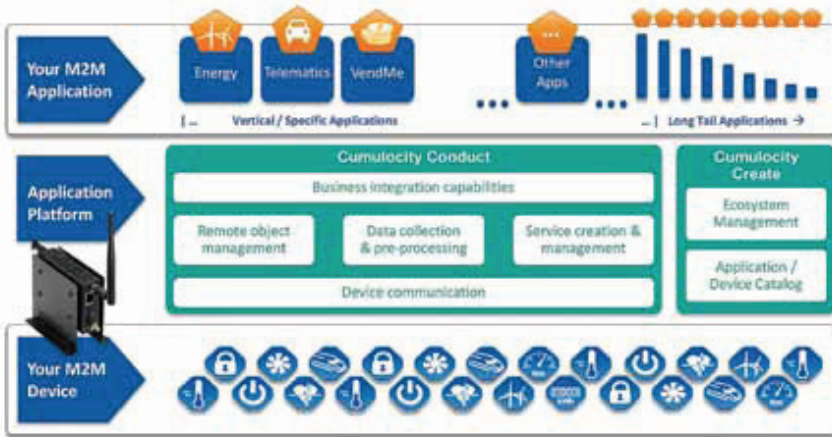# Connecting Everything

**Heralded –and perhaps hyped – for some years, now with more cost-effective technology and solid relationships along the value chain, it looks like M2M's time may have finally arrived. By *G Venkatesh*.**



Kontron

I n a recent edition of the Norwegian technology magazine *Teknisk Ukeblad* (www.tu.no), Dr Steinar Halvorsen at the Intervention Centre of the Rikshospital in Oslo, Norway, talks about monitoring the performance of heart surgery patients remotely via mobile telephony, by implanting an accelerometer-sensor duo in the heart chamber.

An instance of M2M (acronym for machine-to-machine communication) in the healthcare sector – if the heart could be thought of as a machine (it is a pump after all!) on one end, and the human-machine interface (computer terminal or phablet) on the other. If a machine could be defined as anything which reduces human effort, the phablet or computer terminal qualifies as one.

However, M2M is not just about monitoring the "health of machines". Sample this – from next year, cars sold by General Motors in the USA and Canada

will be equipped with fast 4G mobile broadband; improved connections will make it possible for cars to "speak unto each other", in the words of Peter Collins of *The Economist* (April 20, 2013).

Cars can send hazard warnings to each other, receive a constant stream of information on the traffic and weather ahead and even interact with traffic signals as they approach junctions. C2C, in this case – a special case of M2M, if one may. And then we have the driverless (self-driving) cars, pioneered by Google, touted to be a common sight on the roads in the future. While M2M (or C2C, for that matter) has forayed into the use-phase of cars, it has entrenched itself in the upstream automobile manufacturing sector as well.

M2M is also variously referred to as the "Industrial Internet", "Pervasive Internet", the "Internet of Things" (things referring to machines and equipments). It starts with embedding sensors and other advanced instrumentation in an array of machines from the simple (electric motors for instance) to the highly complex (high-end CT scanners, for example).

This allows the collection and analysis of an enormous amount of data (read the feature on Big Data in the April 2013 issue of *CE Asia*), which can be used to improve machine performance, and inevitably the efficiency of the systems and networks that link them.

As mentioned in a General Electric publication titled *Industrial Internet: Pushing the Boundaries of Minds and Machines*, the Big Data itself can become "intelligent", instantly knowing which users it needs to reach.

This publication estimates the monetary savings possible, globally, over a 15-year period in five different industrial sectors, courtesy the adoption of M2M and its concomitant benefits to the industry – energy and material savings, cost reduction, resource optimization, efficiency improvement, productivity gain, proactive maintenance and repair, etc (see Figure 1).

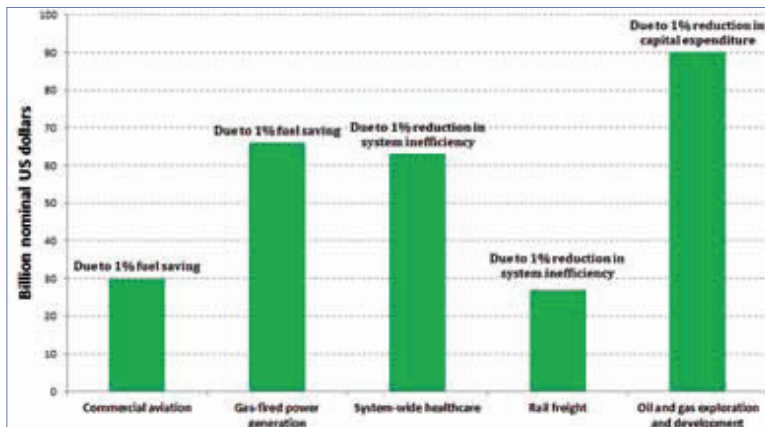Indeed, this decade seems to be the one in which M2M will metamorphose from a caterpillar to a chrysalis.

