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The Telit m2m Magazine

Experts' views and case studies from vertical segments:

Telit® wireless solutions
Making machines talk.®

07|12 CONTENT

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+++ +++ +++ NEWS

Telit launches new wireless module family xE910, enabling global ubiquity on all cellular platforms, interchangeable on any regional network +++ Telit announces high-performance GPS|Glonass module for navigation devices +++ Telit and Telefónica launch best-in-class services for all M2M solutions providers +++ Telit Selects Melper, M2M Application Design and Solution Provider, as its Korea Competence Center +++ Telit M2M technology enables Alta Industrial Automation LTD.'s out-of-the-box remote monitoring solutions +++ Telit enters into a strategic alliance with Calixto Systems +++ Telit facilitates First-of-its-Kind 'Smart Farm' – to monitor and control cold climate greenhouses remotely via their smart phone – in South Korea +++ Telit acquires Navman Wireless OEM Solutions +++ HE863-NAD and HE863-NAR modules have earned certification on the AT&T network +++ Telit and LifeSafer make public safety a priority with wireless breath alcohol device +++ Telit m2m modules empower Ground Lab's 'smart' social responsibility +++ Telit presents brand new, energy efficient, Wireless M-Bus Module for 169 MHz +++ Telit and Intoxalock® keep drunk drivers off the road with wireless breath alcohol device +++ Connected World Magazine's Value Chain Award: ASLH, Telefónica O2 and Telit honored in energy category +++ debut of the Telit DE910-DUAL module, allowing M2M developers to leverage the strength of 3G CDMA networks for applications +++ Telit's CC864-DUAL and GC864-QUAD V2 M2M modules will provide cellular capabilities for SemaConnect's ChargePro +++

Enrico Testa
Chairman of the Board
Telit Communications PLC

Dear Reader,

The economic climate continues to be dominated by uncertainty which is contributing to a slowdown in growth and investments. There is no doubt that we are entering into a protracted phase of transition, at the end of which the world will be very different from the one we are leaving behind.

However at Telit, we are certain of one thing. That technological innovation and the push to increase productivity of both work-force and services will continue to be key drivers and crucial elements of growth. Telit is very much surrounded by this great trend that is shaping the new millennium. The "Internet of things" is increasing, day by day, its ability to reach new people and to offer new services, while the barriers to its progress, be they in terms of cost or reliability are falling. The recent agreement between Telit and Telefónica will make life easier for a great number of users of our products and services and will, for the first time, put one of the largest telephone companies in the world center stage. Customers of all our applications will benefit from the enormous network of new support for both smartphones and tablets.

Telit continues growing, both organically and through potential acquisitions. In just a few years, we have created a major player of global dimensions. Our venture is no longer a gamble, but rather a strong certainty.

As President of the Board of Directors, I would like to thank the Managing Director and all of the company's managers for their achievements, and express my gratitude to all our customers for their loyalty to us.

Chicco Testa

TELIT IN THE FAST LANE.

Oozi Cats, *CEO Telit Communications PLC*

>> The new, comprehensive edition of Telit's magazine is now available. I am pleased to welcome you to the seventh edition of telit2market.

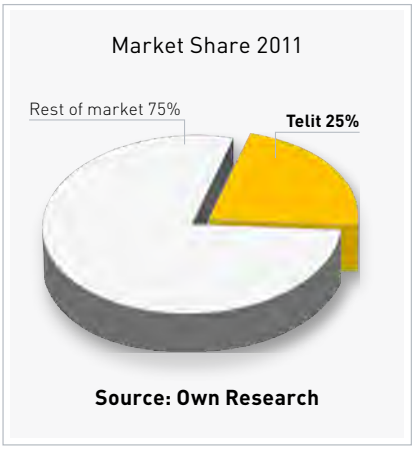
The variety of applications for m2m technology has expanded rapidly in just a few years, and has influenced nearly every conceivable area of our lives. By using m2m devices we can noticeably decrease our energy consumption and optimize energy creation; the use of m2m technology leads to a more responsible way of driving, prevents driving under the influence of alcohol, reduces the risk of accident, and decreases insurance premiums. Community garbage collection can be optimized thanks to m2m and the costs are reduced; health care can be significantly improved in developing countries, and even the protection of endangered animals is noticeably strengthened with m2m technology. You will learn more interesting information about all of these topics from the world of m2m communication – and of course about Telit, too.

Important steps in the right direction.

Telit is still the only manufacturer of m2m modules to offer an extensive product portfolio with all relevant technologies for machine to machine communication solutions. Telit will continue to expand and strengthen this position, and two strategic acquisitions were made in recent months for this purpose: Motorola m2m and Navman Wireless OEM.

With the acquisition and integration of the Motorola m2m business, the most important step forward in further expanding our position as one of the leading three m2m module vendors worldwide has been taken. It increases our global market share to somewhat 25% and enables our customers to benefit even further from enhanced research and development capabilities.

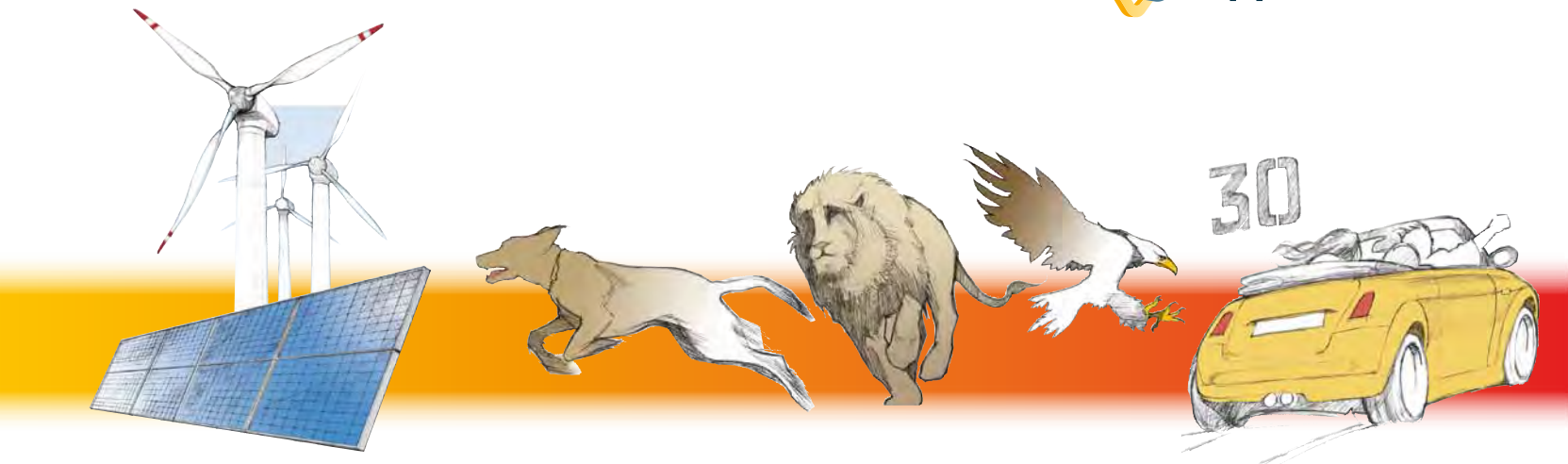
One of the first results of the acquisition of Motorola m2m and proof of the successful integration is the development of the Telit AppZone. This open platform with standard interfaces (POSIX, BSD) for easy integration/porting of applications to other operating systems/platforms provides an especially user-friendly development environment. The project was initiated by Motorola m2m and completed by our joint team. Now our customers can select the development environment that is right for them: Python or Telit AppZone.



Source: Own Research

With the acquisition of the American company Navman Wireless OEM, Telit now has access to new GPS customers and products outside of the traditional m2m market. By acquiring the technology as well as the engineers and sales employees based in the USA, Telit has become a significant player in the GPS market and at the same time can offer its m2m customers an enhanced product portfolio. This combined with Telit's international

AppZone



M2M connections enable remote monitoring and control of solar and wind farms that lower carbon emissions.

Imperial eagles in Bulgaria, lions in Africa and dogs in the U.S. are all tracked with Telit devices.

M2M vehicle technology reduces teen accidents by 70%.

sales and marketing organization provides us with a strong growth position in the GPS sector. The new division is lead by George Arnott, previous VP of Global OEM Solutions at Navman Wireless OEM Solutions, who is thereby an acknowledged expert in this sector.

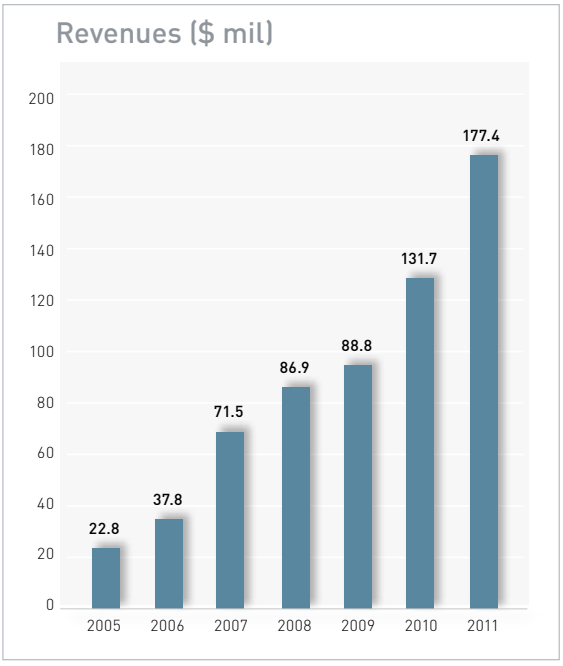
Connectivity – strong chances in a growing market.

Telit has seen significant success in more than just the hardware sector – as the first module manufacturer in the world, the company now offers value added services including connectivity. Telit had already decided in the past year to establish itself in this unusually promising business field, and to provide the ideal bundled solution for its customers with both module and connectivity. With the acquisition of Global Conect at the end of 2011, Telit has set a course for this. Heading up the new Connectivity business unit is Dan Amir, founder of Global Conect and renowned expert in this area.

An additional important milestone was reached at the start of this year. Telit is proud of its global strategic partnership with Telefónica, a world leader in telecommunications, which offers premium value-added services, customer support, module innovation, and global connectivity previously reserved for larger firms. This excellent partnership is the basis for further development of the "Connectivity" business sector. The expansion of this area will be one of the main priorities in the coming year.

Clear strategy. Clear success.

We are convinced that these steps have set the course for a successful 2012. The outstanding financial numbers for the last year also show that this strategy is paying off. And 2011 was an exceptionally good year for Telit. Sales continued to increase, based not only on our acquisitions but also through organic growth. Revenues increased by 34.7% to $177.4 million (up from $131,7 million in 2010), gross profit increased by 28.2% to $67.8 million (up from $52.9 million in 2010). Both of these growth figures reflect Telit's financial stability, especially its sustainability, pointing to a rather prosperous future.



New products. More performance.

New demands on the part of new m2m applications lead to more and more challenges in the development of modules. Since the beginning, Telit has consistently placed its customers' requirements at the forefront. Quality – mature and reliable products, extensive support; ease of integration – trouble-free integration into the technical environment; investment protection – sustainable technology and product strategy; business scalability – form factor and family concept for flexible expansion of m2m applications.

Telit has demonstrated this approach, both last year and already in the start of 2012, with numerous new products.

Our new xE910 module family is based on a land grid array (LGA) form factor with a footprint of just 795mm2 and a total size of 28.2 x 28.2 x 2.2mm. The Telit xE910 family's uniform design, interchangeable on any regional cellular network, gives customers the ability to choose between global or regional cellular technologies depending upon the location and requirements of a specific application for optimum data rates and module costs.

Connected diabetes patients cut hospital visits by more than 50%.

M2M medication reminders help patients with high blood pressure save up to USD$ 5,000 in additional doctor's visits.

Connected cardiac patients cut hospital visits in half.

Convicted drunk drivers deterred from repeating behaviour in U.S. states with M2M monitoring.

This module family was started in 2011 with the HE910, the world's smallest module with Pentaband-HSPA+, suitable in particular for compact mobile devices such as e-readers or PDAs with data-intensive applications like multimedia. The module rounded out the Telit Tiny Troika which also includes the GE864-GPS, the smallest and most efficient GSM/GPRS m2m module on the market, and the GE865 GSM/GPRS , launched two years ago and still the world's smallest GSM/GPRS quad band module.

Telit proved its excellent development expertise once again at the start of the year with the market launch of a new GPS/GLONASS navigation module that is destined to have a major impact on the GPS industry. The innovative Jupiter SL 869 modules triple satellite visibility due to combined access to U.S. and Russian global navigation systems. With this extremely capable product, Telit strengthens its entry in the market for GNSS modules with the stated goal of significantly increasing market share. This step was taken only a few months after the market launch of the likewise excellent module HE863, an economical and fully equipped HSPA m2m module with ball grid array (BGA) form factor and a built-in GPS receiver.

The Telit product portfolio was also expanded with a short range module. The extremely energy-efficient wireless M-bus module ME50-169 for 169 MHz applications is ideal for use in intelligent gas, water, heat, and electricity meters. With this, Telit has made a valuable contribution to the further optimization of smart metering technology, a market that continues to show strong growth due to the continuing energy issues.

New products. More support.

We have the requirements of our customers in sight, not only with our modules but also with our support and services. Our goal is to make the implementation of m2m applications as simple and efficient as possible, therefore significantly reducing the time to market for our customers. As a result, Telit accompanies its customers through all the relevant product development steps, starting with product design and development, on through testing and certification and production support, and continuing to customization and go-to-market. As important is direct communication with customers and partners. For this purpose Telit has designed the Telit Technical Forum as a communications platform which can respond to support inquiries more quickly. Telit customers can interact there directly with the support team, discuss their concerns, ask questions, or start discussions. Even those just interested in m2m can read the entries. The forum celebrated its first anniversary in 2011, and with more than 1,900 members has been a complete success.

Excellence – worldwide

For Telit EMEA, 2011 was a year with many new developments, but also a year with stability and continuity. Despite uncertainty in the Euro zone, Telit was able to hold its course for growth against general market expectations. Furthermore, Telit has strengthened its presence in central and eastern Europe, and recorded outstanding growth in Russia and the CIS countries. With the integration of all Motorola m2m activities and the entire sales team into the EMEA organization, Telit took another big step last year towards company growth.
2012 will also be an exciting year, full of challenges for Telit EMEA; the automatic meter reading/managing market will play a particularly important role. We are well-situated to meet these challenges with our module M-bus 169 MHz – integrated with our GSM/GPRS modules.

The m2m market in North America was influenced in 2011 by the decision from mobile network providers to accelerate the change from 2G to 3G for m2m applications. For developers and manufacturers, this step has significant consequences with regard to costs and network coverage, among other factors, that are to be taken into consideration in their decisions about which technologies to employ. We are countering this uncertainty with our xE910 family that enables migration from 2G to 3G with only one design.
Beside of technologies, Telit took several steps to significantly strengthen its position in the US: The former Motorola employees in the USA were already integrated in 2011; now with the takeover of Navman Wireless OEM we are pleased to welcome more new employees to the Telit family.

In all of Latin America, the m2m market continues to grow strongly, above all in the areas of vehicle tracking and blocking solutions, as well as in metering solutions. In Brazil, the market for electricity, water, and gas

Farmers reduce water usage by 10% with M2M irrigation systems.

Missing autistic children are found within 30 minutes thanks to M2M tracking.

Police departments scan a suspect's fingerprints, eyes or face to instantly obtain personal identification.

Remote video monitoring reduces property crime by 2/3.

metering continues to increase, and Telit is already involved in numerous projects. Strong growth momentum is also found in the Brazilian m2m market as a result of numerous laws. Applications like the connected tax collector's printer or blocking systems in vehicles according to the Automotive Law (Regulation 245) have increased the demand for m2m technologies. Since a new generation of products with additional functionalities is coming to the market in the nearfuture, this demand will remain for some time.

For Telit APAC, 2011 was an extraordinarily successful year with a growth rate of 40%, the perfect basis for further expansion in this promising market. In Korea, Telit APAC successfully defended its market-leading position and was also able to record significant growth, not the least through the partnership with SK Telekom, the country's largest network operator. Even in China, Telit recorded notable successes, and expanded contacts to China's top industry players with numerous events. The successful market introduction of the HE863, HE910, and GE864-GPS modules, as well as JF2 and JN3, lead to an increase in growth in Taiwan, and the m2m market in India is showing clear signals for a surge, also supported by governmental measures and private investors.

Derick Tsang recently took over the newly created position of President of Asia Pacific at the start of this year; he was previously Co-General Manager at SIMCom Wireless Solutions, a business unit of SIM Technology in Shanghai, China. With his extensive knowledge of the m2m market in Asia, especially in China, he will make significant contributions to the increase in market share for Telit APAC.

Telit Israel also saw a radical change with the acquisition of Motorola m2m. For one thing, 30 Motorola employees were integrated into the culture and structure of the company, and four product lines had to be adapted for the brand launch of Telit as well. After relocating to a new office building, all 90 employees of Telit Israel are now at the same location, bringing great synergy to all company departments.
Additional information about our regional headquarters and developments in the individual regions can be found on pages 48 to 55.

Excellent performance – in every vertical segment.

The variety of m2m applications has grown rapidly in recent years, and will continue to increase in the future. The result of this is not only a permanent expansion of m2m technology into many new areas of our lives, but also the need for more and more new and specific knowledge from developers and producers of m2m applications. Telit is particularly conscious of this situation. Since the end of last year, the following experts in the areas of automotive, telematics, and energy have been available as contact persons and consultants: Peter-Rene Zucker, Senior Sales Director Automotive EMEA; Cyril Zeller, Senior Sales Director Global Telematics; and Emmanuel Maçon-Dauxerre, Senior Sales Director Energy. Additional specialized contact persons will follow. In this way Telit takes an important strategic step towards closer customer proximity and established support expertise – essential attributes for a successful future.

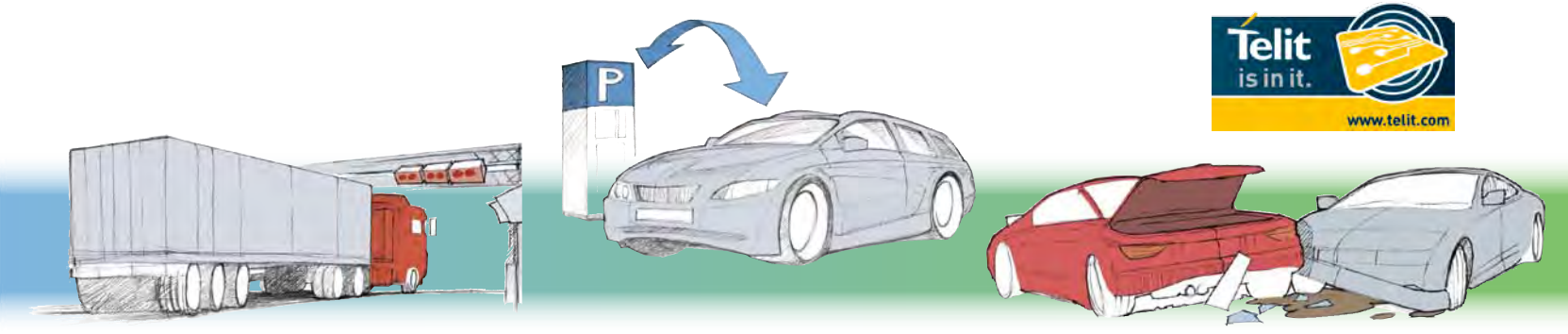
Telit Communications has been the fastest growing of the major vendors for several years now, rising from roughly 6% market share in 2007 to more than 20% market share (on a unit shipment volume calculation) in 2011. The company has, so far, brought a laser-like focus to the core business of providing customers with modules that abstract away as much supply-chain logistical complexity as possible, at aggressive price points. Sam Lucero, practice director, M2M connectivity, states, "The biggest change from 2010 to 2011 was the rise of Telit from third place to second place in the unit shipment volume analysis. Likewise, Telit Communications displaced SIMcom Wireless Solutions at third place in the M2M revenue rankings."

ABI Research, April 2012

Taking challenges as chances

The success in recent months, the successful market introductions of numerous modules, and the expansion into many markets shows that Telit is on the right path with its strategy. In the future we will also be the company that can offer all relevant m2m technology and thus remain a long-term, reliable factor for its customer and partners. Investments in new developments, in the expansion of our headquarters, and above all in our employees will contribute significantly to this. As in 2011, we want to remain the fastest-growing machine-to-machine innovator. <<

With best wishes for a successful year
Oozi Cats
Chief Executive Officer, Telit Communications PLC



Annual revenue from M2M-connected toll collection systems will reach USD$ 3.8 billion by 2012.

The City of Denver increased its annual revenue by $ 1.5 M from new smart parking meters.

Car accidents are reduced by 80% when they are M2M-connected.

DEMAND DRIVEN BY FACTORS
OTHER THAN MODULE PRICING

Gareth Evans, *Managing Director, Equity Research, Canaccord Genuity*

www.canaccordgenuity.com

>> Canaccord's London research team provides coverage of around 30 quoted stocks involved in technology. We research businesses involved in software, IT services and a range of hardware or hardware-related areas. The m2m market is, without doubt, one of the most exciting areas of technology currently, and is rapidly gaining attention of both investors and large technology groups.

The global m2m market is expanding and, in our view, has the potential to move into a material growth phase in the near future. The exact timing and the price levels achieved are subject to risk and uncertainty, but we believe, at some stage, m2m will come into its own. A number of large groups – telcos, systems integrators and service providers – are beginning to talk more about m2m, and the technology was a major feature at this year's Mobile World Congress event in Barcelona.

The challenge for m2m as an industry is to balance the price of the modules and devices being sold (which, as with the pricing of most technology, is declining) against the number of products being sold each year (which appears to be in a secular and well-established growth phase).

The m2m market, however, must be seen from the perspective of the end user, not just the providers of the modules. The cost of m2m implementation is not just the m2m module, and not even just the device itself or the integration work to deal with and benefit from the newly-available data.

The main cost of the m2m implementation is normally the mobile data subscription – the SIM card from the local mobile operator which is inserted into the device at time of shipping, and which allows the device to use the mobile network to send and receive data. The diagram below illustrates the relevant costs from the end user's perspective – note that the overall cost (assuming a five-year device life – not unreasonable in industrial settings) far exceeds the cost of the m2m module. (Figure 1)

There are additional "value-add" services, although these are unlikely to alter dramatically in cost, and they are generally delivered by a third party (often the module manufacturer's customer or partner). We have excluded these costs from the example above.

Referring to the traditional industry demand curve, this suggests that demand for m2m units is influenced not just by the price itself, but also by the costs of integration and data transfer. Our belief is that the m2m world stands to benefit dramatically as:

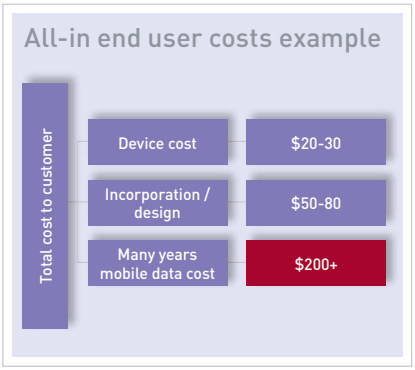


Figure 1
Source: Canaccord Genuity Limited research

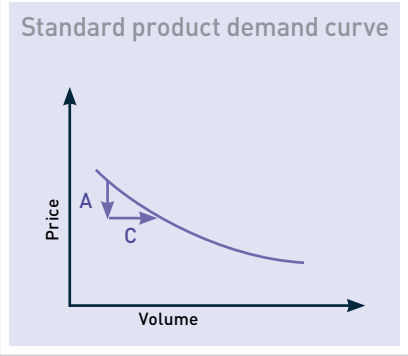
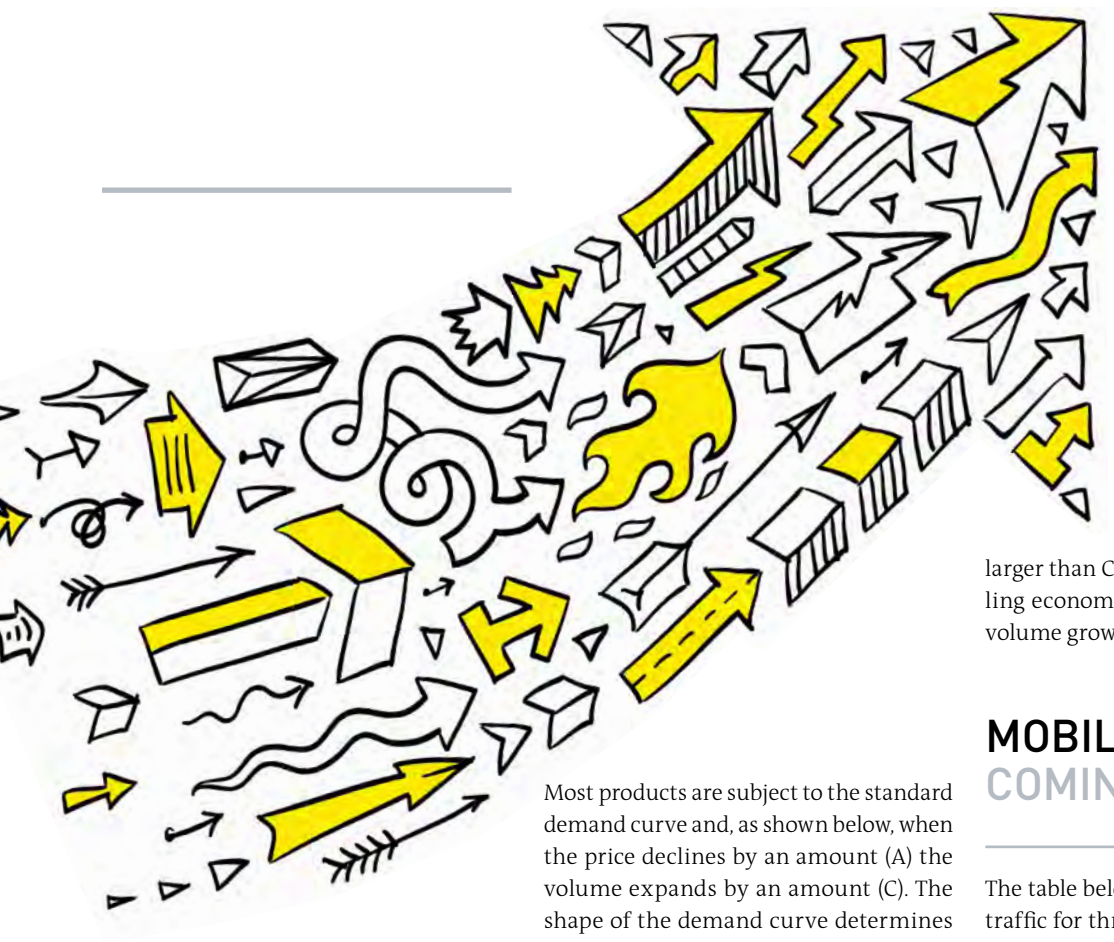


Figure 2
Source: Canaccord Genuity Limited research



- Standards become better embedded in the industry, lowering the cost of implementing and benefitting from m2m platforms; and
- Mobile data charges fall for m2m devices, which generally require only modest data transmission speeds and bandwidth.

As powerful networks such as 3G and 4G become ubiquitous, the m2m load on the network will become de minimis, and m2m data costs will, in our opinion, drop dramatically.

m2m market is driven by price falls in devices AND other costs.

Most products are subject to the standard demand curve and, as shown below, when the price declines by an amount (A) the volume expands by an amount (C). The shape of the demand curve determines whether a price decline results in larger or smaller revenue. (Figure 2)

But the m2m market should benefit not just from drops in device pricing (shown as A in the diagrams), but from drops in the cost of m2m integration and mobile communication (shown as B). The module manufacturer suffers price pressure inherent in the price drop A (albeit offset partly by component price falls), but benefits not just from the incremental demand due to A, but also the incremental demand due to the – maybe much larger – impact of cost reduction B. (Figure 3)

The module provider takes a small amount of pain but sees volume benefit due to other factors in the ecosystem – standardization (cheaper for customers to develop and integrate m2m platforms) and reduction in mobile data charges (as m2m data requirements pale into insignificance relative to burgeoning network capacity). We believe, crucially, that D is materially larger than C – which suggests potentially very compelling economics in the m2m market over time – major volume growth on modest module price decline.

MOBILE DATA COSTS ARE COMING DOWN

The table below is an estimate of the costs of m2m data traffic for three different usage levels – 0.5MB per year, 1MB and 5MB. Clearly, the heaviest users have seen the biggest reduction in pricing (as one might expect) but it is also clear that lower-usage customers will be getting much better data pricing than could have been achieved even a few years ago. (Figure 4)

This could be, in our view, a driver of increased m2m volumes potentially even more significant than the reduction in module pricing.

m2m demand economics summary

It is for these various reasons that we believe the m2m market should become more and more valuable over the coming years.

Specifically :

- The "lag" from recent price declines means that new m2m markets are only just coming on-stream as newly-designed products come to market; and
- The module price decline is only part of the overall cost reduction to the user; other factors are driving costs down materially, which should also lead to increased volumes.

Therefore, we believe that the m2m market is growing, is likely to continue growing, and could potentially grow faster as the lag effects of recent price deflation (both device and other) have yet to show through in terms of market demand. <<

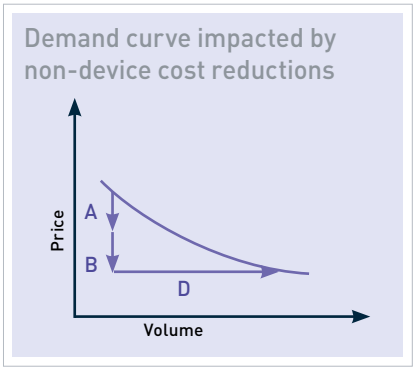


Figure 3
Source: Canaccord Genuity Limited research

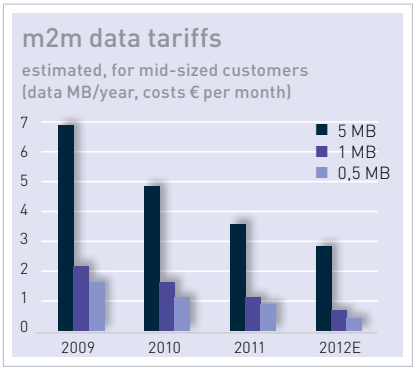


Figure 4
Source: Telit estimates

2012 – A BREAKTHROUGH YEAR FOR TELIT AND M2M

Yosi Fait, *Finance Director, Telit Communications PLC*

>> Everyone assumes a certified public accountant's life is unexciting, but nothing could be further from the truth. Especially when working for a dynamic company like Telit. As a board of directors member and Finance Director, I'm charged with ensuring the financial health of a company experiencing explosive growth, pursuing an acquisition strategy and, most importantly, making real change in the lives of people and companies across the globe.

Since joining this position last year, I've been very impressed with the company's seamless integration and local execution of divergent global strategies by its topnotch workforce. With offices in 18 countries spanning five continents and a distributor network operating in more than 80 countries, Telit employees perform at a fiercely competitive pace across multiple languages, currencies, and time zones.

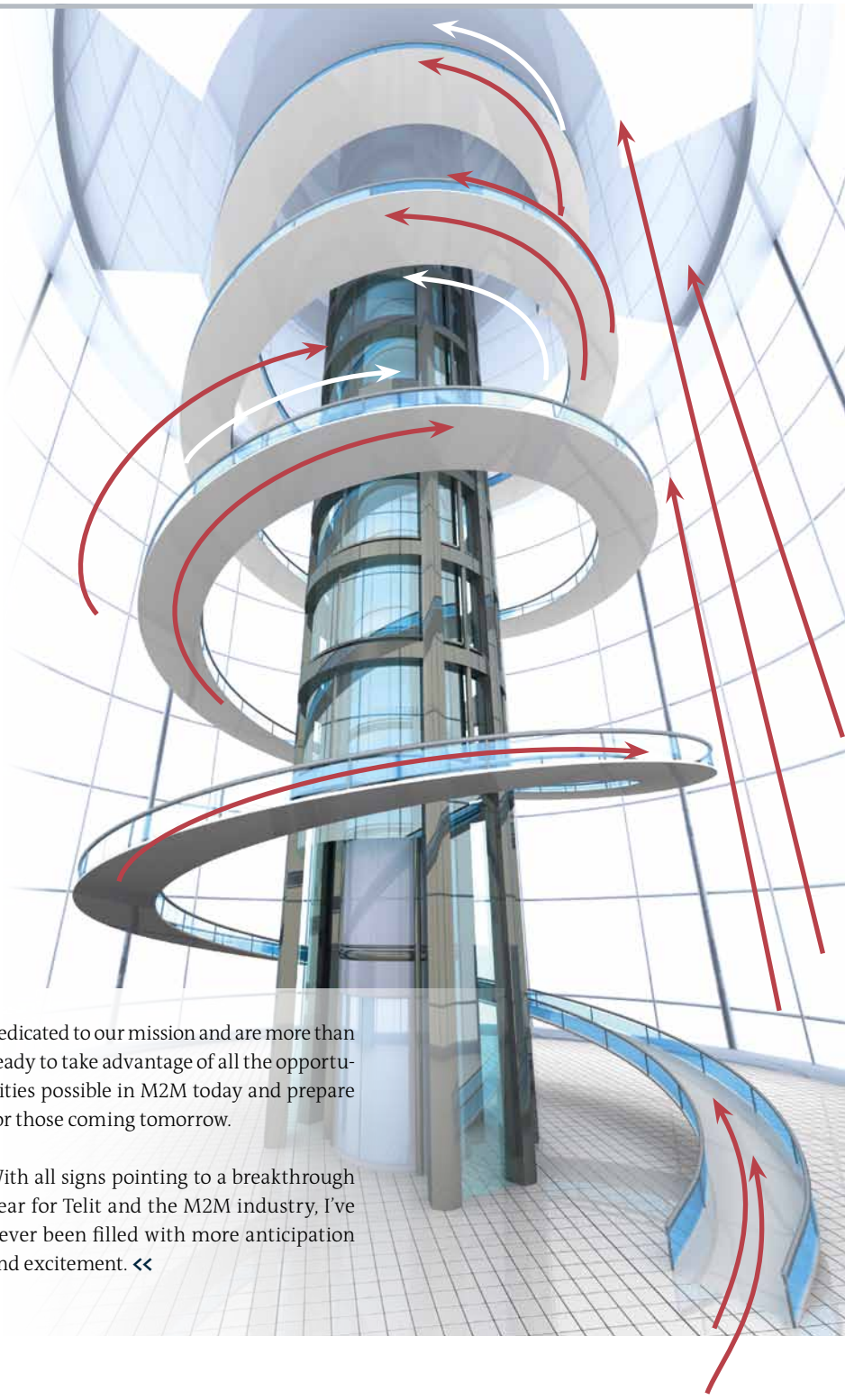
Working alongside our CEO Oozi Cats and senior management, my role is to maintain a solid financial foundation to meet the company's objectives and, through extensive due diligence, qualified decision-making and management consensus, find the best path forward. Fortunately, my background in telecommunications, retail and import/export industries are invaluable for the challenges ahead.

As CFO for Pelephone Communications, the first cellular operator in Israel, I was part of the G1 to G2 wireless revolution and quickly recognized M2M's potential to drive the entire global telecommunications industry forward.

Trends in technology seem to rise and fall much like they do in fashion. I founded one of the leading retail fashion chains in Israel, H&O, and took the company public on the Tel Aviv stock exchange. Understanding the idiosyncrasies of capital markets and managing the demands of the investment community will serve Telit well in achieving our long-term goals.

I have the utmost confidence in Telit's future. The company has hired only the highest caliber of professionals who are dedicated to our mission and are more than ready to take advantage of all the opportunities possible in M2M today and prepare for those coming tomorrow.

With all signs pointing to a breakthrough year for Telit and the M2M industry, I've never been filled with more anticipation and excitement. <<



HOW SHOULD YOU CHOOSE YOUR M2M PARTNER?

Yossi Moscovitz, *President Wireless Solutions*

>> In 2012, the m2m market will consume over 50M cellular modules (based on various market researches) through about 20,000 system integrators and ODMs. For every one of these 20,000 customers the question "How do you choose your m2m partner?" is crucial and the answer can either lead to a success story or a disaster.

Of course, the module you select should fit your technical requirements and budget. But is that enough to guarantee your success? How can you differentiate among the several offers that appear "similar" on paper?

In this article I will highlight some considerations that should help the decision maker in the selection process:

➜ **Market Research** – understanding the market and the competitive position of the different suppliers is a very important step towards making the right decision. There are several m2m focused market research firms providing an accurate picture of the past performance of the different suppliers (based on actual figures) as well as good forecasts. Choosing a market leader over a small player will minimize your risk. Hint: ask any potential supplier to provide the latest market research summary.

➜ **Transparency** – You are entitled to know everything about your potential supplier before you make a decision. Publicly traded companies provide accurate (and audited) information on all relevant aspects of their business. When analyzing private companies, decision makers should request and be provided the same level of transparency. Attempts to avoid disclosure of information ("we are private and therefore cannot disclose ...") should raise serious doubts. Hint: ask your candidate suppliers to provide the latest audited financial report.

➜ **Financial stability** – the long term stability of your m2m supplier is critical to the success of your business. Therefore, read carefully the financial statements of potential suppliers. Companies showing poor financial performance (not profitable, declining revenues, lack of financial resources) should be considered high risk. Companies that are not willing to provide audited financial information should similarly be considered as major risk.

➜ **Company size** – the m2m market requires significant levels of investment for sustained development of next generation products, maintenance of current products and customer support. Small companies and new market entrants do not have sufficient resources and sales volume to support such investments. Market leaders have a significant advantage from that perspective.

➜ **R&D expenses** – R&D expenses indicate the real value of the products you are buying. Each "dollar" spent adds to the performance, stability, functionality, reliability, certifications of the product you are buying. Ask your potential suppliers about their annual R&D budgets and how many people they employ in R&D.

➜ **Local presence** – the m2m industry is spread over 5 continents. Doing business in your language and in your time zone is an advantage. A true global m2m supplier should be able to support you anywhere any time.

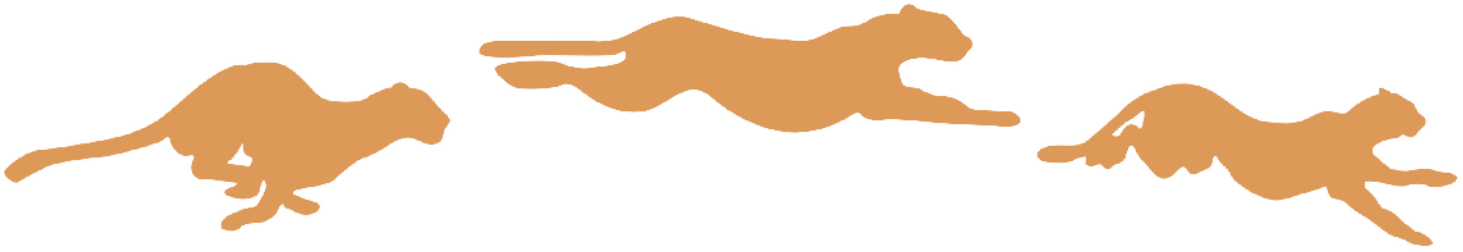
➜ **Did you visit your m2m module supplier?** – We live in a virtual world. If you surf the web sites of your candidate suppliers you will always find the statement: "XYZ is a leading global supplier of m2m modules...". From that perspective they all seem on equal footing. Vendor or supplier selection is however a very "real world" activity and requires interaction with the "real" people. Seeing is believing. If you want to make the right decision go visit your candidate supplier, check the facilities, talk to the people, see the production lines. Then, make your decision. Hint: spending $3,000 on a trip can spare you from making a wrong decision. <<

Telit is a public traded company with 445 employees worldwide, about 25%* market share and $177M sales in 2011. Our financial statements are published regularly and available on our website. Our six R&D centers are spending over $25M annually to ensure the quality of our modules. Telit's stated goal is to support customers from the very beginning of their design and development, through their go-to-market and even beyond. We count on 25 sales and support offices to service customers in 60 countries. These offices are further supported by our online technical support forum to ensure fast response times. From a technology perspective, Telit is the only module manufacturer in the market that provides all relevant wireless technologies: GSM, WCDMA, CDMA, LTE, GNSS and Short range. That ensures ease of integration, scalability and investment protection for our customers. Last but not least, our modules are certified with 57 carriers around the world. All this represents the unparalleled Telit difference.

* Source: Own research

NEW CHALLENGES
IN THE GLOBAL M2M MARKET

Dominikus Hierl, *CMO, Telit Communications PLC*



>> The global m2m market with its unparalleled growth shown over the last decade continues gaining momentum even today. Environmental campaigns mandating the use of m2m technology are being carried out in all parts of the world to improve management of resources and reduce emissions. At the same time the pressure is on for corporate entities to continue reducing costs by improving logistics and operational processes opening new application fields and ensuring steady growth in established market segments.

Despite that, 2011 was a year of new challenges, mainly on the technology front. The US market is shifting to 3G at a much quicker pace and 4G spectrum is getting licensed in all parts of the world. Telit is very well prepared for these challenges due to our long-standing and unique concept of compatible product families supporting all relevant standards. The flexibility our customers gain from this strategy is to be able to provide best-in-class hardware solutions enabling their customers to react very quickly to local market requirements.

As discussed in the previous editions of Telit to Market, Telit is very strongly committed to being the most customer focused supplier of all relevant m2m communication technologies in the market. It is our absolute aim to provide our customers a competitive edge by offering a full range of solutions along the entire m2m integration path. And since we have a clear strategy of not competing with our customers at the end-customer solution level, we are able to focus all our investments and efforts into completing our solutions offerings thus accelerating the generation of m2m applications.

Telit is the only m2m company offering a complete range of complementary cellular, short-range and location technologies. Our recent acquisition of Navman Wireless OEM, a leading provide or global location solutions demonstrates yet again the commitment to offer our clients all relevant technologies out of one shop.

Because we are continuously working to add value to our portfolio, we have been expanding our services offering overlaying our module-based hardware business. Our recent announcement to closely cooperate with Telefonica in offering connectivity packages and service which are optimized for m2m system integrators is a reaffirmation of this approach. The new offering will enable m2m service providers and application developers to bring solutions more quickly to market with technical support over the entire product lifecycle; enhanced monitoring capabilities; efficient real-time budget management; lower tariffs for fixed and mobile applications; and streamlined logistics, operations and deployments.

Whatever challenges the market may bring, you can count on Telit being your reliable, long-term partner with the momentum and experience to take you into the future. <<

Dan Amir,
Manager Value Added Services and Connectivity Business Unit

TELIT REVOLUTIONIZES M2M VAS AND CONNECTIVITY FOR SMALL AND MIDSIZE COMPANIES

>> Following the acquisition of Globalconect Ltd in July 2011, Telit formed a new business unit focusing on leveraging Telit's strong foothold in m2m to become the leading provider of one-stop-shop global and managed m2m solutions, comprised of communication modules and Value Added Services (VASs) such as connectivity. This business unit is expected to become a major "building block" in Telit's market strategy and an important factor for Telit's continued growth and success. Telit's connectivity and services solution enhances its already superior m2m offering, leverages its existing assets and enables Telit to provide customers a full m2m solution that extends well beyond the current value.

We believe Telit is well positioned to capitalize on the services industry since it is located at the center of gravity for connectivity installation, activation, provisioning, distribution (Telit owns about 25%* of m2m module market), and product design. Even more importantly, Telit has full control of its module software allowing it to become a platform for rendering compelling and valuable VASs.

For the connectivity element of its value added services, Telit decided to partner with the largest and strongest global mobile operators specializing in m2m connectivity. Recently, Telit entered into a global strategic partnership with Telefónica S.A. to provide small and midsize enterprise access to a universe of premium global m2m communications solutions and value added services that are both novel, high value and cost effective. Telit and Telefónica are ideal partners with complementary assets and businesses, compatible visions and a synergistic strategic fit. Together we aim to change the m2m connectivity business.

CHALLENGES OF THE SMALL AND MIDSIZE COMPANIES

The m2m market has become a fully mainstream segment of the cellular industry. By the end of 2011, most major mobile operators in North America, Europe, and the Asia-Pacific region had

Why Telefónica?

Telefónica is one of the largest telecommunications companies in the world in terms of market capitalization and number of customers. From this outstanding position in the industry, and with its mobile, fixed and broadband businesses as the key drivers of growth, Telefónica has focused its strategy on becoming a leading company in the digital world.

The company has a significant presence in 25 countries and a customer base amounting to 300 million around the world. Telefónica has a strong presence in Spain, Europe and Latin America, where the company focuses an important part of its growth strategy.

Telefónica is a public company, traded on the Spanish Stock Market (Madrid, Barcelona, Bilbao and Valencia) as well as on exchanges in London, New York, Lima, and Buenos Aires.

* Source: Own research

established m2m business units to focus their efforts in this fast growing market. Several large mobile operators offer specialized end-to-end m2m solutions that include global m2m connectivity, managed services, platform services, SLAs and premium customer support across project lifecycles. However, as costs for rendering such premium m2m services remain particularly high, these mobile operators tend to pursue the larger opportunities while small and midsize customers which lack economies of scale are typically confined to the services of intermediaries (e.g. MVNOs) or limited offerings. As a result, most small and mid-size companies face higher connectivity prices, lack of sufficient technical support & troubleshooting, absence of management tools, degraded network performance and inflexible business propositions.

Real-time SIM lifecycle management

Telit's provisioning process is designed to support and streamline customers' logistics, operations and roll-out. It is intended to overcome all of the major issues that typically occur in SIM card deployment within an m2m environment. Upon SIM card activation (either by customer or Telit) the SIMs will be in a 'test ready' mode, which means that a configurable data usage threshold is set, enabling the customer to install and test SIM cards during the device production and distribution process without activating billing period. No (subscription) charge is incurred, no additional activation or re-activation fees are charged. Billing is activated when predefined thresholds are met.