## The M2M decade

According to a report from Berg Insight, at the end of year-2011, the global number of mobile network connections used for wireless M2M communication had already crossed the 100 million mark. The Asia-Pacific region accounted for 33 percent of this, followed very closely by Europe and North America. And by the end of year-2016, the global subscriber base will have tripled to 360 million, according to the same study.



*Figure 1: Long-term (15-year) savings courtesy the foray of M2M into five different sectors of the global economy (data General Electric)*

By 2025, M2M is likely to be applicable to nearly half of the global economy – an output of approximately US$82 trillion, in other words. A renewed interest in telematics technology from the global automotive industry will serve as a shot in the arm as far as global demand is concerned. The M2M market will also benefit immensely from increasingly advanced service enablement platforms that facilitate the integration of enterprise applications and networked remote devices.

Quite like the automotive sector, the oil & gas industry has benefitted from M2M communication technologies. The number of devices with cellular or satellite connectivity (M2M connectivity in other words), deployed in monitoring and controlling of drills, wells and pipelines in the oil & gas sector, in 2011, was 164,000, says Berg Insight in another report. In five years (2011-2016), the number would have swelled to 435,000 (63 percent being cellular-based and 37 percent satellite based).

The ever-stringent demands on security and efficiency will make wireless M2M, remote automation, control and monitoring indispensable in this sector – which is also slowly expanding with new oil and gas finds (include shale gas) in regions which hitherto were not in the circuit. Players like Schneider Electric, ABB and Honeywell, to name just three, are tapping into the blossoming market for wireless M2M communication and remote monitoring in the oil & gas industry.

While analysts at Berg Insight feel that China has the potential to surpass the USA in terms of number of M2M connections in the near future, India is also touted to emerge as an attractive market for M2M solutions in the years to come, thanks to the increasing demand for remote monitoring and control, governmental initiatives and launch of 3G networks.

Though currently dominated by short-range M2M modules, cellular and satellite variants are likely to have a conspicuously-high CAGR of over 30 percent each during the 2011-2016 period, such that by the end of 2016, the Indian market would have yielded approximately US$99 million to the suppliers of M2M services.

Olivier Beaujard, vice president of market development, Sierra Wireless (a company which enjoys over 34 percent market share in wireless modules for M2M communications, worldwide) tells *CE Asia* that the company's revenues in 2012 were US$397.3 million, of which US$218 million stemmed from the Asia-Pacific region including the two big markets of India and China.

### Increasing applications

In February of this year, it was announced that the telecoms company Vodafone would be providing 50,000 M2M cards to aid the remote control and maintenance of ThyssenKrupp's elevator systems.

"We're delighted that ThyssenKrupp has decided to expand its mobile communication services contract with Vodafone and that we'll be working together even more closely in the future, particularly in the fast-growing machine-to-machine sector," explained Jan Geldmacher, CEO Vodafone Global Enterprise. Vodafone says it has over 250 M2M specialists around the world

⇨

# 'Our vision is to connect every machine'

*Niklas Ekarv*, head of M2M, Asia Pacific, Vodafone, sees a bright future ahead with M2M technology helping companies to develop new business models and automate key processes.

Already the world's largest mobile network provider, the British telecom giant Vodafone is making its presence felt in the M2M world – with 9.7 million connections and over 250 specialists employed. It offers to bring together and manage all the elements of an M2M deployment, from consultancy and project management through to the supply of pre-configured connected terminals, systems integration and data collection and analysis.

As well as working in partnership with the M2M hardware and application suppliers and systems integrators, its own Global M2M Platform provides a central point of control of M2M connections and lets customers centrally activate, suspend and deactivate SIM cards.

*Niklas Ekarv, Vodafone.*

Mahindra Reva recently launched its electric vehicle – the Mahindra e2o, a truly "connected car". Through its partnership with us, the e2o is the first and only Indian car, and among the few worldwide, to include telematics based features that allow for "anytime, anywhere" connectivity between the car and its driver.

Meanwhile, through the provision of mobile voice and data connections, as well as services including mobile device management and M2M cards, Thyssenkrup is today able to remotely control and maintain its industrial products including elevators and intercom systems, thereby increasing the efficiency of the company.

**Q: What's your view on the increase in the number of M2M connections in the next five years?**
**A:** According to Pyramid Research, the number of cellular M2M connections will increase from 143.7 million in 2012 to 478.1 million in 2017. And by 2020, there will be 2.3 billion wireless M2M connections across the globe.

Here at Vodafone, we have over 250 full-time M2M staff, based in all major areas around the world. Our vision is to connect every machine to transform lives and businesses for the better. Bringing together our capabilities – the world's biggest mobile network, outstanding customer experience as well as a long track record of success, we believe that we can help business unleash the transformative potential of machine-to-machine.