Oozi Cats, CEO, Telit Communications PLC

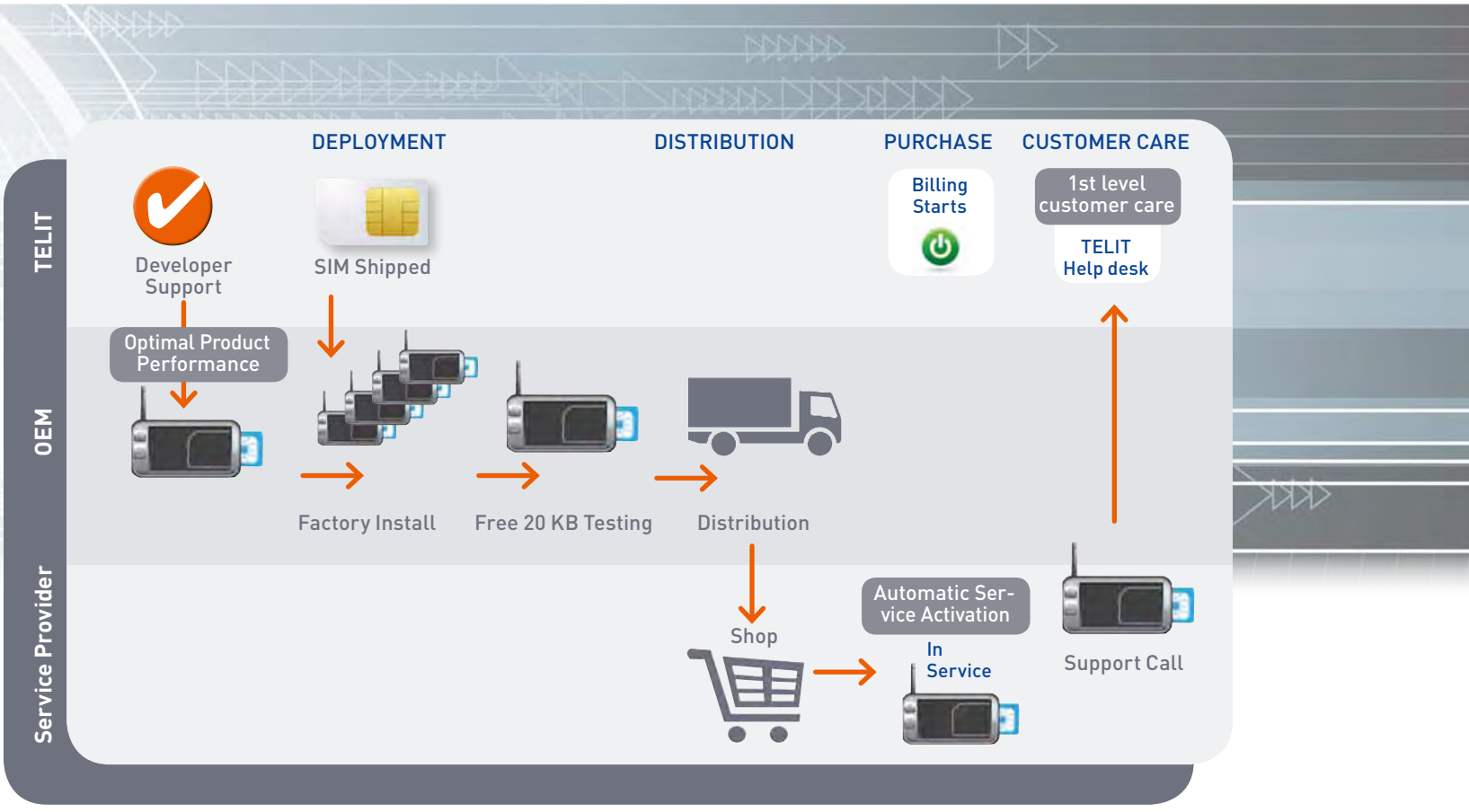
"This unprecedented bundle from Telit and Telefónica signals a paradigm shift in the industry because finally any M2M service or solution provider of any size can have the same quality of service, performance, pricing and support as the largest players in the industry".

TELIT'S END-TO-END MANAGED M2M PROPOSITION

Telit enables small-mid size companies to gain for the first time access to m2m premium services and tariffs previously reserved only for large companies.

Telit's m2m offering for small/mid-size companies includes:

- One-stop-shop, managed m2m solutions, comprised of Telit's communication modules, Value Added Services and Telefónica's m2m connectivity with seamless global cross-border coverage;
- Telefónica's guaranteed high global network performance, reliability, availability.
- Global, unified tariffs and flexible price plans designed for optimal economics and price predictability.
- Flexible SIM provisioning and management including dedicated SIM states to support customers' device and service lifecycles.
- Security via private and safe networks, IPsec VPN and customized APNs.
- State of the art ePortal for self-care of billing, provisioning, and troubleshooting.
- No bill-shocks via sophisticated, real-time usage control and near-time alerts on high usage with upper and lower data limits.
- Novel, proprietary Value Added Services (VASs).
- Telit's three layer support (Hardware, Network and Application) and customer care are m2m industry's best quality standards.



TELIT'S OFFERING GOES WELL BEYOND EXISTING SOLUTIONS

The combination of Telit's communication modules, managed services, proprietary Value Added Services, three-layer support and Telefónica's state of the art m2m solutions establishes the foundation for a paradigm shift in the m2m industry.

To secure a competitive advantage, Telit has implemented a state-of-the-art VAS infrastructure supporting the rapid launch and rendering of novel VASs which are tightly integrated within its cellular communication modules, offering great benefits to customers. Telit's initial VASs are comprised of:

- Remote AT command activation – allowing customers to remotely activate Telit's rich set of AT commands. Today, Telit's wireless module family can be controlled via the serial interface using the standard AT command set. The new feature will enable the wide scale activation of AT commands on modules which are already deployed in field via a web based service portal, literally unlocking their full potential. The first cluster of over-the-air AT-Commands to be supported includes obtaining real-time network QoS measurements (e.g., reception level, reception quality), remote reset, IMEI verification, serial number identification, module software version identification, remote MNO selection, remote IP testing, and remote hardware testing (e.g., temperature, antenna, battery, GPS)
- Real-time traffic (e.g. GPRS and SMS) usage control and monitoring – set of new AT commands, allowing customers to set consumption thresholds, alarms, and alerts / notifications for Telit's modules, in order to prevent "bill-shock" and SIM card abuse. The service is available via a dedicated web based interface. <<

TELIT GLOBAL R&D ON THE SPOT

Sandro Spanghero, *Global VP R&D Telit Communications PLC*

>> Our job is getting more and more complicated at R&D. Market demand is going to be huge in the coming years because of the deployment of so many technologies and of the evolution of m2m market into so many verticals. Product demand is also growing as most customers and segments are looking to use dedicated devices rather than general purpose ones. Over the horizon we already see demand for LTE, but at the same time we still want to challenge innovation in GPRS. On top of this Telit offering, which was initially based on cellular devices then extended to short range modules, at the beginning of this year it was completed by the acquisition of Navman Wireless OEM, renamed in Telit Location Solution.

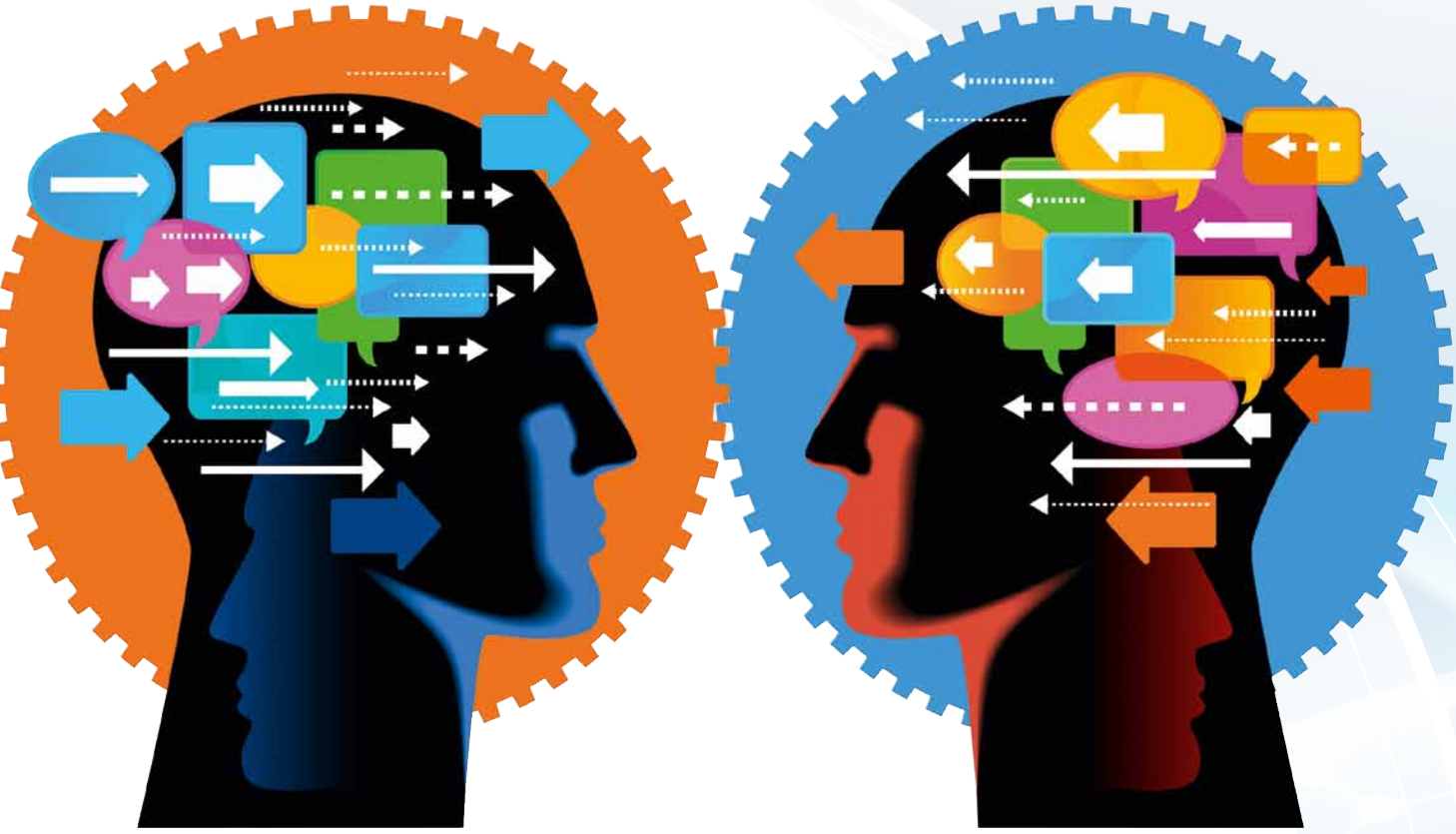
Telit R&D is now about 240 employees strong, spread over 3 different continents (Europe, Asia, and America), 5 countries (Italy, France, Israel, South Korea, the United States), and 6 office locations (Trieste, Cagliari, Sophia Antipolis, Tel Aviv, Seoul, and Foothill Ranch-California). Each team has its own set of expertise, experiences, methodologies, culture, and lives in different environments, so the real challenge is how do we harmonize and optimize the results from their work?

This process is in place mainly between the so called "older" R&D centers in Italy and Korea currently. In these, we are using the same development and testing tools, same production tools and design guidelines. Different teams are working together using updated communication systems (all Telit offices have one or more video rooms with high-quality video conference systems installed). Most employees are in regular contact with their colleagues located in the different offices and are urged to travel from one R&D center to another quite often for joint development activities, design reviews and alignment meetings.

The situation with the groups in Israel and the US is a bit different. As you know, in 2011 Telit acquired the m2m division of Motorola and most of the year was spent in merging and aligning the two different roadmaps, documentations and production. In 2012 the R&D team in Israel will be involved in new development projects and therefore in much closer touch with other R&D centers in the company, mainly Trieste and Seoul. In the meantime we are recruiting additional resources for the group with different expertise. The target is to reach a total of about 35 engineers in Israel by the end of 2012, fully integrated with the rest of the global R&D teams at Telit.

The team in the US is our "newcomer". First of all I would like to extend a warm welcome to all members of the former Navman Wireless OEM Solutions in sunny Southern California. I am positive that we have huge opportunities for growth but some important tasks to complete in the near future as well. The technology under the responsibility of this team is only partly new to Telit, since we have been developing combined products in GPRS-GPS, WCDMA-GPS, and CDMA-GPS modules for a while. But now, having a team fully allocated to Location products and solutions represents a real advantage in serving this important segment of our market using them. We estimate that about 50% of m2m customers use Location services making it easy to glean the importance of this new group.

And now a bit about our future development projects and plans. Telit R&D definitely has a long term plan for growth since we firmly believe that competence and knowhow are key factors for winning in m2m market. The Telit technical team is different from other teams in other companies because a large portion of our R&D effort is dedicated to supporting cus-



tomers during design and certification phases with another large portion going into the maintenance and continuous development of platforms and products already in production. Some years ago I wrote "Telit never forgot a customer". This is still valid and I consider it to be our best selling point and a significant differentiator from our competition.

So, what is the rest of R&D doing? New products, of course. Last year the HE910 was introduced in this magazine. Now it is time to talk about a full family of products based on that same form factor which has become Telit's newest unified form factor. With that the HE910 becomes the parent product of a large family of HSPA+ variants, with different bands, data throughput, and functionalities such as voice, gps, Rx-diversity, and so on. The DE910 will bring the 28 x 28 mm form factor to those US carriers and integrators in the EVDO technology market. Then there are the GE910 as the GPRS variant of the family and the CE910 as the CDMA-1xRTT. By the way; can you imagine what could be the LE910 and UE910 variants? I prefer to leave the identification of these family members for the next release of the magazine.

The last item that I would like to cover here is miniaturization. In the past it was commonly agreed that size was not important for m2m. But Telit was nonetheless the first to reduce overall module size and to introduce a new assembly concept with the GE863 in 2003. In 2005 we introduced the smaller GE864, and then in 2009 the GE865 which, measuring only 22 x 22mm, was for a long period the smallest m2m device in the market, and still is in fact, the smallest quad-band. In the past I used to hear that this was not relevant and that size was not a selling feature. I didn't think so then and still don't, as I watch many of our competitors working to follow suit. Presently, we are working on some advanced concepts to reduce the overall size and thickness of our products even more and that will certainly be a big advantage for those applications requiring communications and which have strong size-related physical design constraints. Clearly I'm thinking about all those devices that will be required by the cloud computing approach and high mobility. This will definitely be the next challenge on our desks. <<

TELIT LOCATION SOLUTIONS: OFFERING THE BEST OF GPS

INTERVIEW WITH GEORGE ARNOTT, VICE PRESIDENT, TELIT LOCATION SOLUTIONS

telit2market: *Firstly, welcome aboard Telit! You were part of the Navman Wireless OEM acquisition last December and now oversee the Telit Location Solutions business unit. Can you tell us a bit about Navman?*

Arnott: Thank you. It's good to be on-board. We are looking forward to a very successful future together with Telit.

Most of our group is made up of ex-Rockwell employees, a big defense contractor based here in Orange County, California during the '80s and '90s. We all come out of the GPS/satellite/AVL (automatic vehicle locate) arena, both chipsets and modules. Navman was a little New Zealand-based marine electronics company that was a customer of Rockwell's when we were just introducing GPS to the market. In 1998, Rockwell spun off to become Conexant and sold their GPS module business to Navman. I came to Navman in 2003 and soon after Brunswick purchased it mostly to serve its marine business. However, at that time, car navigation systems took off and revenues peaked at around $400 million. Later, Navman sold its personal navigation device (PND) unit and its marine electronics business. In 2006, six senior executives, including myself, purchased the remaining GPS OEM module business in a management buyout.

We've done about six million GPS modules over the years, and hundreds of custom variations. We consider ourselves a positioning company that has some of the most experienced professionals in the business.

t2m: *What led to the acquisition?*

Arnott: Well, we hadn't planned on selling the business for at least another year or so because we were expecting strong growth and the valuation would've grown as well. But our goal was to always tie our GPS business to a wireless modem manufacturer because virtually all our customers use them. We started building GPS modules for Telit and started seeing all these synergies between the two companies. Telit asked if we were interesting in selling the business. We always felt that the GPS module part of Navman's business was never funded properly and needed to be separated from the AVL side to reach its potential in the market place. So it just made sense.

t2m: *What are those synergies you see between the two companies?*

Arnott: Everything we do goes along with a wireless modem. We know how to extract the best sensitivity and highest performance out of a GPS module, just like Telit does with its wireless M2M . We are competitive in our pricing and give the customer a turn-key solution that's ready to be dropped into an application. We consult with our customers on designs to get the most out of an application. These are all things Telit does as well in its business. We also have similar component manufacturing needs so we can gain economies of scale. That gives us the best pricing. Also, Telit has offices everywhere and that is a huge benefit that will amplify the success of our products.

t2m: *How will Telit benefit most from the acquisition?*

Arnott: They will be able to concentrate their engineering resources solely on wireless modules and services. Telit's expertise is in building wireless M2M modules. GPS was a sideline because the market wanted a GPS module. Bringing Navman into the group now gives them the expertise in GPS. They can take those engineering resources previously dedicated to GPS and focus on what they really do well. And we'll focus on what we really do well. We know GPS. We know navigation.

Vita

George Arnott has been in the navigation business for more than 30 years, holding a variety of managerial and executive positions in companies large and small. Joining Navman Wireless OEM in 2003, George transformed the business into a global industry leader. With both business and technical expertise, Arnott has been involved in all phases of the design and manufacturing process for GPS modules for navigation devices. Previously, Arnott served in leadership roles at Koden Marine Electronics, Rockwell Industries, Conexant and Skyworks.

We know positioning. And Telit knows wireless M2M. That's the beauty of these two businesses blended together.

t2m: *Will the Navman brand still be on the products?*

Arnott: The Navman name won't be kept as part of the brand but Jupiter will still be used in the product name. Everyone in GPS knows the Jupiter name, which was the original Rockwell GPS module when GPS modules first became available for commercial use. So that's where the Jupiter name comes from and we will continue with it.

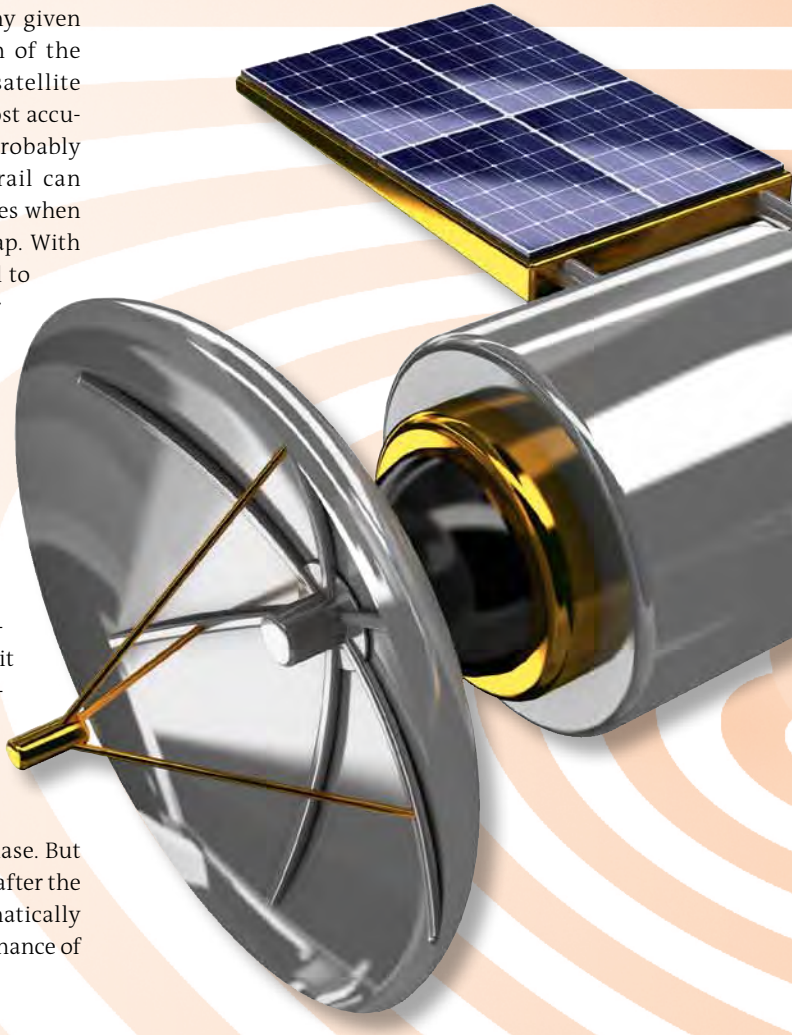
t2m: *What are currently the most exciting products Telit Location Solutions is offering?*

Arnott: We are introducing new products that should put us ahead of the competition. The most recent is a module that combines U.S. GPS with the new Russian GPS GLONASS.
We originally thought that this product would give us a step up on the Russian market. But as we did some testing we found that any GPS application would see incredible performance improvements. With normal GPS, you get six to eight satellites in view, especially in urban environments. With GPS and the Russian GLONASS you can see up to 22 satellites at any given time. The combination of the two offers the best satellite geometry to get the most accurate position. You've probably seen where the GPS trail can meander a bit sometimes when you're seeing your car on a map. With GLONASS you're almost pinned to the street. It also gives you faster acquisition time and more time in navigation. It really is a big step forward in navigation.

Also, many of our products now incorporate what's called " automatic jamming immunity" where the module automatically stops up to eight radio frequency interferers. It benefits any customer in their design because it will tell you exactly what frequency the jammer is and what the amplitude of the jammer is. So pre-development they can eliminate that possible interference during the design phase. But if there's a jammer that pops up after the product is in use, it will automatically remove it, increasing the performance of the GPS to a very high level.

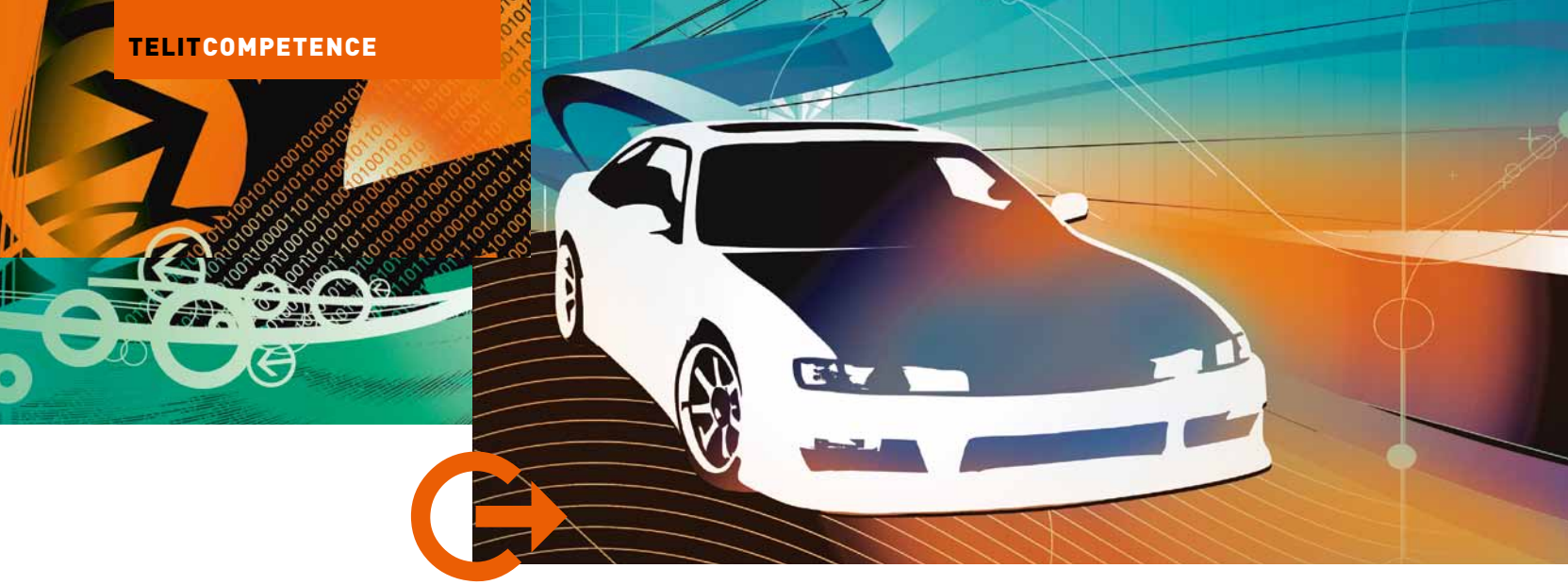
t2m: *Will there be jointly engineered products between your business unit and the other Telit R&D centers in the future?*

Arnott: We're heading down that path, definitely. We provided good suggestions on some GPS solutions Telit is embedding on their products. We're already doing web-based training to transfer all of our knowledge and providing our product design files. As our engineers work more closely together, we are excited about the possibility of creating new hybrid GPS and wireless M2M innovations for Telit customers.



JUPITER JF2

Jupiter JN3



WELL PREPARED FOR THE AUTOMOTIVE MARKET OF TOMORROW

Peter-Rene Zucker, *Senior Sales Director Automotive EMEA*

THE AUTOMOTIVE MARKET

>> The acquisition of GPS module supplier Navman Wireless OEM Solutions does underline the company's commitment to optimizing location and communication in this market segment.

We are seeing that GSM and GPS will be central elements for new in-car services based on wireless, always connected, with true position; and making information accessible everywhere. Soon we will see much richer content in traditional In-Vehicle Infotainment (IVI) systems:

- **Real-time traffic and location information**
A number of new services and downloads such as current traffic conditions, guidance to non-full parking lots, hotels with available rooms, cheapest gas stations nearby, and restaurants with special offers.

- **Real-time multimedia access and download**
Internet access to movies, games, and social networks.

- **Better safety and security connections**
Including insurance companies offering better rates if a black-box is installed in the car to log accident data or driver profiles (Pay-As-You-Drive). Quicker help in case of an accident, or a car breakdown, or theft.

- **eCall: Mandated by the European Commission**
All new cars must have an automatic emergency call system installed by 2015. In case of a crash, the e-call system transfers the necessary accident data to the nearest emergency service center called 'public safety answer point' (PSAP). The time it takes emergency responders to arrive at the accident site can be reduced in urban areas by approximately 40% and in the country by more or less 50%. Today, less than 1% of all passenger vehicles in Europe have such a system installed.

- **ERA-Glonass: Accident Emergency Response System of the Russian Federation**
ERA GLONASS follows the eCall specifications and should be compliant with European eCall 112 standards. The objective is to combine mobile communications and satellite positioning to provide faster assistance in case of collisions. Its infrastructure is planned to be installed in 2013 and systems in all vehicles in 2014.

Vita

Peter-Rene Zucker has been Telit's Senior Sales Director Automotive for EMEA since February 2012. Zucker joined the company to strengthen its brain trust in its fastest growing market segment. The experienced sales expert started in Automotive with over 7 years in the IT and CAD/CAM environments. For the last 14 years he acquired in-depth GPS experience, working for pioneer SiRF Technology. He was part of early introduction of GPS solutions into commercial applications – focused on the automotive market – for almost 10 years while competing for best-in-class car navigation systems. In 2009, after the merger of GPS market leader SiRF with CSR, Zucker added experience in the field of combining location and connectivity solutions. His market know-how positions Telit to better penetrate the automotive business.

TELIT AND THE AUTOMOTIVE MARKET

Quality processes and test scenarios are key elements in the automotive industry. And since quality is one of Telit's core values, we are fully committed to achieving the highest levels of product and process quality possible. A very important measure to ensure long-term stability and quality of our products is a validation testing process which products have to pass before they can be accepted for use in the automotive market, called the PPAP (Production Part Approval Process). Telit is fully engaged in meeting quality targets set by car manufacturers which specify guidelines for zero-defect functionality for car components over the long lifetimes in automotive. Our production sites in Germany and China are TS 16949 certified for automotive grade products.

Because of these very different and specific needs of this industry, Telit has created a dedicated department to enhance support and expand services for the automotive market with focus on all various aspects this strategic market does require.

Four teams inside this department offer value-rich support in the different phases of development:

1. The team focused on field testing and software validation with the particular accuracy specified for all features used by automotive integrators as well as a detailed analysis on interoperability of various modules with different network operators.
2. The team focused on the so called "Reliability Validation" such as PPAP testing and verification, HALT testing and others.
3. The team in charge of first and second level technical support which is directly in touch with the developers at the customer sites, supporting the integration engineers in the design phase.
4. And the team in charge of all issues related to "interactions" among different functions inside the company: R&D, purchasing, quality, test engineering, etc. The objective of this team is to schedule and harmonize every activity of the different Telit departments to enhance the management of requests from customers in general.

With the acquisition of Navman Wireless OEM Solutions, Telit is now able to offer existing GNSS location solutions in addition to its GSM portfolio for the automotive industry. This combination of connectivity, communication and location capabilities will enhance our market position dramatically as key-areas within the demanding automotive industry can be addressed in an optimal way. <<

THE TELEMATICS INDUSTRY UNDERGOING SIGNIFICANT EVOLUTION

Cyril Zeller, *Senior Sales Director – Global Telematics Segment*

>> With about 7.5 million units in service worldwide out of a total available market close to 300 million commercial vehicles, the Telematics industry shows huge potential and is now entering a major consolidation and acquisitions period, especially as we see new verticals addressing personal vehicles also. That is largely why Telit adopted a new organizational model at the end of 2011 going from a traditional organization with Regional Sales Directors responsible for every vertical in the m2m space to segment specialists now focusing on strategic verticals on a global basis, gaining much deeper market understanding to optimize customer services.

The Telematics market is still incredibly fragmented, vertically integrated, and unlike most mature high-tech industries, firmware rather than operating system makes up the base upon which applications run. Despite these characteristics, the Telematics industry has been steadily growing, and is now reaching a degree of maturity which translates into huge consequences for the market:

Vita

Cyril Zeller is Senior Sales Director, Global Telematics. As sales expert he is accountable for the analysis of the Telematics market including its key players and to further develop the company's strategy in this segment. In addition Mr. Zeller is responsible for the development of Telit's sales business in telematics and supports the Telit sales force with his knowledge in this rapidly growing market.

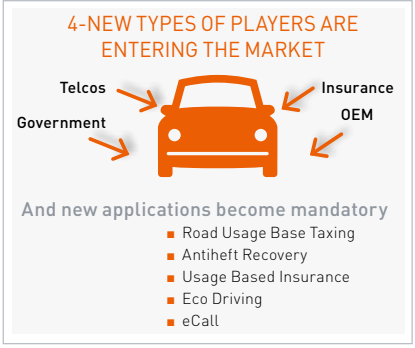
Until September 2011, Cyril Zeller was VP Sales & Marketing of Mobile Devices Ingénierie, a leading European company in telematics technology backed up by Innovacom venture capital. Mobile Devices provides its partners with a unique ecosystem which includes a Telematics multi-application OS (Morpheus 3.0) with its open SDK.

Cyril Zeller, 43 years old, Master of Science in Marketing, started his career at the Bolloré group. After that he undertook different missions in auditing and business management. Subsequently Mr. Zeller became Managing Director of bartering companies such as T.E.C. or Barterfina. Next, he joined Bestmarques.com as Director of Sales, an on-line sales joint venture with Marie-Claire and Roularta group.

New large players are coming in
- Car OEMs (especially in the LCV & HCV)
- Insurance companies
- Wireless carriers

Major consolidation
- Digicore & Minor Planet
- FleetMatics & SageQuest
- Skybitz & Telular

Private equity starting to put up "big money"
- Francisco Partners
- Bertram & Actis
- Vector Capital



The consequences for us are therefore very significant as well. Besides hiring segment "experts" Telit has some key questions to consider:

? Who is going to buy modems tomorrow? Integrated TSPs still? Box vendors? Car OEMs? Insurance Companies? Carriers?

? What will be the driving competitive advantage for them? Price? Size? Support? Services?

? How can we scale up the value chain? Providing air time? Reference designs? m2m modules with embedded SW platform?

? How can we help our partners shorten their time-to-market and rationalize their design?

? With a growing number of Telematics Service Providers (TSP) engaging in make or buy feasibility studies, major insurance companies launching their Usage Based program, car OEMs working on their connected vehicles and Wireless carriers developing their strategies in the m2m space, Telit more than ever needs to be close to its strategic partners to wield its R&D resources anticipating their needs.

We are also seeing that new regulations are key drivers for the industry's growth. Projects like toll collect in the Netherlands, Eco-tax in Europe, Hours of Services in the US, Era-glonass in Russia, and Contran 245 in Brazil should have tremendous impact on the industry and it is Telit's role to be in a position to serve its parters with the right products at the right time.

As a market leader, Telit is already engaged in many concrete solutions.

Consider for example, a general preference for the use of CDMA over GPRS in some regions. Or that the migration from 2G to 3G will happen faster than expected. The new xE 910 family offers Pin-to-pin compatible footprint in 2G, 3G, CDMA, EVDO, and 4G modules so that service providers can target all markets with only one board.

Consider another situation where some governments are imposing use of one satellite positioning network over another or prescribing higher location accuracy for some markets. The new JF family offers GPS only and GPS/Glonass modules with compatible footprints, to reduce the number of boards even more.

Consider finally that you want to address new regions without going through time consuming carrier agreements and selection. Or that your current carrier does not support efficient roaming in all regions where your customers are. We can provide SIM cards, air-time and SIM administration portal buddled with the modules in a global added value pack.

The quality of the relationship we can develop with our Telematics partners is key to us, and we believe that only a good understanding of the market expectations will allow us to anticipate our cousomers' needs. <<

HE910 Family


Jupiter JF2


Jupiter JN3

GREAT, WELCOME CHANGES WITH GLONASS

Alexander Pronin, **Telit RSD**, *Russia and CIS*

>> Although the first navigation satellites were launched over 50 years ago, satellite navigation and positioning has only become popular with the introduction of reliable and easy-to-use systems like the American Global Positioning System – GPS, and the Russian GLObal NAvigation Satellite System – GLONASS. Although GPS and GLONASS were initially intended for military use, there are presently more civilian users of these systems and GPS and combined GPS/GLONASS navigation receivers can now be made very small and inexpensive.

Flight tests for the high altitude GLONASS satellite navigation system were started in 1982 with the launch of the Kosmos1413. The GLONASS system was brought into operational testing in 1993. By 1995 the complete orbital group of 24 satellites was formed. The system was able to provide continuous global navigation for all types of users with different levels of quality requirements for navigation support. But the reduction in funding for the space industry in 1990 led to a degradation of the GLONASS constellation. The President and the Russian government have since approved a number of policies, including the federal program "Global Navigation System" providing the system with protection and means for moving forward.

These regulations specify: the creation of a global navigation field which allows the determination of coordinates of objects with a high degree of accuracy and reliability; the introduction of satellite navigation technologies into the information architecture for traffic management; improved security for the country's road transport sector; a significant reduction in operating costs; and a ban on traditional ground-based navigation radio equipment. As a result the current GLONASS constellation has reached a total of 31 satellites, including 24 operating spacecraft, providing 100% coverage of the Earth's surface.

Because of its heightened importance, the Government of the Russian Federation continuously monitors the maintenance of the GLONASS system, its functionality, performance and quality improvements to navigation services, and fosters adoption of GLONASS along with GPS in Russia and worldwide.

One of the key projects based on GLONASS navigation technology in Russia is the ERA-GLONASS, similar to the European eCall. The project has a high level of social significance and is a valuable example of GLONASS' technology applied to improve safety in all regions of the Russian Federation. The draft ERA-GLONASS legislation requires mandatory installation of an ERA terminal consisting of a GLONASS receiver and a GSM communication device, in all new vehicles manufactured after 2013. In the event of a serious accident, the system automatically signals the exact location of the vehicle using System112 control points. The device connects an emergency operator with the driver. Upon confirmation of the emergency, the operator can organize an emergency response by sending an EMERCOM team, Traffic police, ambulance, etc. These terminals can also be manually operated by the car owner to request a wide range of other navigational services.

Other similar projects and the simultaneous solution of issues inherent to them, lead to faster uptake and scale increase of the national navigation market. Adoption of a multi-standard system is new for navigation: today GPS/GLONASS making up the operating base, later the European GALILEO and Chinese Compass will join them. The creation of a state system for emergency and accident response such as the ERA-GLONASS trends along with these tendencies. <<

Vita

Since 2010, Alexander Pronin has been the Regional Sales Director for Russia and the CIS at Telit. Before joining the module manufacturer Alexander held the position of Field Applications Engineer at the Russian subsidiary of ARROW ELECTRONICS, one of the world leaders in electronic component distribution.

Before he started his career in electric components Alexander operated ground equipment at the Pulkovo airport and participated in a number of research and development efforts.

He is an Engineer and holds a masters degree from the Radio-Technical department at Saint-Petersburg's State University for Aerospace Instrument Engineering.

FOCUS ON THE ENERGY MARKET

Emmanuel Maçon-Dauxerre, *Senior Sales Director, Global Energy Segment*

MEMBER OF ESMIG EUROPEAN SMART METERING INDUSTRY GROUP

>> It is a great pleasure to be writing my first article few months after joining the dynamic and professional Telit team. After several years in the M2M space, I accepted the challenge posed to me by Telit to pursue and influence their winning strategy dedicated to the Energy market.

The two main reasons for my choice were first the characteristics of the company – its dedicated employees with their team spirit, its ability to listen to the market and rapidly implement dedicated solutions, its focus on key vertical markets gleaned from new sales positions not only in Energy but also Telematics, Automotive and Consumer in the sales team; and second the impressive product portfolio in cellular and RF technologies for which Telit owns the stack, thus being able to adapt and design dedicated functionalities required by the energy market.

This market is experiencing huge evolution and even revolution with the waves of deregulation started some years ago which have led to deep modification of the ecosystem as well as business models for all the actors in this industry. We are leaving the vertically integrated model in which a utility owns and operates all aspects of the infrastructure and are going towards a multiplicity of business models: from the most implemented one of a split between the utility and the service provider to very specific and unique ones, like the TeliaSonera Vattenfall project in Finland started in 2005 where the acquisition, installation, commissioning, reading, and maintenance of electricity meters were the responsibility of an MNO (Mobile Network Operator), TeliaSonera.

Another important driver of the energy market is the willingness of utilities and governments to reduce the level of required peak generation capacity and to raise targets for energy efficiency to reduce the effect of global warming. Smart grid technology will contribute to improved efficiency and reliability in energy distribution and optimize allocation of resources and utilization of assets.

But as many acronyms are used and sometimes without accurate understanding of what lies behind each, let me review the ones that we face the most

AMR (**A**utomated **M**eter **R**eading): wireless or wire line, but unidirectional system that allows automatic retrieval of data from a meter to determine the consumption since the last reading. AMR systems have been available in the United States at least since the 1980s.

AMI (**A**dvanced **M**etering **I**nfrastructure, or **Smart Metering**): systems that measure, collect, and analyze usage data, and communicate with metering devices such as electricity, gas, water and also heat meters. These systems include meter hardware, communication networks and Meter Data Management system. AMI differs from AMR in that it enables two-way communications with the meter.

Smart grid is a digitally enabled interconnected network for delivering electricity from suppliers to consumers. It consists of three main components:

- generation plants that produce electricity from various sources like nuclear, coal, wind, solar, hydro power, etc.;
- transmission lines that carry electricity from power plants to demand areas;
- and transformers that reduce voltage.

Smart grid is increasingly becoming more important in monitoring energy demand peaks, requesting amounts of needed energy directly to the best energy producer as mentioned above. Various infrastructure elements and technology segments comprise the smart grid (see figure 1).

The main challenge faced today by energy distribution companies is to balance the available supply of renewable energy sources with the current electricity demand from customers. And since many renewable energy sources like windmills or solar panels have their production dependent on weather conditions (wind, sun, etc.), available power can only be predicted but not planned.

Renewable energy sources are rather difficult to be efficiently included into energy distributors' daily schedules. To that extent, the need for a smart grid that collects data on the demand and supply of energy at the household level and communicates that in real time with the energy sources is crucial.

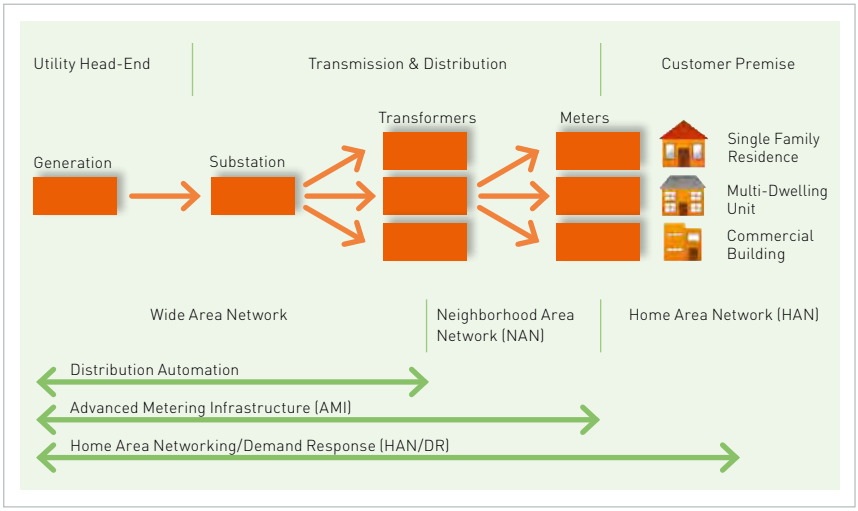


Figure 1 / Source: ABI Research

As seen in the figure below, at the customer premise there is the need to better monitor the energy consumption. This capability is known as HAN (Home Area Networking) or DR (Demand Response).

Now, back to market considerations, the initial large scale deployments seen so far have been mainly limited to electricity meters using PLC (Power Line Communication), cellular (GSM, GPRS) and RF Fixed Network technologies. These electricity meter deployments will continue but new deployments for gas meters are starting to emerge in Europe where short-range RF like ZigBee, wireless M-Bus or proprietary RF protocols will play an important role in place of PLC; and HAN deployments will continue gaining momentum using these RF technologies.

ZigBee Member

Vita

Emmanuel Maçon-Dauxerre has spent the last 20 years in the telecom industry after an initial start in Singapore as a product engineer for Thomson VCR. He has since held various positions in the Telecom industry, first as project manager for a pager operator, and then moving to sales positions from Key account manager up to Sales Director in various companies like Bosch Telecom, Motorola, EXFO and more recently Wavecom/Sierra Wireless where he managed the Key Account team for EMEA as well as Southern Europe Sales. Emmanuel is a graduate Engineer in Physics from the National Polytechnic Institute (INP Grenoble) and holds a MBA from EM Lyon school of Business in France.

Today Telit's offerings address well each of the telecommunication needs of smart metering through:

- a number of cellular products in 2G/3G/CDMA/EVDO and 4G technologies tomorrow with high-value features for the energy market such as:
  - Extended temperature range, embedded SIM to address tough environmental conditions,
  - 3G 900 MHz band to offer increased coverage in areas where less base stations are deployed,
  - Same pin-out and software environment between 2G and 3G modules to ensure solution longevity as cellular networks evolve,
  - Features like remote functionality to monitor the module status, easyScan to detect the best signal without SIM card, limited scan capability to save battery life, Jamming Detection and SSL to better secure the meter or gateway, etc.
  - FOTA (Firmware Over The Air) to maintain and evolve the software
  - etc.

- The short-range RF product line adds brand new ZigBee, Wireless M-Bus and Low Power Mesh and Star Network products featuring:
  - pin-to-pin compatible modules with full IPR stacks in 169 MHz (recently reallocated by the EU decision for Wireless M-Bus) and ISM band (433, 868, 915, 2400 MHz),
  - Extended T°C range,
  - FOTA (Firmware download Over The Air)
  - Short Range (SR) Manager tool allowing firmware upgrade, send/receive data/command from/to the network, configuration wizard, network topology and performance indicator, network analyzer with sniffer, commissioning, and OTA functionalities.

- And now there is also Telit's global managed M2M offering, based on our partnership with Telefonica, which includes also proprietary module and network management VASs (Value Added Service) which may bring great benefits specifically to smart metering deployments. Perhaps the most important ones are:
  - Network diagnostics – non-intrusive software diagnostics agent residing on Telit's modules enabling AMI service providers to obtain real-time, historic and statistical network performance measurements (e.g. Rx level, throughput) as preserved by each AMI unit regardless of its location. For AMI service providers, key benefits include:
    - Increased reliability and continuity in AMI services
    - Substantial decrease in service costs and on-site technician visits
    - Reduction in unneeded AMI terminal repair and replacement
    - Differentiator for pre and post sales – increases customer's stickiness, lowers churn
    - Supports SLA management on the AMI unit level
    - Empowers CSRs and technical support teams to offer better and consistent service
  - Enhanced network coverage and redundancy – AMI applications are often sensitive to network coverage since they are static. This issue intensifies in large countries as coverage is inherently problematic. As opposed to local SIM cards, Telefonica's roaming SIM solution which is part of Telit's end-to-end m2m offering, can deliver data over multiple national mobile networks. Moreover Telit's offering supports real-time enforcement of data traffic steering to a preferred mobile network. As a result, Telit's connectivity performance, reliability and availability are superior over local mobile networks and with redundancy. For AMI service providers, key benefits include:
    - Reduction in support tickets
    - Reduction in end customer field-staff on-site visits
    - Streamlining in support ticket handling
    - Better and consistent technical support
    - Service differentiation

With this said for today, tomorrow we will continue listening to our customers' needs by providing best-in-class solutions to ease and hasten the smart metering implementation. Please feel free to contact me to discuss your energy project at Emmanuel.Macon-Dauxerre@telit.com. <<

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m2m apps is a **free, vendor-neutral** market intelligence platform exclusive to the M2M industry. m2m apps is the product of a group of experts that have come together to address the issue of low visibility of M2M solutions to bringing full transparency to the eco-system and provide insights to adaptors, decision makers and buyers.

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Beecham Research Blog

SIGN UP YOUR COMPANY AND UPLOAD YOUR PROFILE FOR FREE!

TELIT 910 CONCEPT: NEXT STAGE OF THE EVOLUTION

Marco Contento, *Manager, Product Management EMEA*

>> After the introduction of the HE910 and DE910, Telit expands the product family based on the 910 form factor, with the introduction of the GE910 (GSM / GPRS) and CE910 (CDMA 1xRTT).

The introduction of the HE910 featured in the previous edition of this magazine, and the subsequent launch of the DE910 in June 2011, not only marked the introduction of two new broadband modules by Telit – supporting HSPA+ and EVDO respectively – but also the introduction by Telit, of a new family of products – this time LGA – characterized by the same form factor, which is now known as 910.

To understand what kind of market these modules address, we must distinguish between what is an m2m device, and what is not. m2m devices are those which serve specific vertical markets such as POS terminals, ATMs, vending machines, metering systems, asset tracking, home automation and monitoring, to name a few. The definition of what is m2m or what is not has particular importance with respect to the 'connected consumer devices'. Devices that have a single use, such as personal navigation devices (PNDs), e-readers, while still being considered m2m devices, are actually more consumer devices. Then, there are tablet PCs and notebooks which do not run solely m2m applications, and therefore are not m2m devices being considered consumer electronics.

What Telit intends to do is to serve m2m vertical markets like metering for instance, which require industrial-grade 3G WCDMA technology, where the life-cycle of the application in the field is often very long exceeding 10 years perhaps, and also where broadband is typically not required. System integrators focused on such vertical markets, have concerns with 2G network availability in the future. Many network operators are already talking about completely shutting down their 2G GSM/GPRS networks to make room for 3G WCDMA deployments. This is the market for which Telit is targeting the HE910 modules, which feature HSPA 7.2/5.7 Mbps (down/up-link). These are offered in different band-set models: the HE910-NA for North America, and the HE910-EU for Europe.

As for 'always-connected' consumer devices, this is a rapidly growing market. Sales of smartphones and tablet PCs are increasing quickly and so is worldwide coverage of mobile networks supporting HSPA which has reached a point now where broadband connectivity is available essentially anywhere. According to figures provided by the Global Suppliers Association (GSA), there are 451 mobile network operators in the world supporting HSPA, of which 187 support HSPA+. So, for the

UMTS | HSPA
HE910 Family

GSM | GPRS
GE910-QUAD

CDMA | 1xRTT
CE910-DUAL

CDMA | EVDO
DE910-DUAL

28.2 x 28.2 x 2.2 mm

HE910 VARIANTS		
Three high-throughput (HSPA 5.76/21.0) penta-band variants	Three local, lower throughput (HSPA 5.76/7.2) three-band variants	Three local, lower throughput (HSPA 5.76/7.2) three-band variants
800/850/900/AWS/1900/2100 MHz	850/900/2100 MHz	850/1900/AWS
Global	EMEA, APAC, Latin America	North America

consumer market and m2m devices that touch the consumer, but are still considered m2m, Telit offers the HE910 penta-band HSPA+. The product is designed for the global market featuring category 14 (21 Mbps) downlink and category 6 uplink (5.7 Mbps). Moreover, Telit offers the DE910, which is a dual-band 800/1900 EV-DO Rev.A and CDMA 1x module capable of 3.1 Mbps downlink and 1.8 Mbps uplink, targeting the North American market. Both products feature RX diversity and assisted GPS.