**Q: Are the M2M connections provided by Vodafone based on fixed short-term contracts.**
**A:** Contract terms typically range between three to five years on average. When current service level agreements (SLAs) expire, a new one can be signed. However, the terms of the SLA such as connectivity rate may differ from the existing one.

**Q: Which sectors or applications do you see driving the lion's share of the demand in the next few years?**
**A:** We expect the automotive and energy sectors to grow most strongly, followed by consumer electronics and manufacturing, not just globally, but in the Asia Pacific region as well.

Leading companies such as Mahindra Reva and Thyssenkrupp are just some examples of companies that are spearheading integrating M2M connectivity into the core of their businesses in automotive and industrial manufacturing, respectively.

**Q: How can companies justify investment in M2M?**
**A:** The adoption of M2M solutions can enable companies to establish new business models and differentiate themselves from the competition. Increasingly, more manufacturers and solutions providers are looking to connect everyday devices to the internet in order to give customers more personal, safe and fulfilling experiences. The Mahindra Reva and Thyssenkrupp examples show how M2M is helping businesses boost their productivity through the automation of key processes.

**Q: Is Vodafone's M2M business sensitive to the economic cycle?**
**A:** The economic situation does have an impact on various aspects of the M2M market, but not necessarily in a negative way. During a downturn, some customers focus on reducing expenses and as such, are hesitant to make incremental investments in new areas such as M2M solutions.

However, while companies are under pressure to continue reducing costs, there is also an opportunity for M2M as the deployment of these solutions can actually help customers optimise their operations and reduce operational costs.

We believe that we can help business unleash the transformative potential of machine-to-machine.**"**

# 'Transform things into intelligent devices'

**Sierra Wireless is the leading global provider of M2M modules by market share.**
*Olivier Beaujard*, **vice president of market development, talks to** *CE Asia*.

Two-decades-old, Canada head-quartered Sierra Wireless, with a global staff strength of 900, offers a portfolio of wireless machine-to-machine (M2M) devices including 2G, 3G, and 4G embedded modules and gateways that are integrated with secure M2M cloud services. The company serves clients in sectors ranging from energy to transportation to healthcare.

**Q: The definition of M2M is perhaps a bit fuzzy. It can denote communication between two machines but also between a patient's heart and a remote computer, for example. So what does M2M mean to Sierra Wireless?**
**A:** For our purposes, M2M is typically used to describe communications between machines that can (but doesn't always) happen independent of human intervention. In the example of the patient's heart, the M2M communication would be happening between the device that is attached to the patient and monitoring the heart rate, and the remote computer collecting the data to analyse or store it in the patient's records.

Machine-to-machine (M2M) connects "things" to the internet, hence it is also sometimes called Internet of Things. And M2M transforms these things into intelligent devices that exchange real-time information; those devices could communicate either with or without human interaction.

**Q: How active is Sierra in Asia?**
**A:** Sierra Wireless is the leading global provider of wireless modules for M2M communications, with over 34 percent market share worldwide, according to ABI research. Of the company's revenues in 2012 (US$397 million), 55 percent were generated in the APAC region (which includes India and China).

**Q: Could you comment on the revenues from your three offerings – Air Prime, Air Link and Air Vantage?**
**A:** We can provide the numbers only as they are publicly disclosed. Revenues by product as provided in the 2012 annual report: AirPrime (embedded wireless modules): $340,457 million; AirLink (wireless gateways & modems): $46,699 million; AirVantage (M2M cloud) and others: $10,165 million.

**Q: Is everything just rosy and positive about M2M? I would be guess there would be initial hurdles to implementation – security, fear of hacking, etc?**
**A:** Like any new technology, there are both positive elements and

*Olivier Beaujard, Sierra Wireless.*

things to be careful about. Implementation is often difficult and time-consuming, but that situation is improving with integrated solutions like those Sierra Wireless offers, which include on-board processors, software tools and libraries to speed up development, and cloud-based platform for device management and data integration both during and after deployment.

Security and privacy issues have been raised within particular market verticals like smart grid deployments, for example. But industry players across the board, including Sierra Wireless, have been and continue to address these issues, and we don't believe the concerns outweigh the benefits of M2M technology.

Strong levels of security are achieved through end-to-end solutions that are secured from the devices themselves up to the cloud, and this is exactly what we are providing with our range of end-to-end solutions.

**Q: It seems that self-driving cars will hit the road in large numbers in the not-too-distant future. Another M2M application waiting in the wings?**
**A:** Yes, self-driving cars would be another example of an M2M application. But we don't need to wait for self-driving cars to find examples of automotive M2M applications. Sierra Wireless is the leading cellular wireless technology supplier to the automotive industry today. Our technology is being used to connect cars already, enabling telematics applications like geo-tracking, remote diagnostics and troubleshooting, and emergency notification in case of accidents or breakdowns.