With regard to the GE910 and CE910, these two new products are intended to meet the needs of customers requiring products in 2G technology, which are pin to pin compatible with the respective 3G products. Specifically, Telit offers the GE910 GSM/GPRS, as counterpart to the HE910, and the CE910, CDMA 1x offered as counterpart to the DE910. But nothing prevents system integrators from developing an application that can mount, as necessary, the GE910, the HE910, the CE910, or the DE910. There is also the high-value feature of these four products based on 910 form factor, which is the AT command interface common to all four products, except for minor differences inherent to the different radio access technologies and which represent the main difference among the four products.

The rapid increase in mobile data traffic experienced in the past few years, basically supported by HSPA and HSPA+ technologies, is now driving attention toward deployment of LTE as rapidly as possible, garnering industry support globally. Moreover, the LTE standardization is complete, and 3GPP Release 8 is the basis for initial LTE deployments. LTE technology supports higher data transmission speeds compared to HSPA, extending rates to 100 downlink Mbps and 50 uplink Mbps - under the 3GPP Release 8 specification. LTE also fully supports IP-based networks. Adoption of LTE further reduces cost-per-gigabyte of traffic which is essential for consumer always-connected devices.

LTE is the natural migration for network operators currently supporting GSM, HSPA, WiMAX, and CDMA; and is the fastest developing of the mobile technology system. According to GSA, there are currently 285 mobile network operators currently investing in LTE in 93 countries, and there are already 49 networks commercially launched. Mobile operators look at consumer electronics devices as a major factor for an ARPU growth. That considered, Telit has planned to develop LTE modules in 910 form factor for the consumer market in the coming years, to be used in tablet PCs and notebook computers requiring always-connected mobile connectivity. Moreover, considering the varied combination of LTE and HSPA+ bands required by mobile network operators, and the new bands allocated for LTE, such as 2600MHz as well as the bands released as part of the Digital Dividend (white-space): 700 MHz in USA and the 800 MHz in Europe, many product variants will be needed in order to support the different combinations. <<

POSITIONING TECHNIQUES

Valerio Carta, *Product Manager*

>> The acquisition of a device's position information is a key factor for a wide range of Cellular m2m applications such as asset tracking, infotainment, theft prevention, and surveillance systems. The acquisition and updating required for a reliable position is usually performed using a GPS receiver mounted in tandem with a cellular module or by means of a module combining Cellular and GPS. The cellular module is required to send and receive data to and from a remote server.

Besides the position fix resulting from use of satellite navigation systems, there are other methods for a cellular device to perform an estimation of device position. For instance, by using measured parameters from 2G and 3G mobile networks, and methods like BTS triangulation (Cell-ID, OTDOA, AOA and so on) it is possible to obtain an estimated position.

The quality and reliability from Cell-ID positioning is not comparable with GPS in outdoor environments. However, Cell-ID performs well compared to GPS in indoor environments. It should also be highlighted that standalone GPS modules can face serious problems in harsh outdoor environments such as urban canyons, due to the limited visibility of a plot of sky. Limited satellite visibility can be experienced not only around the classic high-rise business centers but also in other apparently less harsh environments like Venice's canals where it is so difficult (or impossible) to perform a fix and the operation is so slow that data in not available at the right moment.

Assisted GPS (AGPS) mitigates the effects of these limits by means of some assistance in performing the position fix. There are different types of assisted GPS which can basically be divided into two main groups: server based and network based. It should be noted that both services require cellular network access; the difference is that in server-based AGPS the m2m application connects to a "server-based service" using whatever cellular network, making it MNO independent. This is not the case for network based service. In fact, it is possible that AGPS will not be available because a given network does not offer a necessary resource such as, for example, MS-Assisted service.

Server-based assistance requires availability of a server where the information necessary to perform a fast and reliable fix is stored. This information can be, for example, the so-called "extended ephemeris" file (EE File), a file containing the satellite ephemeris (precise satellite orbit). Injection of the EE file into the GPS receiver, allows a fast and reliable fix even when it is difficult to collect enough information from the data broadcasted by satellites. This allows booting the GPS in a "hot start" condition. The EE file is downloaded from the server by means of an internet connection via the cellular module in the m2m application device.

Another type of information provided by the server can be a rough position calculated by the server itself, based on the Cell-ID database. The server performs an estimation of device position based on network parameters measured and collected by the device in the field, and sent to the server via internet. Position error depends upon the number of cellular base stations in range and on the quality of the data stored in Cell-ID database. This data is in fact, a collection of measured

positions collected by devices, mainly cellphones, using applications able to map the network parameters paired with GPS positions and sending this data to the Cell-ID database. The accuracy is generally lower outdoors while it is better in cities where the number of cellular base stations is higher.

This rough position provided by the Cell-ID database can be used as-is but for a better result, it can be also injected into the GPS as initial point. The rough position and the time mark, in fact, help the embedded GPS to start in a warm-start condition (Hybrid Approach).

In all these cases, the cellular network is used only as bearer, without any additional role than pure networking, providing the internet access to download the assistance files.

Besides server based assistance, network assisted positioning techniques are those where the GPS is aided by the cellular network, making them MNO-dependent.

Generally speaking, it is possible to divide Network assisted positioning into two groups: MS Assisted and MS Based.

In general, it is possible to divide network-assisted positioning into two groups Mobile Station (MS) Assisted and Mobile Station (MS) Based. MS Assisted is that where the network transmits an assistance message to the MS, consisting of a time mark, visible satellite list, ephemeris, and other parameters. These aiding parameters help the embedded GPS receiver reduce acquisition time considerably. The embedded GPS receiver acquires satellite pseudo-ranges and then sends them to network base station where the position fix is calculated and then sent back to the device. This method requires most of the hardware elements of a stand-alone GPS receiver (i.e. antenna, RF front-end, and digital processor), but can generally get by with less RAM and ROM as the firmware required to compute the position solution exists elsewhere in the network. MS Based is that where the onboard GPS is used to collect satellite data and the cellular network is used to obtain rough position, time mark and other data allowing a fast TTFF. Position is calculated onboard. The MS-based device can also work in an autonomous mode providing position solutions to the user or embedded application without the cellular network provided aiding data.

In both these network-assisted cases the MNO is an active part of the process. The network operator either performs the position estimation or sends aiding parameters in order for a reliable and quick fix to be performed. Position or aiding data can be sent using different dedicated channels and protocols, like SUPL (over User plane, defined by OMA) or RRLP (Over Control Plane, defined by 3GPP).

Under the definition of assisted GPS, we can also include the ephemeris estimation generated onboard, i.e. in the GPS chipset. The increase in computing power and memory of the latest GPS chipsets, allows chip manufacturers to embed in the GPS firmware an engine able to perform the calculation of the extended ephemeris data starting from the data broadcasted by satellites.

This approach does not require any network assistance. The accuracy of the EE file generated onboard is lower than the EE file calculated on a server, especially when calculated data is for long periods with validity for 3, 7, 14 days. Nevertheless, it does allow a TTFF during hot start condition with a CEP (Circular Error Probability) that increases in inverse proportion to the numbers of days left.

This "self-assisted method" combined with the completion of Glonass constellation and the ramp-up of Galileo mitigates the urban canyon effect because even for a small visibility angle, the probability of track a sufficient number of satellites to perform a fix is significantly higher.

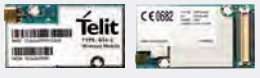
By the way, for an indoor fix, some network information is always required to produce a reliable result due to the weakness of satellite signals. <<

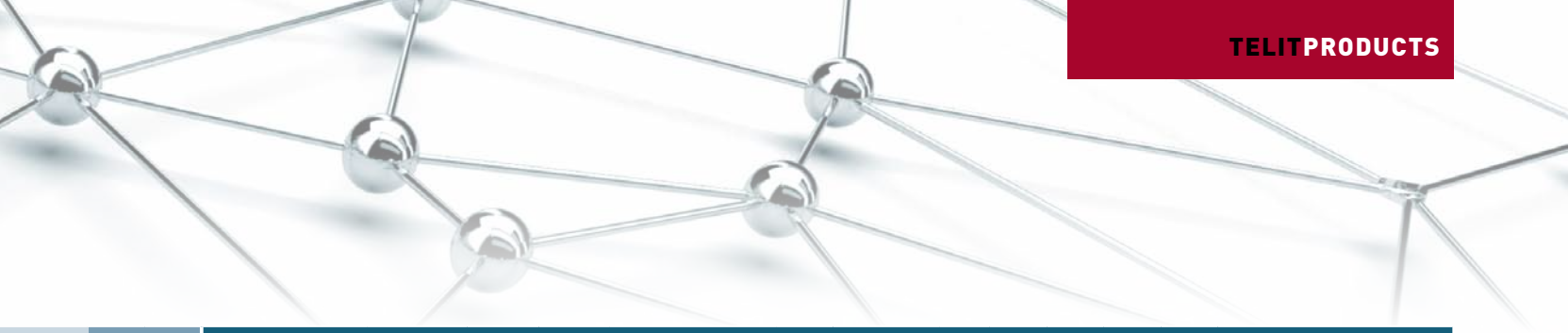
Telit understands well the requirements of indoor and outdoor position calculation and provides AGPS-capable modules covering different AGPS requirements as detailed in the following table.

Technology	Features	Supporting modules
SUPL / RRLP	MS-based Mobile-Assisted	HE910
gpsOneTM	Mobile-Assisted Hybrid Mobile-Assisted Mobile-Based Stand Alone Mode	CC864-DUAL DE910-DUAL C24 H24
Server Generated Extended Ephemeris (SGEE) download	The Extended Ephemeris are calculated by server and downloaded and injected in the GPS. Network connection is required.	GE864-GPS JF2 JN3 SL869
Onboard/Client Generated Extended Ephemeris (CGEE)	The Extended ephemeris is calculated on the client device starting from data broadcasted by locally visible satellites. Network connection is not required.	GE864-GPS JF2 JN3 SL869

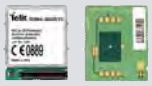
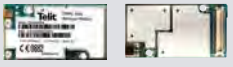
CELLULAR PRODUCT RANGE

FORM FACTOR AND FAMILY CONCEPT

TECHNOLOGY	FORM FACTOR	PRODUCT	Cellular Technology	GPRS / EDGE Class	Data Speed [UL/DL] Kbps	Interfaces			
						USB type	AAI (analog audio interface)	DVI (digital voice interface)	DAC (digital to analog converter)
GSM | GPRS	Terminal	**GT863-PY** 	2 G (GSM/GPRS)	GPRS Class 10	2 G (GSM/GPRS) Kbps: 42.8 /85.6				
		GT864-QUAD **GT864-PY** 	2G (GSM/GPRS)	GPRS Class 10	2 G (GSM/GPRS) Kbps: 42.8 /85.6		x		
	Modem	**GM862-GPS** 	2 G (GSM/GPRS)	GPRS Class 10	2 G (GSM/GPRS) Kbps: 42.8 /85.6		x		
	Embedded	**GE863-GPS** 	2 G (GSM/GPRS)	GPRS Class 10	2 G (GSM/GPRS) Kbps: 42.8 /85.6		x	x	x
		GE863-PRO³ 	2 G (GSM/GPRS)	GPRS Class 10	2 G (GSM/GPRS) Kbps: 42.8 /85.6	2.0 - FS	x	x	x
		GE864-QUAD V2 **GE864-QUAD Automotive V2** **GE864-QUAD Atex** 	2 G (GSM/GPRS)	GPRS Class 10	2 G (GSM/GPRS) Kbps: 42.8 /85.6		x	x	x
		GE864-GPS 	2 G (GSM/GPRS)	GPRS Class 10	2 G (GSM/GPRS) Kbps: 42.8 /85.6		x	x	x
		GE865-QUAD 	2 G (GSM/GPRS)	GPRS Class 10	2 G (GSM/GPRS) Kbps: 42.8 /85.6		x	x	x
		GL865-DUAL **GL865-QUAD** 	2 G (GSM/GPRS)	GPRS Class 10	2 G (GSM/GPRS) Kbps: 42.8 /85.6		x	x	x
		GE910-QUAD 	2 G (GSM/GPRS)	GPRS Class 10	2 G (GSM/GPRS) Kbps: 42.8 /85.6		x	x	x
	Embedded / Compact	**G30** 	2 G (GSM/GPRS)	GPRS Class 10	2 G (GSM/GPRS) Kbps: 42.8 /85.6		x		
	Compact	**G24-LITE** 	2 G (GSM/GPRS)	GPRS Class 10	2 G (GSM/GPRS) Kbps: 42.8 /85.6	1.1-FS	x	x	



		Features														
ADC (analog to digital converter)	GPIO (general purpose input/output)	Size	Surface mounting	# Pin, Balls, Pads	Antenna connector	Temperature Range	GPS channels	Embedded TCP/IP Stack	FAX support (Class 1 G3)	SIM Access Profile	Designed for Automotive Applications	Run AT Commands Remotely	Jamming Detection	ATEX	Main Approvals
	x	107 x 64 x 33 mm			SMA	-30°C to +75°C		x	x	x		x	x		R&TTE CE
x	x	77 x 67 x 26 mm			FME	-30°C to +75°C		x	x	x		x	x		R&TTE, CE
x	x	43.9 x 43.9 x 6.9 mm		50	MMCX	-40°C to +85°C	20	x	x	x		x	x		R&TTE CE GCF PTCRB FCC IC SRRC
x	x	41.4 x 31.4 x 3.6 mm	BGA	120	RF PAD	-40°C to +85°C	20	x	x	x		x	x		R&TTE CE GCF PTCRB FCC IC SRRC
x	x	41.4 x 31.4 x 3.6 mm	BGA	189	RF PAD	-40°C to +85°C		x	x	x		x	x		R&TTE CE FCC IC
x	x	30 x 30 x 2.8 mm	BGA	120	RF PAD	-40°C to +85°C		x	x	x		x	x		R&TTE, CE, GCF, PTCRB, FCC, IC
											x				R&TTE, CE, GCF, PTCRB, FCC, IC
														x	R&TTE, CE, GCF
x	x	30 x 30 x 2.8 mm	BGA	120	RF PAD	-40°C to +85°C	48	x	x	x		x	x		R&TTE CE GCF PTCRB FCC IC
x	x	22 x 22 x 3 mm	BGA	63	RF PAD	-40°C to +85°C		x	x	x		x	x		R&TTE CE GCF PTCRB FCC IC
x	x	24.4 x 24.4 x 2.7 mm	LCC	48	RF PAD	-40°C to +85°C		x	x	x		x	x		R&TTE CE GCF PTCRB FCC IC
x	x	28.2 x 28.2 x 2.6 mm	LGA	144	RF PAD	-40°C to +85°C		x	x	x		x	x		R&TTE CE GCF PTCRB FCC IC
x	x	24.4 x 40 x 3.5 mm	LGA	81	LGA PAD / U.FL	-40°C to +85°C		x	x		x		x		R&TTE CE GCF PTCRB FCC IC STK
			Board2Board	70	U.FL										
x	x	24.4 x 45.2 x 6 mm	Board2Board	70	RF MMCX	-20°C to +75°C		x							R&TTE CE GCF PTCRB FCC IC STK

TECHNOLOGY	FORM FACTOR	PRODUCT	Cellular Technology	GPRS / EDGE Class	Data Speed [UL/DL] Kbps	Interfaces: USB type	Interfaces: AAI (analog audio interface)	Interfaces: DVI (digital voice interface)	Interfaces: DAC (digital to analog converter)
GSM | GPRS	Compact	**GC864-QUAD V2** 	2 G (GSM/GPRS)	GPRS Class 10	2 G (GSM/GPRS) Kbps: 42.8 /85.6		x	x	x
EDGE	Compact	**G24-EDGE** 	2 G (GSM/GPRS) 2.75 G (EDGE)	GPRS Class 10 EDGE Class 10	2 G (GSM/GPRS) Kbps: 42.8 /85.6 2.75 G (EDGE) Kbps: 118.4/236.8	2.0-FS	x	x	
UMTS | WEDGE	Compact	**UC864-WD** 	2 G (GSM/GPRS) 2.75 G (EDGE) 3 G (UMTS) 3.5 G (HSDPA)	GPRS Class 12 EDGE Class 12	2 G (GSM/GPRS) Kbps: 85.6/85.6 2.75 G (EDGE) Kbps: 118.4/236.8 3 G (UMTS) Kbps: 384/384 3.5 G (HSDPA) Mbps: 0.384/7.2	2.0-FS			x
UMTS | HSDPA	Terminal	**GT864-3G** 	2 G (GSM/GPRS) 2.75 G (EDGE) 3 G (UMTS) 3.5 G (HSDPA)	GPRS Class 12 EDGE Class 12	2 G (GSM/GPRS) Kbps: 85.6/85.6 2.75 G (EDGE) Kbps: 118.4/236.8 3 G (UMTS) Kbps: 384/384 3.5 G (HSDPA) Mbps: 0.384/7.2	2.0			
		GT863-3GG 	2 G (GSM/GPRS) 2.75 G (EDGE) 3 G (UMTS) 3.5 G (HSDPA)	GPRS Class 12 EDGE Class 12	2 G (GSM/GPRS) Kbps: 85.6/85.6 2.75 G (EDGE) Kbps: 118.4/236.8 3 G (UMTS) Kbps: 384/384 3.5 G (HSDPA) Mbps: 0.384/7.2	2.0			
	Compact	**UC864-E** **UC864-E-AUTO** **UC864-K** 	2 G (GSM/GPRS) 2.75 G (EDGE) 3 G (UMTS) 3.5 G (HSDPA)	GPRS Class 12 EDGE Class 12	2 G (GSM/GPRS) Kbps: 85.6/85.6 2.75 G (EDGE) Kbps: 236.8/236.8 3 G (UMTS) Kbps: 384/384 3.5 G (HSDPA) Mbps: 0.384/7.2	2.0-FS	x	x	x x
		UC864-E-DUAL **UC864-G** 	2 G (GSM/GPRS) 2.75 G (EDGE) 3 G (UMTS) 3.5 G (HSDPA)	GPRS Class 12 EDGE Class 12	2 G (GSM/GPRS) Kbps: 85.6/85.6 2.75 G (EDGE) Kbps: 236.8/236.8 3 G (UMTS) Kbps: 384/384 3.5 G (HSDPA) Mbps: 0.384/7.2	2.0-FS	x	x	x
UMTS | HSPA	Embedded	**HE863** 9x Product Family 	2 G (GSM/GPRS) 2.75 G (EDGE) 3 G (UMTS) 3.5 G (HSPA)	GPRS Class 33 EDGE Class 33	2 G (GSM/GPRS) Kbps: 85.6/107 2.75G (EDGE) Kbps: 236.8/296 3 G (UMTS) Kbps: 384/384 3.5 G (HSPA) Mbps: 5.76/7.2	2.0-HS	x		x
	Compact	**H24** 	2 G (GSM/GPRS) 2.75 G (EDGE) 3 G (UMTS) 3.5 G (HSPA)	GPRS Class 12 EDGE Class 12	2 G (GSM/GPRS) Kbps: 85.6/85.6 2.75 G (EDGE) Kbps: 118.4/296 3 G (UMTS) Kbps: 384/384 3.5 G (HSPA) Mbps: 5.76/7.2	2.0-FS	x	x	
UMTS | HSPA+	Embedded	**HE910** 9x Product Family 	2 G (GSM/GPRS) 2.75 G (EDGE) 3 G (UMTS) 3.5 G (HSPA) 3.75 G (HSPA+)	GPRS Class 33 EDGE Class 33	2 G (GSM/GPRS) Kbps: 85.6/107 2.75G (EDGE) Kbps: 236.8/296 3 G (UMTS) Kbps: 384/384 3.5 G (HSPA) Mbps: 5.76/7.2 3.75 G (HSPA+) Mbps: 5.76/21.0	2.0-HS		x	
CDMA | 1xRTT	Embedded	**CE910-DUAL** 	CDMA (1xRTT)		CDMA (1xRTT) Kbps: 153.6 (full-duplex)	2.0-FS	x	x	
	Compact	**CC864-DUAL** **CC864-SINGLE** **CC864-K** **CC864-KPS** 	CDMA (1xRTT)		CDMA (1xRTT) Kbps: 153.6 (full-duplex)	1.1 1.1	x	x	x
		C24 	CDMA (1xRTT)		CDMA (1xRTT) Kbps: 153.6 (full-duplex)	2.0-FS	x	x	
CDMA | 1xEV-DO Rev.A	Embedded	**DE910-DUAL** 	CDMA (1xRTT) CDMA (EVDO)		CDMA (1xRTT) Kbps: 153.6 (full-duplex) CDMA (EVDO) Mbps: 1.8 /3.1	2.0-HS		x	x

Features																
ADC (analog to digital converter)	GPIO (general purpose input/output)	Size	Surface mounting	# Pin, Balls, Pads	Antenna connector	Temperature Range	GPS channels	Embedded TCP/IP Stack	FAX support (Class 1 G3)	SIM Access Profile	Designed for Automotive Applications	Run AT Commands Remotely	Jamming Detection	ATEX	Main Approvals
x	x	30 x 36.2 x 3.2 mm	Board2Board	80	GSC	-40°C to +85°C		x	x	x		x	x		R&TTE CE GCF PTCRB FCC IC
x	x	24.4 x 45.2 x 6 mm	Board2Board	70	RF MMCX	-30°C to +85°C		x	x				x		R&TTE CE GCF PTCRB FCC IC
x	x	30 x 45 x 4.8 mm	Board2Board	80	MM7329	-40°C to +85°C		x	x	x					CE GCF
x		77 x 67 x 26 mm			FME	-30°C to +75°C		x	x	x			x		R&TTE CE
x	x	83 x 64 x 33 mm			SMA	-20°C to +65°C	12	x	x	x			x		R&TTE CE
x	x	30 x 36.2 x 4.8 mm	Board2Board	80	GSC	-30°C to +80°C			x	x					R&TTE, CE, GCF
					RF PAD			x		x	x				CE, GCF
					GSC										KCC
x	x	30 x 45 x 4.8 mm	Board2Board	80	GSC	-30°C to +80°C		x		x					R&TTE, CE, GCF
							12								R&TTE, CE, GCF, PTCRB, FCC
x	x	31.4 x 41.4 x 3.0 mm	BGA	189	RF PAD	-30°C to +85°C		x	x		(x)				R&TTE CE GCF
x	x	24.4 x 45.2 x 5.4 mm	Board2Board	70	RF MMCX	-30°C to +65°C	12	x	x				x		R&TTE CE GCF PTCRB FCC IC
x	x	28.2 x 28.2 x 2.2 mm	LGA	144	RF PAD	-30°C to +85°C	28	x	x			x	x		R&TTE CE GCF PTCRB FCC IC
x	x	28.2 x 28.2 x 2.4 mm	LGA	144	LGA PAD	-30°C to +85°C		x							FCC IC CDG1 & 2
x	x	30 x 36.2 x 4.8 mm	Board2Board	80	GSC	-30°C to +80°C	12	x							FCC, IC, CDG1 & 2
															KCC, SK IOT
															MIC, SK IOT
															MIC, SK IOT
x	x	24.4 x 45.2 x 5.6 mm	Board2Board	70	RF MMCX	-30°C to +85°C	30	x	x						FCC IC
x	x	28.2 x 28.2 x 2.4 mm	LGA	144	LGA PAD	-30°C to +85°C	32	x							FCC IC CDG1 &2

SRD MODULES
ENABLING THE IOT AND ENERGY SECTOR.

Tony Spizzichino, *CEO RF Technologies*

>> Suddenly mature, and as predicted, the Internet of Things (IoT) is coming and being announced as the most impacting revolution in the ICT. According to the most accredited marketing researches, in the next 5 years this trend will start materializing. And finally there is no doubt that Short Range Devices (SRD), due to their intrinsic characteristics of low-cost and low-power will play a fundamental role in providing connectivity to most of the sensors and actuators in the network.

An impressive yearly growth from 800 Million now to over 4 Billion SRD Wireless Circuits (WC), reportedly, delivered in 2015 with the trend continuing into 2020 when almost 9 Billion of them will be delivered. About 26% of this volume of SRD WC will be module solutions, for a total exceeding 1 Billion SRD modules delivered in the year 2015. This is because the advantages of a modular approach to the multi-standard, multi-technology multi-band requirements imposed by markets, in these inherently long lifecycle applications, are becoming quite well understood by the majority of players facing the start up of the IoT challenge. (See figure 1)

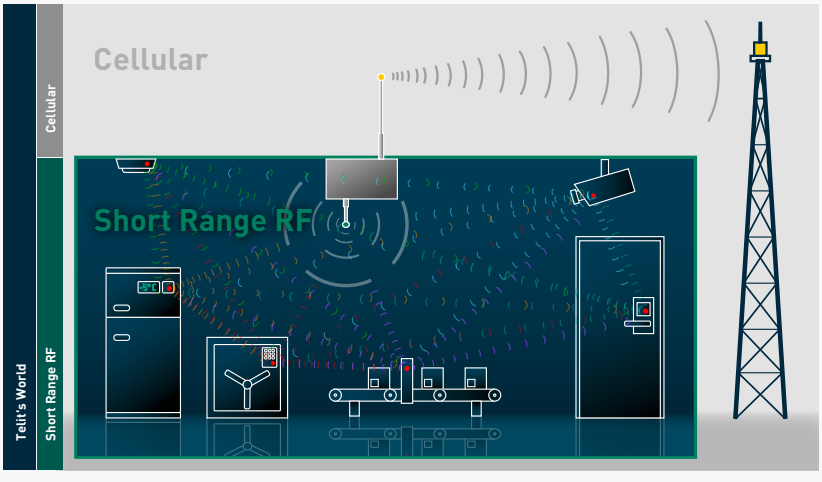
Among the various IoT applications and relevant market segments, the Energy sector is definitively the first one to pick up momentum.

Strongly pushed by government regulations recently imposed in attempts to achieve compliance to the multitude of mandates for carbon footprint and pollution reduction, and resource sustainability, the Energy sector's drive is now materializing in a variety of AMM and Smart Grid initiatives. Efficiency increase and process optimization which are the core values of the subject matter m2m, have here a classical-literature-like application example with the integration of distributed generation sources, impact of electric vehicles likely to raise peak demand, and better customer services enabled by smart metering, to name a few. But even more impressive is the potential for energy savings that smart metering is enabling.

The 'Empowering Demand' report commissioned by the European Smart Metering Industry Group (EMSIG) highlighted an 8.7 % average energy consumption drop across over 100 metering projects where an In Home Display (IHD) was used, with similar reduction percentages in the Critical Peak times. British Gas, the UK leading dual fuel energy utility which is running a large scale metering project, states that 73% of their customers participating in a post-trial survey reported that the use of smart meters and IHD (in Home Display) changed the way they used energy with 64% of them willing to undertake energy efficiency improvements in their homes.

From a technical standpoint, to enable the virtuous capabilities and services of Smart Grid-Metering, several different architectures are possible. However in the EU, the trend which standardization efforts is following is to concentrate the various meters (Electricity, Gas, Water and Heat) into one gateway under full control of the Utility Companies and use a second home-hub, for use by the services sector

SRD AND CELLULAR ARE COMPLEMENTARY



- SRD cost is about 50% of a similar GPRS device
- SRD does not require a Network subscription
- SRD power consumption could be from 0,1 to 15% of a GPRS device

Figure 1

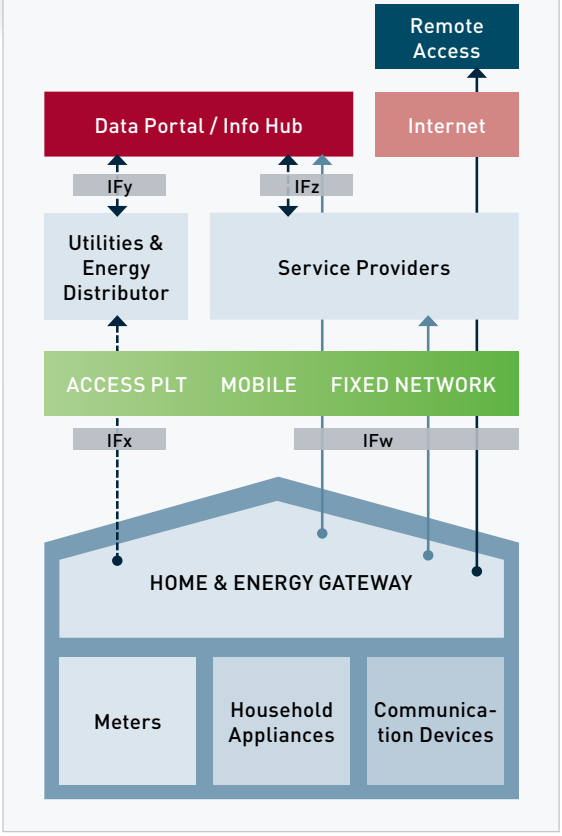


Figure 2: Home Energy Management (HEM) business model

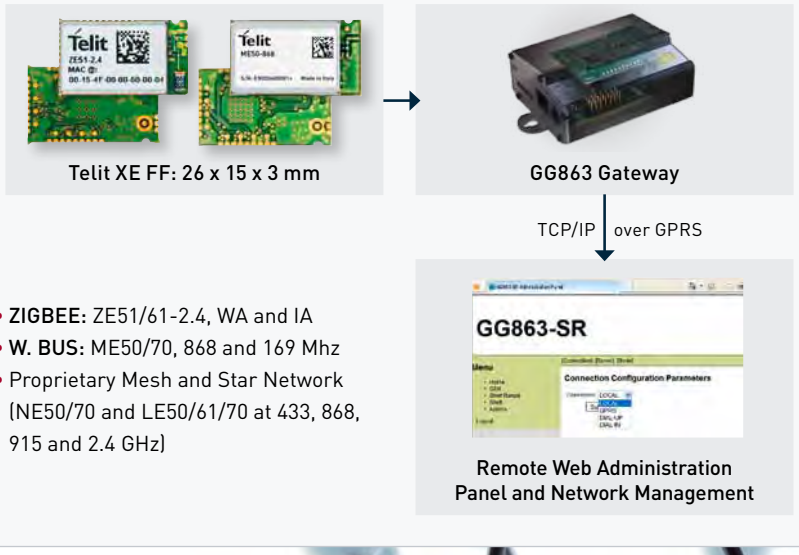


Figure 3: The Telit SRD offer

to enable reporting of consumption data, associated and proposed tariffs, and allow smart management of other home appliances. (See figure 2)

This is opening a second area of market opportunity with impressive potential for companies devoted to Energy value-added-services (VAS), Gateway and Hub design, and sales in general. And for Telit in particular which, despite leading the m2m market in cellular device technologies, started investing resources in SRD at the end of 2008. Telit is in fact still the only m2m wireless technology provider that in addition to an impressive cellular product range can also offer a complete SRD portfolio in an integrated, combined cellular-SR offering. Telit has already developed a vast amount of IPR in Zigbee, Wireless M-Bus and other proprietary networking technologies which combine them into a common single form-factor, interface, and software tool, for an unparalleled market offering. (See figure 3)

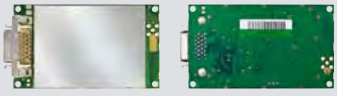
In the last 12 months, Telit has augmented its SRD product roadmap with the introduction of new pin-to-pin and form-factor compatible products in the 433 MHz band (i.e. the star-network, low-power LE50-433, and the low-power mesh-networking NE50-433) and also in the 169 MHz band with the new Wireless M-BUS compliant product, the ME50-169.

The 169MHz recently-EU-reserved and license-free frequency band for AMM applications will in fact allow much better RF performance in comparison to the 433, 868 MHz, and 2.4 GHz, providing both a higher RoI and a lower total cost of ownership (TCO) for Wireless M-Bus-based metering projects. Moreover the new release of Telit's dedicated SRD network tool will enable our partners in this market to manage their SRD network, improving quality of service, and reaping a real competitive advantage in their respective marketplaces. <<

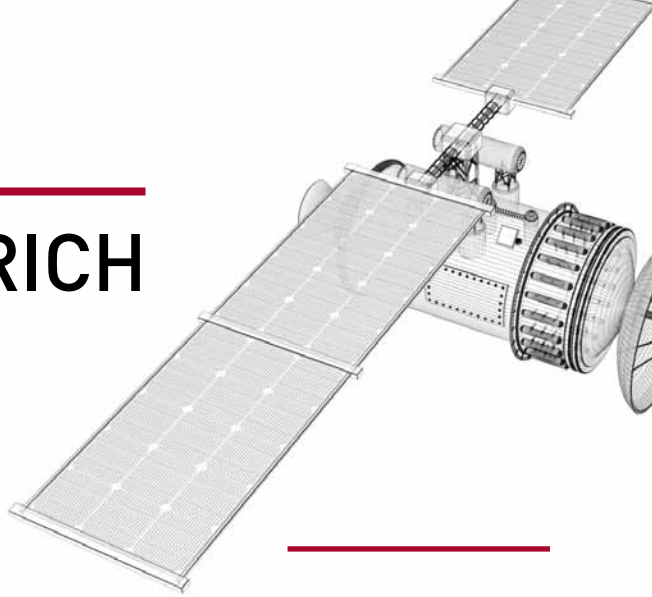
TELIT UNIQUE VALUE PROPOSITION IN SRD IS BASED ON:

- Complete portfolio of Pin2Pin SR modules for **Zigbee, Wireless M-Bus and proprietary protocols** with full IPR stacks in the common Telit SRD Form Factor
- Frequencies: 169, 433, 868, 915, 2400 MHz
- Power Range from 2.5 to 500 mW
- Data Rate from 4.8 to 250 Kbps
- Unique additional features (i.e. Repeater function for lighting)
- Portfolio of SRD/Cellular Gateways
- Network tools to roll up and manage the SRD network
- Developing Tools, Exhaustive Documentations and full support for Design-in and pre-certification

PRODUCT RANGE
SHORT RANGE

TECHNOLOGY	FORM FACTOR		PRODUCT	Range	Frequency
Short Range to GSM|GPRS Gateways	Terminal		**GG863-SR Gateway** **Core:** ARM9 200 MHz 128 MB flash / 64 MB RAM with Linux OS **Cellular:** Quad band GSM/GPRS class 10 	up to 4000 m	169, 433, 868 or 2400 MHz
License-Free System for Frequencies < 1 GHz	Terminal	TinyOne	**TinyOne® Plus 868 MHz** 	1500 m	868 MHz
			TinyOne® Pro 868 MHz 	4000 m	868 MHz
		PowerOne	**PowerOne™ 868 MHz** 	16000 m	868 MHz
	Compact		**PowerOne™ 868 MHz RF modules** 	16000 m	868 MHz
	Embedded	Tinyone	**TinyOne® Plus 868 MHZ RF modules** 	1500 m	868 MHz
			TinyOne® Pro 915 MHz RF modules 	4000 m	915 MHz
		LE Family	**LE50-433 RF modules** **LE50-868 RF modules** 	2000 m	433 MHz 868 Mhz
		NE Family	**NE50-433 RF modules** **NE50-868 RF modules** 	1500 m	433 MHz 868 Mhz
		ME Family	**ME50-169 RF modules** 	5000 m	169 MHz
			ME50-868 RF modules 	2000 m	868 MHz
IEEE 802.15.4 | ZigBee		ZE Family	**ZE51-2.4 RF modules** **ZE61-2.4 RF modules** 	1000 m 4000 m	2400 MHz

Size	Radio Data Rate	Output Power	Sensitivity	Standby	Embedded Stack Option	Antenna Option
83 x 64 x 33 mm	up to 250 Kbps	up to 500 mW			Mesh, ZigBee or Wireless M-Bus	SMA
100 x 62 x 40 mm (casing only) 200 x 62 x 40 mm (with antenna and connector)	4.8 to 38.4 Kbps	5, 10 or 25 mW	-105	70µA	Mesh & Star	Removable
100 x 62 x 40 mm (casing only) 200 x 62 x 40 mm (with antenna and connector)	4.8 or38.4 Kbps	500 mW	-105	4µA	Mesh & Star	Removable
IP65 casing: 159 x 85 x 35 mm (without antenna) IP67 casing: 187 x 80 x 60 mm (without antenna)	9.6 Kbps	25 to 500 mW	-115	15µA	Star Network	Removable
94 x 52 x 13.5 mm	9.6 Kbps	25 to 500 mW	-115	10µA	Star Network	RF pad - SMA
38 x 21 x 4 mm	4.8 to 38.4 Kbps	5, 10 or 25 mW	-105	4µA	Mesh & Star	RF pad
38 x 21 x 4 mm	38.4 Kbps	500 mW	-105	70µA	Mesh & Star	RF pad
26 x 15 x 3 mm	9.6 to 115.2 Kbps 4.8 to 115.2 Kbps	25 mW	-109	1µA	Star Network	RF pad
26 x 15 x 3 mm	38.4 Kbps	25 mW	-103	1µA	Low Power Mesh	RF pad
26 x 15 x 3 mm	2.4 to 38.4 Kbps	35 mW	-120	1µA	Wireless M-Bus	RF pad
26 x 15 x 3 mm	4.8 to 100 Kbps	25 mW	-108	1µA	Wireless M-Bus	RF pad
26 x 15 x 3 mm	250 Kbps	2.5 mW 100 mW	-97 -100	1µA	ZigBee Pro	Integrated - RF pad



TELIT'S NEW FEATURE-RICH GPS PORTFOLIO

Alexander Hauk, *Sr. Sales Director – Telematics Segment North America*

>> Just recently, Telit added a number of new GPS standalone products to the portfolio – time to take a closer look at the new incumbents. The Jupiter branded products come in 2 flavors Jupiter JF2 and Jupiter JN3. Both modules have already been deployed in substantial volumes and tested 100%. Whereas the JF2 is a 1.8V QFN packaging suitable for medium to high volume application the JN3 is designed for a 3V Power source and LCC packaging suitable for low volume application and manual soldering and reworking. Both based on world-class CSR/ SirfIV chipset.

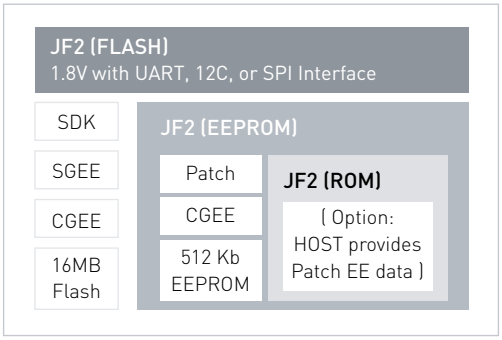


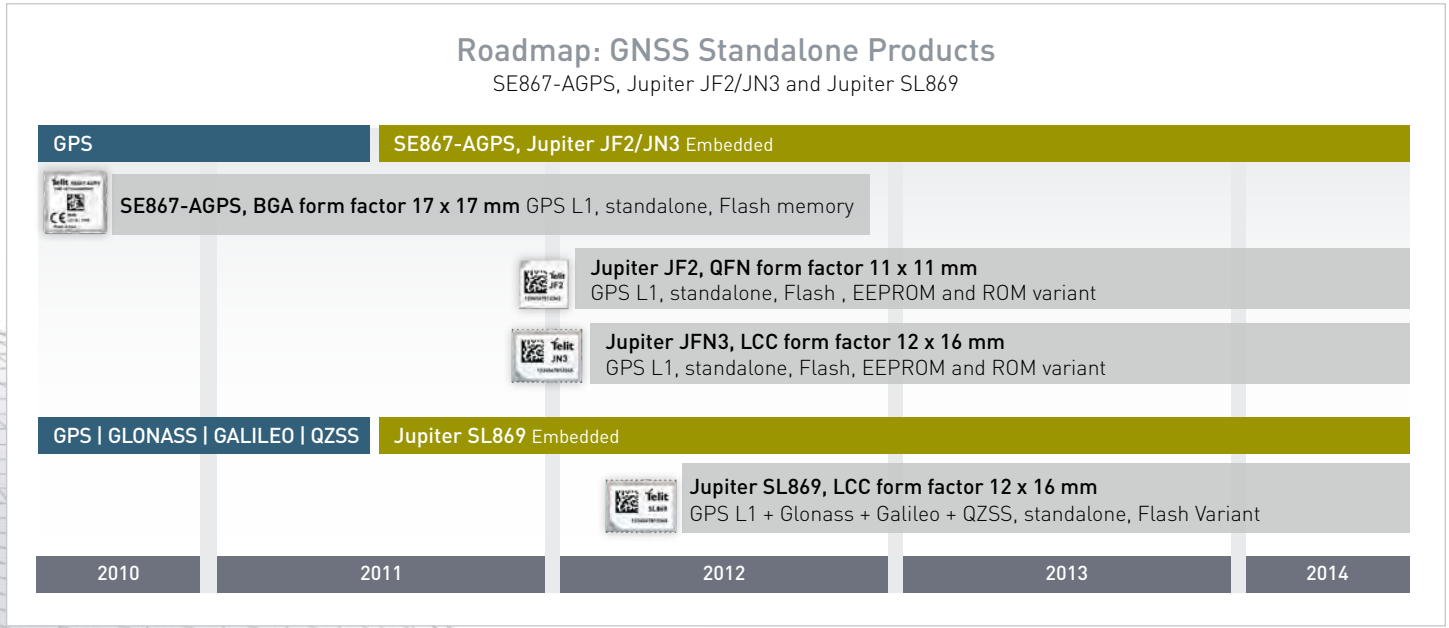
Figure 1: JF2 Product variants

In order to offer a higher degree of customization and cost competitiveness each Module is available in Flash, EEPROM and ROM-only versions. Common to all our models and variants is the A-GPS functionality which substantially reduces the receiver's time-to-fix. A variety of power modes allows for very low power consumption. Size matters as well so you can choose from a 12 x 16 mm footprint with the JN3 and an 11 x 11 mm package with the JF2. And to sweeten the offer both standalone GPS products offer a proven Anti-Jamming system that can detect and removes up to 8 in-band Jammers.

Caught your interest? Take a look at the roadmap on the next page and see how we plan the evolution of these products over the next few years.

More satellites, better performance

Ever wondered why it takes your GPS receiver so much time to get a 'fix'? The reason is very simple. It takes 4 satellites to calculate your position on the globe and with the current US powered GPS constellation your device can choose from up to 24 satellites. Not at the same time of course since there can only be up to 12 in view.



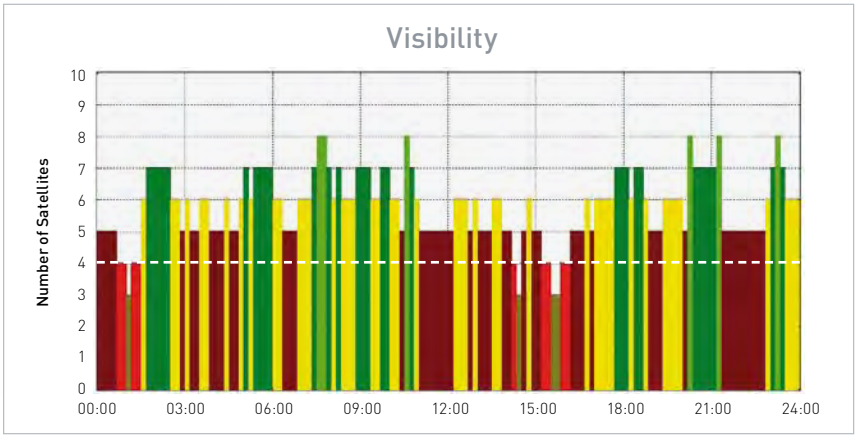


Figure 2: Relies on GPS satellites only

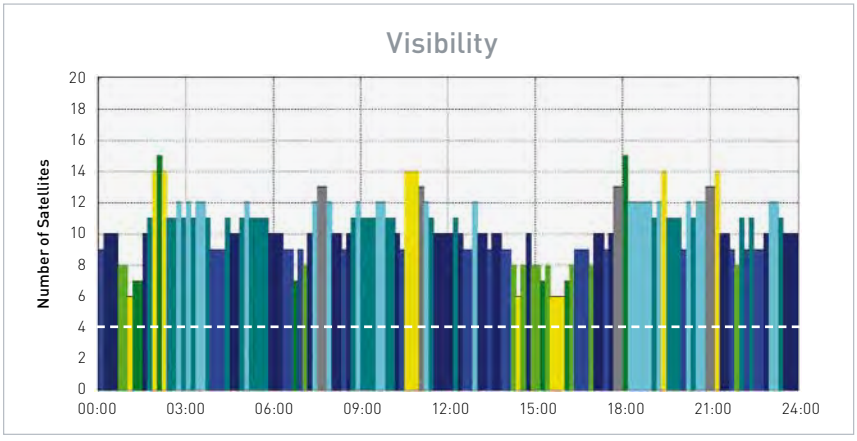


Figure 3: SL869 multi-GNSS receiver module

Now what if you sent up more satellites? Well that's not exactly going to happen with the American GPS system; but what about Glonass? Until recently Glonass was believed to serve mostly the Russian market but the truth is that Glonass gives every user worldwide access to almost double the number of satellites – anywhere – period.

Let's take a look at the charts below. You will see bars showing the number of satellites over a 24h time period from midnight to midnight (As tested from a street lined with 5 story buildings in London, UK). Figure 2 shows the perspective from the one that relies on GPS satellites only.

And Figure 3 shows the one with GPS – AND – Glonass combined; the new SL869 multi-GNSS receiver module.

The difference is clear. The combined Glonass product clearly outperforms GPS and our drive tests confirm the same improved results.

Telit's new SL869 is a dual GPS and Glonass receiver and is Galileo ready. For the product's next generation we plan the addition of CAN and DR functionalities which will again enhance performance. Imagine a navigation experience where you are able to obtain extremely accurate location information independently of external condition whether indoors or in a tunnel. The SL869 is that module.

Still not convinced? Request a developer's kit from your Regional Sales office and put the new SL869 to the test. <<

PRODUCT RANGE GPS

			Features																		
TECHNOLOGY	FORM FACTOR	PRODUCT	Size	Surface mounting	# Pin, Balls, Pads	Antenna connector	Temperature Range	TRAIM	GPIO (general purpose input/output)	Tracking channels	GPS	Glonass	Galileo	Qzss	DGPS	SBAS	Interfaces	Additional features	Main Approvals
GPS | GLONASS	Embedded	**Jupiter JF2**	11x11x2.3mm	QFN	32	RF PAD	-40°C to +85°C		x	48	x					x	UART, SPI, IIC PPS, USB	A-GPS Jammer rejection Internal Flash memory (optional)	CE
		Jupiter JN3	16x12.2x2.4mm	LCC	24	RF PAD	-40°C to +85°C			48	x					x	UART, PPS	A-GPS Jammer rejection Internal Flash memory (optional)	CE
		Jupiter SL869	16x12.2x2.4mm	LCC	24	RF PAD	-40°C to +85°C	x		32	x	x	x	x	x	x	UART, IIC, 1PPS, USB, CAN bus	A-GNSS Jammer rejection Internal Flash memory	CE

TELIT APPZONE,

A NEW WAY TO REACH OUT TO THE M2M MARKET FASTER AND WITH A LANGUAGE M2M DEVELOPERS ARE MOSTLY FAMILIAR WITH

Tomer Lavie, *Senior Account Manager*

Telit AppZone runs exclusively on G30.

>> With the launch of Telit AppZone last December Telit waved to the market its ability to service new and diversified development communities, again showing Telit's commitment to the ongoing processes started before the Motorola m2m BU acquisition. The newly joined R&D and Marketing professional teams have put together an effort to formally kick start the embedded C code platform for the G30 Low Cost GSM module.