> On-board processors, software tools and libraries to speed up development, and cloud-based platform for device management and data integration both during and after deployment.''

# 'Focused on Asia Pacific as driver of business growth'

**Shane Murphy**, vice president & general manager, Kore Wireless Asia Pacific, on how the company plans to ride the M2M wave.

Kore is a specialized provider of GSM, CDMA & satellite network connectivity services for the machine-to-machine (M2M) marketplace, powering M2M solution providers and enterprise customers in over 170 countries. Unlike providers who rely upon "complex, limiting and often expensive international roaming agreements", Kore says it can provide Tier 1, in-country network connectivity on multiple networks for the highest availability.

**Q: What is your outlook for the M2M market?**
**A:** As the largest independent all-digital M2M network provider in the world, Kore has consistently grown at well over 25 percent year-on-year throughout its decade-long history – a clear sign of relentlessness.

The company's business is built on flexible supply contracts that enable our partners to have maximum control over their SIMs (subscriber identity modules) and devices in the field, without being limited by individual fixed term contracts per SIM.

Kore covers most countries in the world in conjunction with our carrier partners and have a physical presence in North America, Australia and Southeast Asia. We are very focused on Asia Pacific as a major driver of business growth over the next five years, and recognize that the recipe for this would be investment and patience.

**Q: From which sectors will the growth be coming from in the next few years?**
**A:** This will vary from country to country and region to region as many are driven by governmental regulations and other push factors. For instance, Smart Metering and Smart Cities will drive a huge amount of growth, but are very dependent on individual government policies for timing and specific focus.

*Shane Murphy, Kore.*

Insurance Telematics is starting to really take off in the USA and Europe, and we expect to see it rising in the Asia-Pacific region very soon. For example, there are 70 million motor scooters in Indonesia; and a scheme that was predicated to meet this market would be very effective.

Meanwhile, mHealth and eHealth will grow apace. However, the health sector is very sensitive to the changes in the insurance reimbursement regimes in each country. We see large uptakes in, say the US and Western Europe, with other countries slowly coming online as particular health problems of note are covered by devices and insurers.

In normal commercial applications, tracking of all types – commercial vehicle, personal and safety – are going to continue their regular growth patterns. This probably will be the widest area of market coverage across all regions, although it may not have the largest overall connection numbers.

Overall, most countries will have some combination of these applications within the next five years. You may say that parts of Asia lag behind today, but it is all about the local economics of any solution. Once the threshold of sustainability is reached, the applications take off and I think that we will see that threshold come very quickly in line with other countries.

**Q: How do economic crises affect the M2M market? Guess it cuts both ways?**
**A:** Yes, you are right. Much of M2M growth is anti-cyclic or independent of the economic cycle because it is driven by specific projects and decisions made at government level – like smart metering for example. But a good part is also commercially-driven and so directly affected by a slowing economy – as in vehicle tracking in the commercial sector or mining.

# 'We expect sales volume to double every 18 months'

**Steve Sanislo** is president and founder of Global Monitoring.

Headquartered on the east coast of the USA, Global Monitoring is a 25-year old outfit which supplies industrial-grade remote monitoring and control systems Monitored equipments at client-sites include pumps, generators, heating-ventilation-and-air-conditioning equipment, safety trailers; and monitored sites include silos, lift stations, computer rooms, farms, laboratories, and reservoirs.

**Q: Could you comment on Global Monitoring's M2M market, in terms of number of installations – globally and in the Asia-Pacific?**

**A:** Global Monitoring has deployed over 10,000 monitoring systems, and Asia Pacific accounts for about 10 percent of our sales volume. All indications point to dramatic growth in the M2M marketplace over the next five years. We expect Global Monitoring's volume to double every 18 months.

In the past, customers viewed

*Steve Sanislo, Global Monitoring.*

M2M systems as an optional technology, making a rapid ROI the primary deployment factor. Today, M2M is seen as a "must-have" technology in which customers will look at a five to 10 year ROI.

**Q: Did the previous economic crisis affect the M2M market adversely?**
**A:** Over the past decade, we've seen little change in demand for our products due to external economic conditions. Some businesses, of course, will impose strict across-the-board spending cuts during economic downturn, which lowers the demand for M2M systems. That is offset by other businesses that use economic downturns as an opportunity to streamline and automate their operations.

**Q: Your thoughts on the relative advantages and shortfalls of cellular-based and satellite-based M2M connections?**
**A:** Unlike cellular communications in which bandwidth, latency and cost tend to be somewhat uniform amongst various providers,

those same factors can vary dramatically from one satellite provider to another. With that in mind, I offer the following comparisons between cellular and satellite connections:
Capabilities: Cellular service provides lower cost, higher bandwidth and lower latency. Satellite service provides better coverage – including coverage over large bodies of water that cannot be served with cellular technology.
Resiliency: Cellular networks are more resilient to in-network equipment problems. Satellite-networks are subject to catastrophic, network-wide failures caused by natural or malicious satellite damage that could require the repositioning of an in-orbit spare or the launch of a replacement satellite.
Disasters: Cellular service is prone to regional failure in areas affected by earthquake, power outage, floods, or terrorism. During such events, satellite connections may be the only way to communicate with a remote site.
For land based installations, cellular service with a fail-over to satellite usually offers the best combination of cost and reliability.

# 'Satellite has moved to the forefront for critical M2M services'

**London-based Inmarsat, with a global network of offices, is a mobile satellite communications provider. *Joel Schroeder,* director, M2M Program, Inmarsat, tells more to *CE Asia*.**

Inmarsat was formed in 1979 to provide safety and other communication services to the maritime community. Today the company owns and operates three constellations of communication satellites, comprising a total of 10 spacecraft. Flying in geosynchronous orbit 36,000 km above the Earth, the satellites are positioned in nine orbital locations to give seamless global coverage.

Inmarsat offers a suite of global machine-to-machine (M2M) services for enabling companies to monitor and manage their remote assets. These services include BGAN M2M, a global, two-way IP data service designed for long-term machine-to-machine management of fixed assets located in remote, unmanned locations.

*Joel Schroeder, Inmarsat.*

**Q: Are satellite-based and cellular-based M2M networks in competition?**
**A:** It is not a case of competition. Satellite and cellular networks should be regarded as complementary when it comes to M2M solutions. While the majority of M2M traffic uses wireline or cellular, satellite networks are playing an ever increasing role, and it is worthwhile to point out some of the advantages of satellite-based solutions.

For example, connectivity to more remote and unmanned locations is possible and vulnerability to extreme environmental conditions is lower. The satellite M2M terminals operate with a high degree of pointing tolerance and thereby the network remains connected even if the antenna moves as much as 30 degrees.

Interruptions to service during peak usage periods are also unheard with satellite-based M2M. Last but definitely not least, the cost of BGAN M2M services are directly competitive to the rest-of-world roaming rates offered by many of the leading mobile network operators – rates on which many of the new global alliances are built.

**Q: Is Inmarsat looking at a relatively smaller share of the M2M market, as cellular-based services are more popular and better-entrenched?**
**A:** Satellite was once regarded as a costly option for back-up and redundancy but this is no longer the case and it has moved to the forefront in terms of extending or, for some critical M2M services, completely replacing terrestrial networks.

With increasing demands for M2M communications services, Inmarsat has been strengthening its M2M portfolio over recent years and this includes new devices and value-added services for remote monitoring and data collection.

**Q: How would you rate Inmarsat's prospects globally and in the Asia-Pacific in the next few years?**
**A:** Inmarsat now offers the broadest M2M satellite portfolio of any L-band satellite operator, including BGAN M2M and IsatData Pro. We are seeing a tremendous opportunity for growth in Asia Pacific and are investing to support this expansion. This is reflected in our most recent acquisition of TC Communications in Australia, which significantly extends our customer service and technical expertise in the region.

The satellite M2M market is predicted to reach US$2.7 billion in 2021 globally. And of this, Asia Pacific will account for seven to 14 percent. Growth is expected to come largely from users in the mining and green energy sectors. We're also seeing opportunities in the Government market, particularly for environmental monitoring and security.

For industries such as energy and mining, we are seeing increasing demand for reliable communications technologies in applications as broad as pipeline monitoring, leak detection and security-related activities. In each area, M2M is the key to driving cost efficiencies across an operation. This trend has not been impacted by the economic environment but has rather been driven by it. We see this set to continue.

# 'Expand presence in utilities, oil & gas, and environmental monitoring'

*Sue Rutherford,* **director of marketing communications, SkyWave Mobile Communications, tells** *CE Asia* **how the company plans to take advantage of the growth of satellite-based2M.**

SkyWave Mobile Communications is a global provider of satellite-based wireless data communications for the machine-to-machine (M2M) market. It has designed, manufactured and shipped more than 600,000 satellite terminals to customers in the transportation, maritime, oil and gas, utilities and government sectors. Using the Inmarsat satellite constellation, the company provides communication and global tracking and monitoring of fixed and mobile assets.

*Sue Rutherford, SkyWave Mobile Communications.*

**Q: How does a satellite-based M2M solution stack up in terms of cost, efficiency, speed and reliability?**
**A:** From a SkyWave satellite-based wireless data M2M communications perspective, it's about payload and latency. SkyWave's IsatData Pro offers a significant increase in payload capacity compared to other satellite-based M2M services in the market, delivering up to 10,000 bytes to the device and up to 6,400 bytes from the device. Other global M2M satellite services currently available offer data connectivity at between 270 and 340 bytes.