This new platform allows companies and their development teams to design their applications on the G30, eliminating the need for external microcontrollers thereby reducing costs and time to market for the customer application. Several languages are being used by the various vendors but the most common in the m2m space is C. With the Telit AppZone we are opening the door for this large community of developers to start developing m2m applications quickly and with very little effort.

In addition and differently from common microcontroller development, the Telit AppZone platform provides a high level m2m-oriented interface that is convenient and easy to use. In a time like this when m2m platforms are proliferating (according to Beecham Research), system integrators take the opportunity to simplify their application development and reduce costs. The Telit AppZone was built with this concept in mind and in its short market experience has already shown great results. In its offering through the Telit technical support team, a skeleton sample set of C code provides functional modules that developers can use and quickly complete their projects.

Our team has been involved in the exciting project of defining and developing the AppZone platform from the beginning with the following goals in mind:

1. Simplicity – To provide a C code developer who is familiar with low-level microcontroller implementation the ability to easily switch to the AppZone platform by providing access to specific known m2m procedures using logical API naming and parameters.

2. Standardization – Telit AppZone is an open platform compliant to the BSD standard for Sockets and to the Posix standard for file system and hardware control. It allows developers to implement applications using their knowledge in conventional open software, libraries and protocols.

"In the process of planning the architecture of the AppZone we used our vast experience with customers using our earlier environments. We tried, as much as possible, to build interfaces that would be logical and simple to both experienced developers as well as beginners in the m2m market, while still considering the common and standard interfaces currently being used in that market", says Tiran Kaskas, Chief SW architect for the Telit AppZone.

We knew from past experience that close technical support is crucial to the success in the task of bringing developers using the platform up to speed and making them feel confident about using it. Ofir Dangur, the AppZone technical support manager, answers the question of what Telit is offering to AppZone users. "The support we are providing covers server hosting services, sample code according to customer needs, and even the ability to codereview the application to make the customer feel confident and reduce to the minimum possible, the number of

AppZone

defects in first runs of applications. We are also always happy to implement requests for further tooling and features from our customers and to share these additions to increase the community using this great platform. Our AppZone specialists are flexible and open to the customers' needs. As an example, we recently developed a VPN application and embedded it in the platform so that it could be used by many other customers that are interfacing within enterprise systems"

Among the key features the platform offers are: a great framework for multi–tasking, the ability to customize priority setting (by Telit), full-tracing, compiling and embedding the application into the Telit firmware, field-proof OTA (Over-the-Air) software upgrading, recovery mechanism, large memory space(both volatile and non), RTC (real time clock) only mode (for power saving), real and very-fast interrupt handling.

Jeya Kumar, Telit FAE India, explains the reasons why the Telit AppZone has been so well received in his region. "Telit AppZone simplifies the software design effort compared to microcontroller-based m2m architectures because it provides dedicated APIs for system peripherals and GSM/GPRS module access with libraries including multi-tasking capability. Above all, the OTA feature that supports our customers to upgrade their applications in the field is a time consuming effort for them to implement on a microcontroller-based architecture. "

Need we say more after this kind of feedback coming from the field? <<

FEW CASES TO SHARE

Case ❶
A customer in Asia who was using different vendor embedded platform was able to convert its code into Telit AppZone in just 2 weeks and was able to lower its costs and reach market by minimum changes to its application due to simple M2M Oriented API's.

Case ❷
A customer in Israel who was asking for Sample Code received a full proof demo and source code implementing all communication requirements and ability to test it through Telit server.

Case ❸
A customer in Asia that requested Telit to implement a new significant feature within AppZone platform got a trial Build in less than 2 months due to its modular and standard implementation.

Case ❹
A customer in Europe that is evaluating ability to use G30 Telit App processing in order to reduce its Microcontroller processing for communication and updating procedures, allowing efficiency of its full HW design.

Case ❺
Customers in Asia and Europe that are transitioning from G24 Java to the pin compatible G30 and its Telit AppZone platform with the help of Telit TS team allowing customers to reduce their costs.

Realize Your Idea & Build Your Dreams

BYD EMS Factory, a Professional, Dynamic Manufacture

Stanley Liu
General Manager
Division 9

Overview Introduction

>>Based on the information from Bloomberg Business week, BYD is one of the Top 25 most Innovative Companies all over the world.

Established in November 2006, BYD EMS (OEM&JRD) factory is specialized in SMT, Assembly, Testing, and Color-package for electronics products. Its main products are PCBA, Mobile phone, Module, MP4, MP5, Tablet, Set-Top Box, mechanical parts and so on. BYD has earned a lot of big and stable customers owning to its reliable product quality and super excellent customer service. Currently, it not only includes international business giant, such as Telit , Nokia , Motorola, Intel , Dell; but also domestic excellent customers, like Huawei (the No.1 data-card supplier in the world), Lenovo, Coolpad, and K-touch.

In 2011, the total shipment of BYD is over 54 Million, with the revenue 5.6 Billion RMB. The capacity of BYD is about 12M pieces every month, with 40 SMT lines (the most advanced mounter in the world, like Fuji, Siemens and Panasonic) and 53 assembly lines (Long line for mobile phone, tablet, and High Mix line for simple consumer electronics), and plentiful testing equipment for different request (GSM, CDMA, TD-SCDMA, CDMA2000, GPS, WIFI and so on, with the brand of Agilent, Rohde and Schwarz, and so on).

Business Development

In 2006, at the beginning of its establishment, BYD cooperated with the mobile phone business giant---Motorola.

In 2007, BYD started the business with Nokia and K-touch for ODM mobile phone.

In 2008, BYD started the business with Huawei. After three years BYD became the most important partner of Huawei(In 2011, BYD delivered 36 million Pcs mobile phone and date-card to Huawei) . And on July of 2009, BYD was awarded as "Best Supplier of Huawei" .

In 2009, BYD started to cooperate with Telit by bring GSM/GPRS Modules、WCDMA/CDMA/HSD-PA/UMTS/WEDGE Modules .

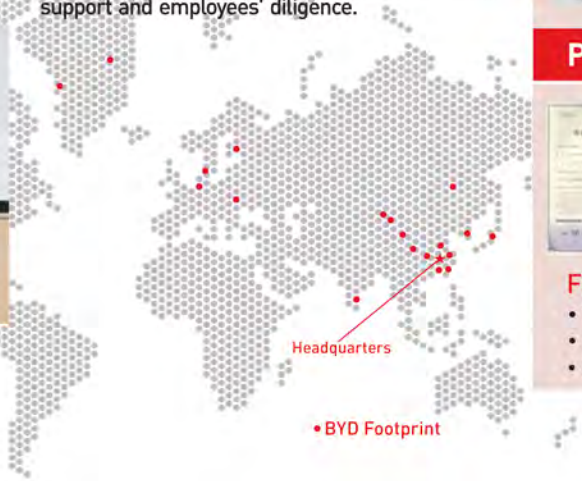
In 2010, BYD was awarded as "Best Supplier of Telit".

By the end of 2010, the mass production of Dell notebook sends the new blood to BYD.

In 2011, BYD started the Smart Phone business, and cooperated with Huawei, Lenovo, Coolpad, which are the top 3 smart phone brand in Chinese market, meanwhile BYD is still the smart phone supplier of Motorola.

As a young EMS factory, BYD has a rapid development in recent years. And all the success should thanks to the partners' strong support and employees' diligence.

Telit Award BYD as the best supplier at the end of 2010
Oozi CATS .CEO of Telit Wireless Solution (left)
Stanley Liu . General Manager of BYD Div.9 (right)



Enterprise Honor

Quality Assurance

Patents

For the patent, Div 9 has:

- The 35 invention patents
- 51 utility model patents
- 29 design patents

Manufacture Technology and Capability

BYD has the most advanced Technology and capability by its high dense SMT lines. It has excellent brand machines -- Japanese Fuji NXT and Germany Siemens, which can ensure the high process technology, such as POP and FoB. For testing station, BYD has advanced testing equipments for mobile phone, module, data-card and other consumer electronics, such as Agilent 8960, R&S CMU 200, network analyzer, and so on.

Besides, BYD has a specialized test laboratory for consumer electronics. With the advanced equipments, like R&S TS8955G， R&S TS8955GW， Agilent GS8800, MS8700 and DASY5 SAR, R&S TS9976， R&STS9981， R&STS9982， BYD can provide various testing like RF(Radio Frequency), Audio, Antenna, EMC, Reliability and so on.

In 2010, BYD Lab passed the certificate of CNAS, and got the certification of ISO/IEC17025.

Reasonable Price

BYD provide reasonable price to every customers. For the supply chain, BYD Group has a central purchasing department, which can get a competitive price from supplies by purchasing bulk volume. Meanwhile EMS factory has its own purchasing department, which can be flexible by purchasing other non-standard components. BYD also has the advantage of Vertical Integration, which means that some divisions of BYD manufacture components by themselves, like battery, charger, metal , plastic parts, LCD, Touch Panel, camera and so on ,and finally EMS factory assemble these components with high quality and low cost.

BYD always set an internal plan to optimize the production process, and it does DFX (design for manufacturing, testing, and so on) for customers, which also can improve the production efficiency. Therefore, the conversion cost is reduced.

Fast Delivery

BYD has a complete flow from material preparation, production, to delivery. With the flow, BYD can not only provide you the timely delivery with good quality, but also can keep a short inventory turnover.

Address & Contact:

Address: Xiang shui River Daya Bay Economic Development Zone Huizhou Guangdong P.R China 516083
Contact: Fax: +86-752-5181617
Telephone: +86-752-5118888-65079
E-mail: li.ruyi@byd.com William.cai@byd.com

Company Society Responsibility

BYD has complete quality assurance Policies, like Environmental & Occupational Health and Safety Policy,Product Safety and Liability Policy, Intellectual Property Rights Policy ,Information Security and Confidentiality Policy,Human Resource Policy. It's always committed to enterprise &social harmonious and sustainable development, and it is endeavor to become the faith worthy enterprise through providing innovative technology and improved management system.

BYD EMS factory has a rapid development in the past six years, and it would like to become the top class telecom and electric products and components manufacturer, with the most effective vertical integration, the advanced manufacturing technology, the excellent quality controlling, the diligent employees, the most reasonable price,and the timely delivery .

Choose BYD, let's help you to realize Your Idea; let's help you to Build Your Dream.<<

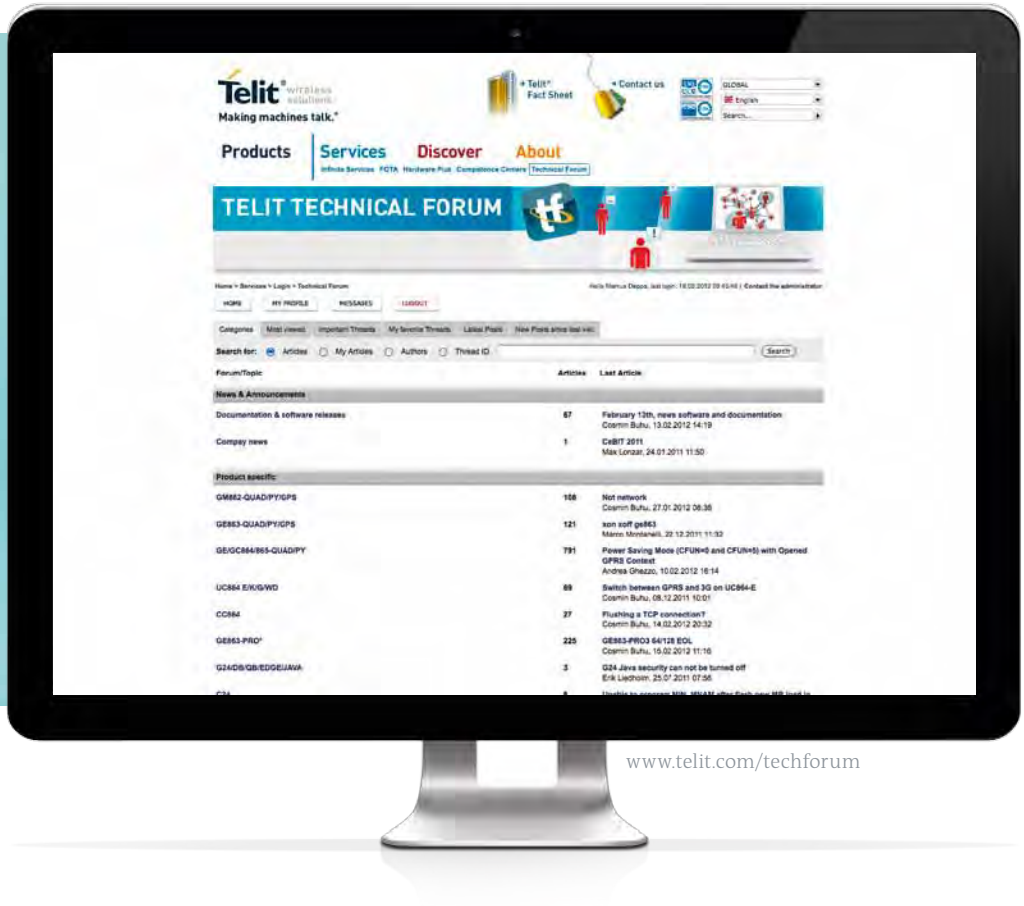
Donation to Sichuan Wenchuan Earthquake in 2008

Bright Journey to Tibet

THE TELIT TECHNICAL FORUM FIRST ANNIVERSARY

Cosmin Buhu

At the end of October 2011, Telit's newest innovation in technical support, the online public forum, celebrated one year of truly successful activity that has proven outstanding in fulfilling all its intended goals and objectives.



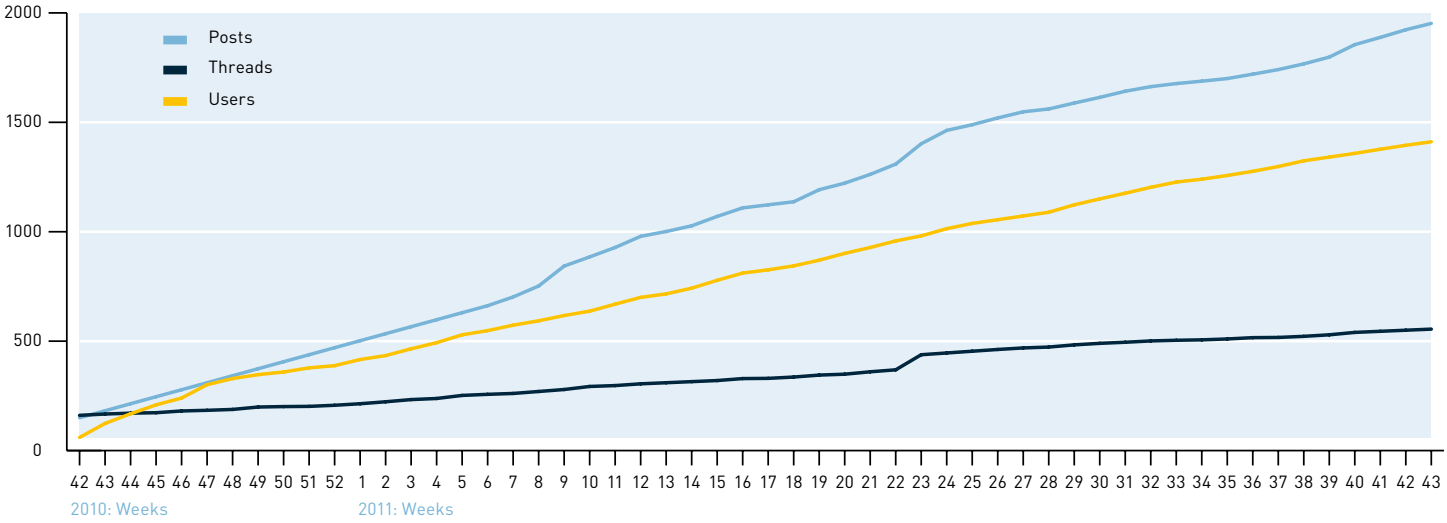
www.telit.com/techforum

>> Launched after quite a bit of planning and design, the forum objectives were clear: in short, to take one step further in serving Telit customers with the best in industry technical support.

The new approach ushered into practice an open way of dealing with customers which translated into wide public visibility, thus complementing the more customer-limited, discrete and detailed, already proven support provided by our regional technical support teams based in many of our offices all over the globe. The new online platform is also global, but in a broader scope. Not only is support being continuously provided by our technical staff, but there is also a flow of ideas which keeps coming from all participants in the forum, who have therefore given rise to a real Telit product user community – like brainstorming on a global scale! Direct access to the support team guarantees rapid response times and prompt assistance, enabling customers to market launch their m2m applications in significantly shorter time.

The solution selected which proved to be quite adequate was based on a forum system developed in-house, and run by a special task-force within Telit's technical support structure. An important element

The rise of the Telit Technical Forum



to the solution design which again was well-tuned for the task was the internal support center system, which was swiftly adapted to act as a tool to log and track each topic, transport it from the forum to the internal tech support groups, locate the solution areas and serve these back to the public eyes of the forum. This process together with the responsive backstage teams, led us to shorten problem-solving times significantly in ways which couldn't have been imagined before.

Let's have a look at several topics in forum discussions for which solutions were promptly provided:

- Early in February, a discussion clarified the use of PCM streaming in and out with the AT#SPCM command, which can be nicely applied for human interfacing;
- In April suggestions were made for an in-car audio system;
- In May explanations were shared on firmware upgrading via alternative ASC1 port and service pin, as well as clarifications on SYSHALT;
- The following month, suggestions were again put forward for keeping timers in Python and audio DTMF;
- In July discussions covered hardware flow control in the UC864, treating exceptions in Python and G24 Java security;
- During the relaxed month of August there was work on the GE865 watchdog, getting time from the network and counting GPRS traffic;
- The fall season came with more activity including discussions around the LE50-868, UC864 Windows drivers, FTP in active and passive modes, RTC differences between platforms and a lot more.

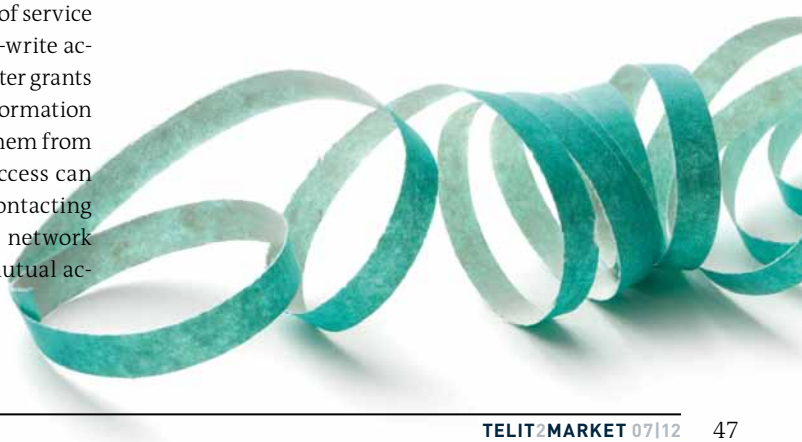
Apart from this multitude of covered subjects, the forum regularly maintains an FAQ area, an information service covering news in documentation and software releases weekly, and a personal messaging system for solving administrative requests.

With respect to public access to the forum, it should be noted that although everyone is granted free access, two levels of service rights are in place, namely read-write access and read-only access. The latter grants users the right to read all the information in the forum while preventing them from writing into it. However, full access can be easily obtained by merely contacting any member of the Telit resale network and establishing an opening mutual acquaintance.

The success of the forum can be easily gleaned from its numbers. By the end of October 2011, the forum had served 1,362 users who in turn created 555 threads with a total number of posts nearing 2,000. The graphic above depicts the healthy steady growth of the forum in number of users, threads and posts over time.

So, after one year of activity which has hopefully been useful to all our customers, we can say that thanks to the wealth of articles from our technical support teams, users and FAQ´s, the forum has developed into a comprehensive source of information available to all registered users encouraging the exchange of expertise relating to M2M products and applications.

If you are already a contributor, we would like to thank you for your valued membership and input. If not, join the forum today and take part in discussions, access FAQs to get answers to technical questions or to send messages directly to the technical support team. Your next Telit project will surely come to life with much ease and assured success, and so much faster with us. <<



TELIT'S GLOBAL PRESENCE

• Over 5,000 customers in 60 countries around the world • 25 sales offices with a sales force of more than 100 • 59 distributors covering 60 countries with a sales force of more than 230 • Headquarters in Rome (Italy), regional headquarters in Raleigh (NC, USA), Sao Paulo (Brazil), Seoul (Korea) • 445 employees in 5 continents • 6 R&D centers in Trieste and Cagliari (Italy), Sophia Antipolis (France), Tel Aviv (Israel), Seoul (Korea), Foothill Ranch (CA, USA) with over 250 engineers

CHALLENGES AND LEADERSHIP POSITION IN EUROPE

Carlos Perez Negrete, *Vice President Sales EMEA*

GE864-ATEX

ME50-169

>> 2011 was a consolidation year for Telit EMEA in many respects. First of all, after growing over 100% in 2010 over 2009 despite the shaky economic environment and uncertainty in the Euro zone, we kept to a growth path, again beating market expectations. Secondly, we successfully took over all of Motorola m2m activities integrating their sales teams, both direct and distribution, into the Telit sales channels, maintaining service level and customer support during this process our top priority. Last but not least, we strengthened our presence in Central & Eastern Europe and saw outstanding growth in Russia & the CIS where we substantially increased our activities during 2010.

2012 is again a challenging year for us in EMEA. Given our leadership position in Europe and our target to grow again above market average, we have focused our efforts during 2011 in securing several key projects that we will see running in EMEA during this year.

One of our most promising markets is AMR/M (Automated Meter Reading/Management). We have seen several countries releasing legal frameworks defining smart meter requirements, back-end systems and communication protocols. Italy has been among the most active ones with the largest electricity utility releasing a tender to substitute significant part of their existing GSM concentrators for new GPRS systems with the deployment of this new equipment happening during 2012 and 2013. We have also seen the passing of law ARG 155/08 which regulates the gas smart grid system. Telit has been actively participating in the working groups to define communication protocols and

Telit Wireless Solutions **EMEA**

Corporate Global HQ in Rome
Coordination of all disciplines
Trieste
- *Product Development, GSM/GPRS*
- *Product Development, Short Range*
- *Product Management*
- *Technical Support*
- *Sales & Marketing for EMEA*

TELIT COMMUNICATIONS SPA: IN 2012 READY FOR THE SHIFT !

Dott. Giuseppe Surace M.Sc. in C.S., *CEO, Telit Communications S.p.A.*

>> Dear reader, I am here again to write you; and as with many other serial stories, 2011 was another interesting episode with former industry leaders stumbling in the face of missed trends, while others post enormous gains from creating new value. Against this backdrop of crisis and chaos, the main trends that we observed this time last year continued unabated throughout 2011, and we expect they will continue to be important throughout 2012 with some new twists and trends.

we have released our wireless M-bus 169 MHz module that supports all required features to comply with this new law. The combination of this M-Bus module together with our GSM/GPRS Atex certified module GE864-ATEX has been selected by many of the key players in the industry and we will participate significantly in deployments during 2012 and beyond, both in industrial and residential meters. In total around 17 million meters will be connected in this market by 2016.

We have also seen substantial activity ongoing in The Netherlands with the Netbeheer project launched and pushing for the connection of around 500,000 meters by 2015 where again wireless M-bus and GPRS will play a major role. The UK has taken a different approach. The Department of Energy and Climate Change (DECC) has decided to use ZigBee as the short range communication protocol, having all residential meters connect to a ZigBee/GPRS gateway. Their project is very ambitious with a target to connect meters in around 30 million households. We have seen an initial RFP release the last quarter of 2011 and during 2012 this will be major focus of attention in the industry. It is also worth highlighting initiatives from different utilities in Spain and Portugal which are moving beyond governmental requirements in terms of required deployments and using AMM to offer value added services to their customers while also improving their management of customers and resources.