For mission critical applications, IsatData Pro can transmit a 100 byte message in less than 15 seconds, or a 1,000 byte message in 45 seconds – ideal for sending information to drivers operating in high-risk areas, or for the effective use of sensors to closely manage remote equipment.

SkyWave also offers a solution that combines the benefits of both satellite/cellular. From a satellite/cellular (dual mode) perspective, it's about augmenting cellular coverage to deliver more ubiquitous and resilient communications. Dual mode offers the best of both worlds and achieves cost effective global coverage.

The use of satellite is desirable when real-time and reliability is critical and cellular coverage is not available, particularly in applications like emergency situations. Operating costs are a consideration for those customers whose vehicles cross international borders where cell roaming charges can become increasingly prohibitive.

**Q: What is the outlook for satellite-based M2M solutions?**
**A:** The M2M satellite market is growing rapidly with high growth in transport and logistics and vehicle telematics, as well as in the application services area. Satellite continues to target "remote users" leveraging the robustness of service and the resilience of L-band network. In the remote monitoring environment, there is little overlap with terrestrial technologies.

**Q: And how does SkyWave plan to take advantage of this growing market?**
**A:** Our plans for expansion include growth in our core transportation markets in Asia-Pacific, the Americas, and Europe with our dual mode satellite/cellular products. We also plan to increase penetration of our dual mode product offerings for logistics applications (versus security base) where the demand for increased data communication is a requirement.

Other initiatives include building and expand a presence for first mover advantage in Utilities and Oil & Gas & Environmental Monitoring vertical market sectors, and creation of an M2M business unit with focus to support other communications technologies and application building blocks. Maintaining and growing our leadership position in Latin America, while expanding growth in Asia-Pacific and in Russia, is also on the agenda.

**Q: How should companies justify investment in M2M?**
**A:** For almost every industry in today's economy, escalating fuel prices continue to put pressure on operations to be more efficient. With operations often stretching far and wide, automated data transmission is essential in order to achieve actionable intelligence and real-time clarity for improved operations.

Likewise, for many monitoring and control applications, the ability to transmit regularly scheduled position reports and one-off texts is all that is needed. Satellite messaging terminals send and receive the equivalent of text messages, which comes at a much more reasonable cost. They provide a fiscally responsible way to automate machine-to-machine (M2M) communications for fleet management, navigation and monitoring.

Satellite M2M technology meets the increasing demand for richer information in remote applications and allows data sharing between diverse operations without the added cost associated with continuous connectivity.

> Satellite is desirable when real-time and reliability is critical and cellular coverage is not available.❞

*Deutsche Telekom and Vodafone are two big telecom players that have made significant forays into the world of M2M.*

and cites a total of 9.7 million M2M connections.

Meanwhile, Deutsche Telekom has entered into a partnership with Munich-headquartered Kontron which will enable the latter to promote its M2M solutions. From fleet management and video surveillance and distributed outdoor signage systems and advertising boards, Kontron hopes to leapfrog and secure quick access into OEMs from these vertical markets, through its venture with the German telecom giant.

For distributed systems requiring cellular network connection, Kontron offers the matching industrial grade nodes to connect the terminal devices to the cloud applications and the Internet-of-Things, through a pre-installed 3G WWAN (wireless wide area network), which can be extended for redundant configurations via a second PCI Express 3G.4G module.

While relative to cellular-based M2M, the satellite-based variant may account for a smaller share of the market, this has not deterred companies like Inmarsat to march onward. IsatData Pro is a jointly-developed service that teams SkyWave Mobile Communications' range of M2M terminals with Inmarsat's global L-band satellite network to offer high payload and low latency L-band satellite store-and-forward service.

It targets a wide range of enhanced M2M applications, including SCADA communications for systems that monitor gas pipelines
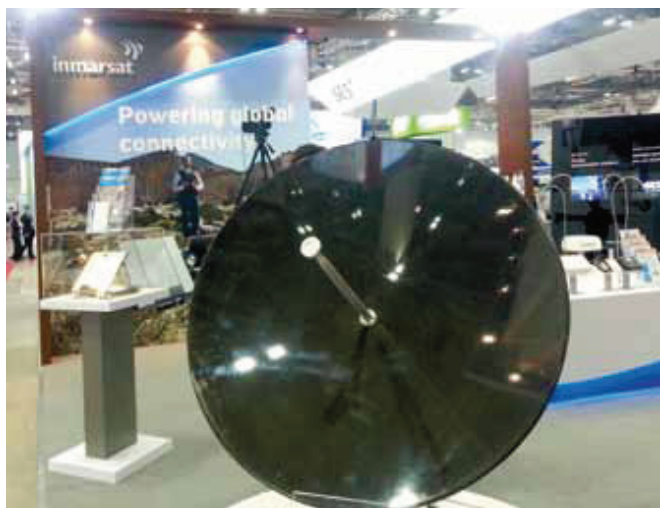
and oil wells, and communications to/from telemetry and tracking devices for transport fleet management systems.

Joel Schroeder, director of the M2M program at Inmarsat says that the satellite M2M market is predicted to reach US$2.7 billion in 2021 globally; of which the Asia Pacific region will account for anywhere between seven to 14 percent.

SkyWave's senior vice president, operations, Dan Poirier, points to satellite-based M2M services becoming more and more important to organizations operating in key sectors such as oil & gas, banking and finance, merchant shipping, commercial fishing, environmental monitoring, utilities, transport and government.

As mentioned earlier, by the end of 2016, the oil & gas sector alone would have about 160,000 satellite-based M2M connections, and SkyWave's Sue Rutherford, director of marketing communications of the company, while dwelling on the advantages of satellite-based M2M versus the cellular-based variant (see interview), informs that satellite meets the increasing demand for richer information in remote applications and allows data sharing between diverse operations without the added cost associated with continuous connectivity.
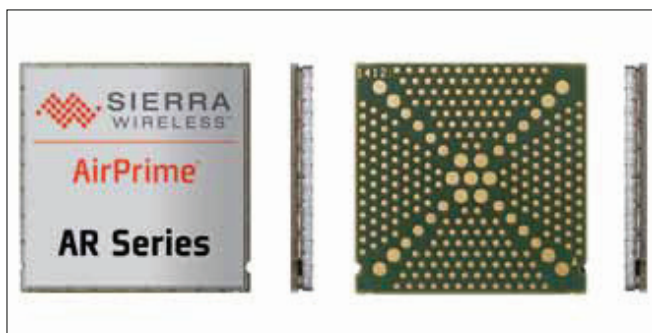
According to Shane Murphy, vice president of M2M network service provider Kore Wireless, much of the growth in the M2M market is independent of the economic cycle. He observes that it is all about when the threshold of sustainability is reached in a country before M2M applications start taking off. In Murphy's opinion, the Insurance Telematics segment, in particular, has a good potential for growth in the Asia-Pacific region, over the next five years.

## What about ROI?

Steve Sanislo, president and founder of US-based Global Monitoring, an industrial-grade remote monitoring and control systems supplier, tells *CE Asia* that many businesses use economic downturns (like the one from which the world is slowly trying to bounce back) as opportunities to streamline and automate their operations; and this is when M2M service providers can make hay. And unlike in the past, M2M is seen as a "must-have" technology.

However, Ben Tucker, lead sales engineer, Digi M2M Solutions, reminds that the return on investment (ROI) is surely a strong consideration for potential end-users when they make decisions as regards the adoption of M2M technologies.

"All effective M2M applications must demonstrate strong benefits in the form of ROI and distinct business efficiencies. The benefits are not just about the communications methodology, but also about the remote sensor, logger and controller that is deployed to monitor physical objects, or in the case of a business, assets.



*Satellite M2M enables connectivity more remote and unmanned locations where environmental conditions may be more extreme.*



*Beyond technology: effective M2M applications should demonstrate strong benefits in the form of ROI and distinct business efficiencies.*

# 'Increasing affordability of M2M devices and services'

*Lakhi Baug*, solution sales manager, M2M, Gemalto, is notably optimistic about the outlook for M2M.

Gemalto's M2M portfolio is enabling solutions across a wide variety of industries, ranging from healthcare, retail services, smart energy, transportation, logistics, and automotive. Its Cinterion M2M modules provide worldwide cellular footprint and high speed data transfer, and a number of value added services provide for the management of M2M solutions.

**Q: Do you concur with recent market surveys that predict a promising future for M2M over the next few years?**
**A:** Gemalto is confident of the health of the M2M sector, propelled by the increasing affordability of M2M devices and services due to improved economies of scale, and the fact that awareness and adoption of M2M technology across industries is increasing. We are already making market inroads into the oil & gas and automotive sectors and looking into areas such as transportation and logistics, as well as smart grids.

For instance, Gemalto is working with UAE's integrated telecommunications service provider Du to deploy M2M solutions that will assist with the management of hard–to-reach oil and gas meters to ensure effective maintenance.

In transport and logistics, M2M technology makes it possible to track down and trace vehicles, goods shipments, employees, and mobile resources, thus improving the efficiency of the entire supply chain. And for smart grids, M2M can make business processes more efficient, productive and cost-effective by adding remote metering capabilities.

**Q: How about prospects for M2M in Asia Pacific?**
**A:** Asia-Pacific is poised to become the largest market for machine-to-machine subscriptions in volume terms. The number of M2M subscribers in the region increased by 64 percent to reach approximately 34.5 million at the end of year 2012, fuelled by massive growth in China that almost doubled its cellular M2M subscriber base to approximately 21 million (according to Berg Insight).

We see a lot of potential in countries like China, India and Indonesia where the government is driving the adoption of smart meters. Another area of growth in several countries including China is the automotive sector both before-market and after-market telematics. Gemalto is well positioned in this region and we are ready to drive the growth of M2M in Asia.

**Q: It all sounds very positive – but what are some of the issues and concerns surrounding adoption of M2M?**
**A:** We are obviously excited about the potential of M2M, but at the same time also cognizant that there are hurdles



*Lakhi Baug, Gemalto.*

to overcome for the technology. Firstly, one of the challenges is that of standards – namely, the industry lacks them. While there are bodies which are coming together to develop some, the current situation means that interoperability among devices is restricted.

Secondly, the pervasive nature of data monitoring and collection provided by M2M may bring up privacy and data security issues – especially as highly-sensitive data is transmitted over a cellular connection. In this aspect, Gemalto has a unique value proposition which we bring to the market – with our heritage in digital security, and our end-to-end offering in M2M ecosystem, we are able to provide a complete security solution and help develop secured systems and devices.

**Q: Your thoughts on the role of M2M in healthcare?**
**A:** We see M2M playing a very important role in the healthcare industry. There are already new mobile health (mHealth) and telemetry monitoring solutions which are using cellular M2M technology and web-based platforms to connect medical devices, aggregate health data and provide a true comprehensive look at patients' well being.

Sensors and devices for blood pressure measurement and weight scales, from mobile ECGs, pedometers and fitness equipment, glucose meters and spirometers to implant monitors can transmit health information via the mobile network into a personal health record from where the patient's condition can be reviewed.

Constant monitoring enables better treatment, and is in fact crucial for management of chronic diseases, from prevention all the way to rehabilitation. To meet the needs of the healthcare industry, our Cinterion product portfolio serves health market requirements.

**Q: With M2M advancing into the future, are we in for a time when several things will not just be connected but fully unmanned? In other words, not even requiring remote human intervention?**
**A:** We believe that there will always be human involvement in the process. A key part of M2M communication is the decoding of information into useful and actionable information. This step will still require a specialist who has the necessary context and experience to make use of the information relayed via M2M.

But, what will happen with the evolution of M2M is that the gathering and transmission of information will become more effective and increase convenience for users. At the same time, new skill-sets and competencies will need to be developed to leverage on benefits of M2M to its fullest.

"So, the question becomes, what happens if this item is not instrumented, monitored or managed? If it is monitored, what happens if the data can only be collected manually, versus automatically on a regular basis? The economy of scale also applies – while it might be easy to monitor a few things, it's far more efficient to implement a system to monitor many things that are widely dispersed," explains Tucker.

He goes on to say that from optimizing service appointments to ensuring that machines are experiencing as much up time as possible, the ROI can be seen in multiple layers of an M2M solution and that ROI also depends heavily on the particulars of a specific use case.

"We work closely with our customers and partners to ensure that the benefits of a given solution are properly quantified and understood. In vending, we've seen companies use M2M to benefit from optimizing pick-up times, servicing machines more efficiently and ensuring that all of the money that goes into the machine makes it back to the company," notes Tucker.

### Look, link, learn...

Niklas Ekarv of Vodafone says that the company's vision is to connect every machine in order to transform lives and businesses. However, as Kore Wireless' Murphy says, the "push factors" would play a key role – governmental regulations being an important one.

SkyWave's Rutherford believes that with operations often stretching far and wide; and likely to be more so in the years to come, automated data transmission is essential in order to
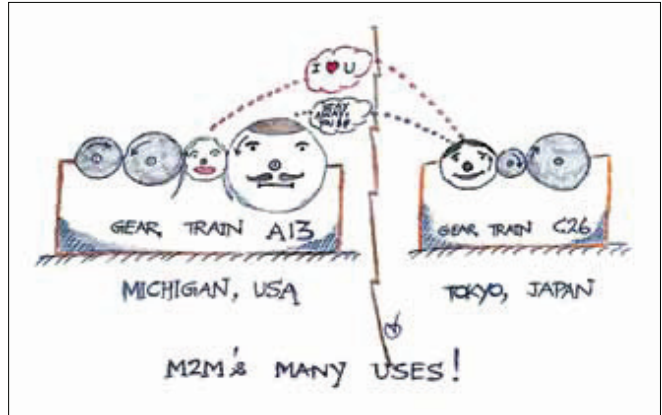


*So, let machines talk unto each other...*

achieve actionable intelligence and real-time clarity for improved operations; and M2M would thus almost hold a pride of place in the scheme of things.

This is what will define several activities in the anthroposphere in the years to come: networks and connections will matter a lot – be they B2B, B2C, C2C or M2M; and speed, safety, security will be the three "Ss", absolutely necessary for a fourth – survival, and indispensable for a fifth – success.

So, let machines "talk unto each other"…and by doing so, make life and work more comfortable for men and women, who in turn would find more time to "talk unto each other". **CEA**