Another market which has been major focus of attention for us during 2011 was Telematics. We have seen that consolidation is still going on in this market and even if eCall is postponed, the Era-Glonass project in Russia has been pushing many of the big players towards new developments.

There are other less exuberant segments where we have also seen significant activities during 2011 (i.e. security, cash-registers, elevators) that will materialize in new projects during 2012, clearly showing that m2m has maintained good traction despite the crisis in Europe. Our new module, the GL865 has shown great acceptance in the market, being selected for many new designs started during last year. Last but not least, we released our new GNSS (Global Navigation Satellite System) modules and started our first activities in the connectivity arena, establishing the path for continued growth in 2013. <<

GL865

As these trends gain momentum in 2012, a common theme is beginning to emerge. A shift is taking place with the pervasive adoption of connectedness, cloud, and mobile – technologies across all industries that are also transforming the m2m arena. The movement toward cloud computing is forcing the technology industry and its customers to rethink established ways of doing business despite concerns about security in the cloud, and the security risks associated with software-based ecosystems.

m2m has been a success story that has came through the recession in fairly good shape. But this success has quite often been achieved on proprietary platforms. A key distinguishing factor for Telit has been that of embracing new Open Standards and providing them to our customers. By being ready for this shift ourselves, we can ensure our customers are ready to move from the classical m2m paradigm to the so called IoT (Internet of Things).

Telit Communications SpA is a member of some of the most important IoT panels here in Italy. These panels count on academic and industry leaders surely likely to drive the "shift". The Internet of Things is much more than m2m. IoT it is about interacting with objects around us near and far; even static non-intelligent objects and augmenting such interactions with context as provided by geo-location, time and so on.

EU commissions have been pushing strongly for the adoption of technological solutions for vertical sectors such as Smart Grid & Metering, mHealth, Green Tech. And the Smart city concept is just around the corner. We are working diligently in our labs to provide all the needed technology components and solutions to our partners so that they can be ready for the new expanded m2m world.

I hope that my short note has encouraged our partners to think about the many opportunities opening up in the m2m/IoT space, and provided some clarity as to what needs to be done next. <<

TELIT NORTH AMERICA UPDATE

Michael A. Ueland, *Senior Vice President & General Manager, Telit Wireless Solutions Inc. North America*

>> 2011 was a transition year for m2m in North America as we began to see the impact of mobile network operators' (MNOs) decision to expedite the migration from 2G to 3G for m2m applications. Cost, coverage, power, network longevity and size trade-offs between 3G and 2G had to be considered as m2m device developers weighed the relative impact of each on their technology decisions. Combined with the uncertainty created by AT&T's announced acquisition of T-Mobile USA in March, m2m developers faced a very difficult math problem to solve.

For Telit, it was also a transitional year as we integrated Motorola's m2m business into North America and introduced new technologies to our module line-up (EV-DO and HSPA+). Following up on our very popular connectorized "family" concept, Telit incorporated next generation 3G chipsets in a common footprint, a very compact 28 x 28 mm form factor using surface mount technology (LGA). These new improvements in size, cost and power would not only allow developers to incorporate more functionality into existing applications like home alarm, medical devices, vehicle telematics, etc., but also enable them to dream up new applications to take advantage of the increased bandwidth of 3G networks.

Looking forward into potential new m2m applications, one area that is prime for development is remote information displays. I am excited about the opportunity that digital signage represents to simplify and improve the quality of our daily lives by providing better and timelier information allowing us to make informed decisions. It still surprises me today that most major U.S. cities do not have real-time schedules and other status information available for

Jupiter JN3

Jupiter JF2

much of their public transit systems. If riders could see the next three trains or buses on a display at a train station, bus stop or via text messages to a Smartphone, the impact on ridership would be significant. Uncertainty about when the next bus will arrive or depart often discourages people from taking the bus. Imagine the potential opportunity; consider how FedEx revolutionized the overnight delivery business. FedEx realized its business was more about status information and less about when the package actually arrived. Similarly, for a commuter who wants to arrive at work on time, knowing that the bus will be on time reduces the stress related to being late to work and provides better information to the consumer to make alternate arrangements if the bus is running late.

In the past year, we observed continued, sustained investment, and commitment to the m2m market from the large MNOs who invested in people, customer projects, and facilities to support their m2m initiatives. Evidenced by several m2m related TV commercials that were widely played throughout the year, MNOs have made an important contribution to m2m, by raising awareness among the general population of the many benefits of m2m. Several years ago, I never thought I would have seen m2m ads on TV like "Susie's Lemonade" from Verizon Wireless, which profiled a Telit customer – USA Technologies.

As 2011 ended, Telit introduced two Global Positioning System (GPS) modules, the JF2 and JN3, either of which when coupled with a Telit GSM/GPRS module represent the ideal solution in total cost effectiveness and time-to-market readiness for location aware applications. As part of our entry into the GPS module business, Telit acquired Navman Wireless OEM Solutions, a leading designer and manufacturer of world-class GPS modules and solutions. The integration of Navman's technology and its U.S. based executive, engineering, and sales staff will make Telit a major contender in the GPS market while providing an enhanced product portfolio for our m2m customers.

Looking forward to 2012, the year has gotten off to a good start as many next-generation 3G designs are underway and should start coming to market later this year. Telit North America is excited about the wide breadth of the new product portfolio now including both GPS and next generation (EV-DO and HSPA+) 3G technologies. We are uniquely positioned to help customers who are looking for a committed m2m module provider that has the experience to get customers to market whatever the technology requirement. <<

Telit Wireless Solutions **North America**

- *Regional Headquarters*
- *Regional Product Certification*
- *Regional Product Management*
- *Regional Technical Support*
- *Sales & Marketing for North America*
- *Product Development, GNSS*

IS THE WORLD FLAT OR IS OUR UNIVERSE A NUTSHELL?

Marcos Kinzkowski,
Vice President Sales Latin America and General Director Telit Wireless Solutions Brazil

>> Not that long ago, specific solutions were developed to address each market with their own particular characteristics. Today thought, more and more global solutions are conceived to straddle a great variety of markets and countries and, as a matter of fact, a diversity of vertical markets. Things are being integrated in such way in this production chain that we can, for instance, develop a Brazilian hardware solution with US software, Indian Firmware, and Chinese manufacturing; finally selling it in Australia, or Brazil and the US. This is really flat. It is possible to take advantage of all the benefits and specialization from each country and still provide customized products to supply the global market. Our world is bigger than ever – but connected

The m2m in Brazil

Yes, T&T and Logistics Managements solutions continue taking a large chunk of the m2m market and dominating the use of wireless m2m. Telit´s participation in these market segments has grown steadily, penetrating new customers. In the Security and Electronic Access segment, we can celebrate our presence in the majority of Brazil's biggest players and a general predominance. The metering market is preparing to achieve its peak including Electricity, Water and Gas Metering. We are now present in a variety of projects, including smart grids. In the several pilots this year, Telit will be connecting devices with GPRS and Zigbee technology. Lampposts will be talking all around town!

The long-time promise of 3G solutions in m2m; it is the birth of a new era and a global trend becoming reality in Brazil too. Here some laws should increase the use of wireless m2m such as the connected tax collector´s printer, which allows real-time remote tax oversight as well as control of employee clocking-in and out. The Automotive Law (Regulation 245) for remote blocking systems in vehicles, is expected to have is trials concluded before it officially begins at the end of 2012. Current first generation devices should be short lived because new functionalities will be implemented in a second and third generations, really integrating the device into the car. 2013 is already here!

The m2m market growth in South America

We are observing m2m solutions grow all across Latin America. We can highlight Argentina with a wave of new vehicle tracking and blocking solutions made up of domestic and foreign development. In Colombia, beyond vehicle tracking systems, we have been seeing an increase in the use and development of metering solutions. Peru and Chile are focused on ready solutions coming from Brazil, China, Israel and other countries. Other countries in the region are breaking open their frontiers for m2m like Venezuela and Ecuador. The strong growth observed in those countries is shifting the propor-

Telit Wireless Solutions **Latin America**

- *Regional Headquarters*
- *Regional Product Certification & Regulatory Compliance*
- *Regional Technical Support*
- *Manufacturing, Logistics*
- *Quality Compliance*
- *Sales & Marketing for Latin America*

APAC UPDATE

Derick Tsang, *President of the Asia-Pacific (APAC) region*

Telit Wireless Solutions APAC

- *Regional Headquarters*
- *Product Develpoment, CDMA & UMTS*
- *Product Management*
- *Manufactoring, Logistics*
- *Regional Technical Support*
- *Sales & Marketing for APAC*

>> For Telit APAC, 2011 was a year of consolidation and preparation for important expansion moves into the future. I am confident that the achievements we had this year will be important cornerstones for the m2m market. Looking back at 2011, I am pleased with the many successes our team achieved including a stunning growth rate of 40% in the Asian market and the progress we made in maintaining a leading position in the industry, generating good operational results, and continuing to advance our strategy.

tion of the South American market from 10% to 20% of relative weight as related to Brazil.

Increase of coverage and support

The growth of m2m is pushing us to enter into new partnership in other countries. Since 2011, we have established new distributors in Argentina, Brazil and Venezuela. This has increased our coverage and ability to support customers with quality in these countries.

Quality and Features of Telit Products

One of the reasons behind Telit´s success around the globe is its wide variety of high quality products. Telit's modules have low failure rates – below market average – inspiring complete confidence in customers. Also, we provide an excellent support during the customer development phase which minimizes re-work and shortens time-to-market. All of this leads us to gain more customers and be designed into more solutions; through trust from our customers and who pass the word around the market about our overall quality. There has been much talk lately around Telit´s patent in Embedded Jamming Detection and Reporting. When implemented this could become a Blue Ocean for users and our customers. We are on the right track to lead this segment. <<

In Korea, Telit again retained its market leadership as result of an aggressive approach leading to an impressive growth of over 25% in 2011 as compared to 2010. Operationally, in 2011 we successfully advanced our strategy with sizeable contract wins focusing on key business verticals, a willingness to invest in long-term growth, and a strong track record in implementing advanced wireless communication projects.

Thanks to a broad base of investments by government and network operators, application and service providers too small to finance access to testing facilities were given a chance to do so. SK Telecom, the nation's largest network operator, accelerated cooperation with m2m players, especially Telit, a company at the other end of value chain, opening a Special Purpose Terminal Test Centre. Telit has in fact been collaborating well with the center testing functions of various devices including remote meter readers, navigation systems for taxis, electronic anklets, PDAs for parcel services, and wireless credit card payment devices.

In the broader market we participated in various events including the World IT Show and the Smart Cloud Show, showcasing Telit's newest products. Additionally, we also co-organized m2m technical seminars with Korea's Communications Agency to share ideas for m2m market acceleration.

In China, Telit has been exerting great efforts to achieve further success in one of the world's fastest growing markets. In September Telit participated in the ICT Application 2011, a leading industry event as its key sponsor, presenting its insights on future perspectives for the global m2m industry. The Customer Seminar held in Hang Zhou, eastern China's Zhejiang province, gathered dozens of key customers and business partners, and successfully enhanced our reputation among China's top industry players.

HE863 GE864-GPS HE910

Telit Taiwan also experienced positive growth with the successful launch of leading wireless products such as the HE863 – small, lightweight, low power module which combines access to digital communication services in GSM, GPRS, EDGE and HSPA networks; the HE910 – the world's smallest penta-band HSPA module for industrial and consumer applications; the GE864-GPS – the market's smallest 2G module with integrated a GPS receiver; and the JF2 and JN3 – ultra-compact standalone GPS module.

It has been almost a year since Telit started its operations in India and we have made significant progress in that market. The market which is emerging and warming up to m2m devices and solutions has been quite encouraging in its response where a wide variety of customers have been adopting solutions well. While the growing AMR market is an obvious opportunity, we are noticing a significant push in government and private initiatives that are also creating demand for interesting m2m applications.

Telit has also signed up with Calixto Systems, a leading embedded systems integrator, to act as a Competence Center in India. This partnership with Calixto will enable Telit's customers to develop and deliver highly effective solutions with significantly reduced development cycles.

A technical trend picking up momentum is one where customers design applications in Europe and the US and then bring them to China, Taiwan, or SEA for manufacturing, using OEM companies. In this scenario, Telit provides the customer not only local technical support but also full logistical and production engineering support through the regional APAC team, fully synchronized the other regions.

2011 proved to be a successful year, especially in China and India. I would like to take this opportunity to thank all members of the APAC team for their contributions. With your continued efforts, 2012 will be an even better year. <<

TELIT ISRAEL: COMBINATION OF MANPOWER AND BRAINPOWER

Gideon Rogovsky, *CEO Telit Israel*

>> During 2011, Telit Israel successfully absorbed Motorola's M2M Division, transforming its four product lines into Telit brands. Thirty Motorola employees, specialized in R&D and sales, joined Telit Israel. The new employees were fully integrated into the company, adopting Telit's values and organizational culture. We were also successful in absorbing all of Motorola's systems – from operations to R&D solutions – smoothly, with no downtime and no impact on users, customers or partners.

The merger of Motorola's M2M Division into Telit Israel was also successful in terms of the sales that resulted from the acquisition. Telit exceeded target sales by 20% on the former Motorola products, and succeeded in retaining all former Motorola customers worldwide.

Telit's goal next year is to continue growing with Motorola's product lines, and to boost sales worldwide. On the R&D side, the local Israeli team will participate in

the product roadmap development effort for the entire Telit Group.

In March 2012, Telit Israel moved to its new offices in Ramat Hachayal, Tel Aviv's main high-tech park. This transition completes the integration process following the acquisition of Motorola's M2M Division, with all employees in central Israel located under one roof. Telit Israel's new building boasts some of the most modern IT infrastructure, including backup systems, world-wide unified R&D systems, IP telephony, secure Wi-Fi solution and many other state-of-the-art systems. The new building's IT systems truly represent the world's latest innovation in IT and will also serve as Telit's global disaster recovery center.

Innovative products

Telit Israel is responsible for developing some of Telit's new and innovative products. The most interesting product, currently in early development, is a module based on the Long Term Evolution (LTE) fourth generation cellular technology. LTE is the standard for high speed cellular data that provides downlink and uplink rates of up to 300 Mbit/s – 10 times that of today's most advanced networks. This module will be used in the automotive industry, for streaming video to vehicle infotainment systems, and for application by leading cellular operators in North America and NTT Docomo. The LTE module will allow high definition video quality.

AppZone, another C-based new platform developed by Telit Israel, allows companies and their development teams to design application for Telit's G30 series modules, eliminating the need for an external microcontroller, reducing costs, and time to market. The Telit AppZone platform provides a high level M2M-oriented interface that is convenient to use.

Telit Wireless Solutions **ISRAEL**

- *Product Development, GSM/GPRS/ EDGE, CDMA-1xRTT, HSUPA and LTE*
- *Regional Technical Support*
- *Sales & Marketing for Israel*

Ninety people, three divisions

Telit Israel employs 90 people and comprises four divisions. Each division reports both to Telit Israel management and to the global divisions, according to the company's global matrix. The Sales Division, which is responsible for selling Telit's products in Israel, employs sales representatives and support professionals, serving clients and prospects country-wide. The Technical Support division is responsible for worldwide support customers whose designs are based on ex-Motorola products. The R&D Division is located in Tel Aviv and in the Jordan Valley, near the Sea of Galilee, in the Jordan Valley College campus. It employs highly skilled R&D professionals who joined from Motorola, following the acquisition of Motorola's M2M Division, or who were recruited by Telit Israel after the acquisition. The division maintains the product line that was acquired from Motorola (the G-24, G-30, H-24 and C-24 modules), and develops new products as part of Telit's global portfolio. The Operations Division manages logistics and worldwide distribution of the ex-Motorola product lines. Production is carried out by three contract manufacturers one in Israel and two in China. Finished products are sent back to Israel and distributed to customers. The division also handles local logistics and local distribution of all other Telit products.

Entrepreneurial spirit

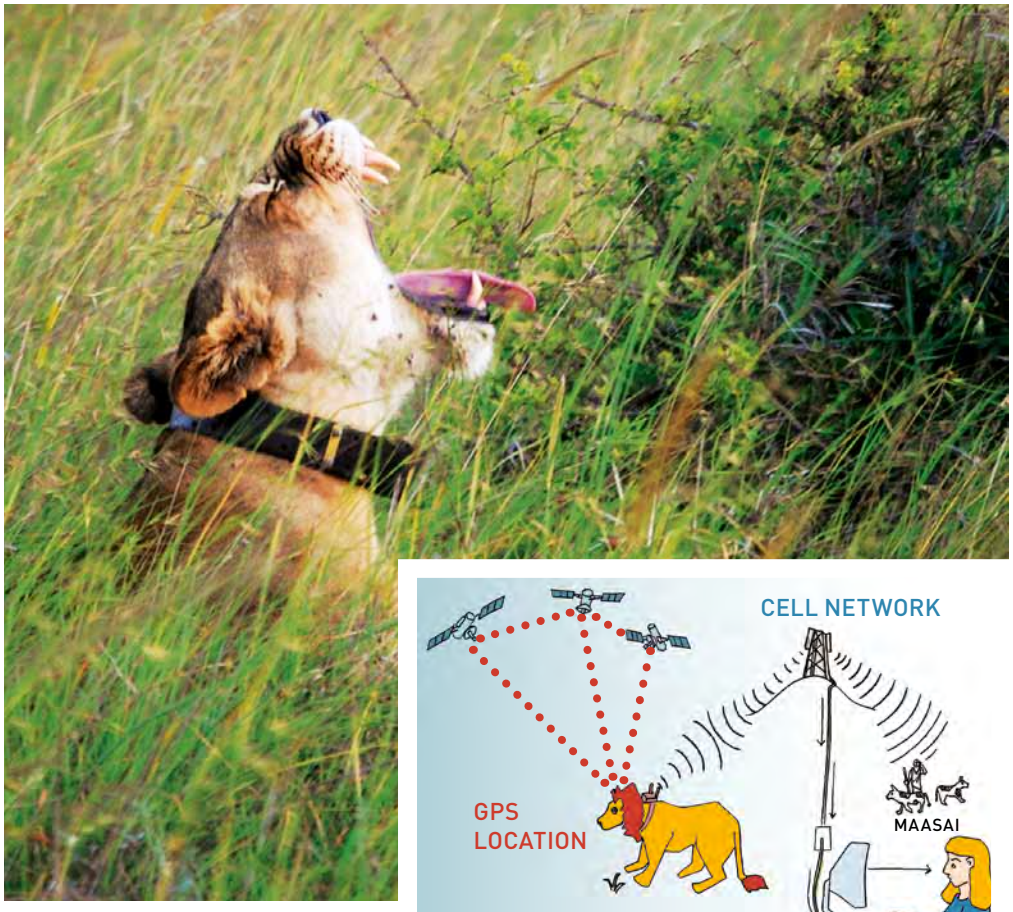
Although Telit turns over $200 million in annual sales, it retains a startup mindset. The company has an entrepreneurial spirit that turns technological ideas into great achievements. Telit's culture is based on teamwork and excellence, and every employee does his or her utmost to contribute to the company's success. Telit is a combination of manpower and brainpower, plus highly advanced scientific and technological expertise. Telit employees demonstrate creativity, sophistication and a drive to succeed. <<

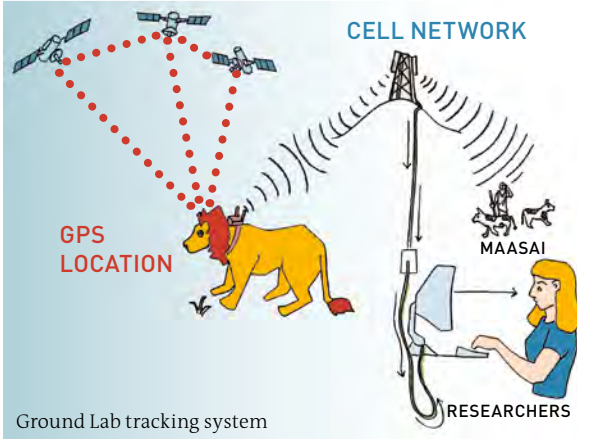
G24 G30 H24 C24

NEW ER&D
FOR SOCIAL MARKETS

GROUND Lab
WWW.GROUNDLAB.CC

Justin Downs, *Co-Founder of GROUND Lab*





Ground Lab tracking system

Device for in-field-tracking

>> GROUND Lab is an engineering, research and development company focused on developing real-world solutions and platforms for 21st century humanitarian, social and energy challenges. Unlike a classic approach to ER&D, at GROUND Lab we streamline the development process towards field-ready prototypes based on the specific challenge and social context. This allows us to match technology with function, getting prototypes in the field faster, while creating a more efficient, longer lasting and cost effective solution.

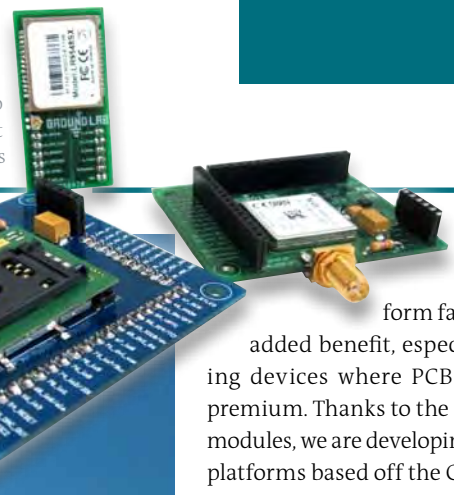
GROUND Lab utilizes this strategy to help solve cutting-edge problems for clients ranging from large international organizations (e.g. UNICEF Uganda Country Office) and universities (e.g.The Earth Institute and the Modi Research Group at Columbia University with sites in Uganda and Mali) to NGOs and wildlife conservationists (e.g. Lion Guardians in East Africa). Thanks to this approach, we are not only creating new devices but also new working structures.

New Markets

With the nexus of shrinking energy budgets, a global web of resources and population growth, new methods of transferring resources and energy need to be developed from the ground up. Wireless networks are providing the backbone for these new social structures from mHealth patient data collection and transfers, to local micro-energy grids and real time monitoring.

This is reflected in the large number of client's projects in which GROUND Lab implements GSM based M2M capabilities. From infield systems monitoring and data transfers to real time GPS/GSM tracking systems, the biggest challenge has been developing flexible M2M platforms that are cost effective, power efficient, customizable and have an overall small form factor.

By developing open M2M platforms instead of one-off devices, GROUND Lab is also achieving a faster cycle of innovation-to-application accompanied by lower development costs. This platform-centric approach allows us to keep pace with our clients' needs as well as their budgets.



GROUND Lab boards with Telit modules

With these modules the small form factor comes as a real added benefit, especially for our tracking devices where PCB space comes at a premium. Thanks to the price point of these modules, we are developing our next tracking platforms based off the GE865-QUAD.

New Solutions

GROUND Lab is focusing on new platforms covering two development niches:

- Tracking: Low-powered, small tracking and data monitoring devices.
- Remote Monitoring: All-in-one monitoring and metering boards with extended memory and peripherals.

These two platforms provide focused functionality that can be easily modified to cover a broad range of applications and problem sets.

The tracking platform combines GSM networking (using the GE865) with GPS satellite tracking and environmental monitoring via an embedded micro-controller with on-board ADCs, digital I/O, SPI and serial interfaces. Thanks to these features, we have built a platform that can track, monitor and efficiently log resources over extended periods of time utilizing a local power source.

The monitoring platform focuses more on stationary applications that might need more capable embedded logic and peripherals. The board expands the existing interfaces from the tracking platform and adds a micro SD card, USB connectivity and a greater number of peripherals, inputs and outputs. This is paired with a GPS and GSM unit which supports higher data transfer rates, and with flexible connection to accommodate a wider array of antennas, achieving an extended range of transmission to exploit the full capability of the GPRS interface.

With these platforms GROUND Lab can continue to provide cost effective rapid prototyping to solve 21st century challenges. <<

From Innovation to Product

To implement the first cycle of development of a hardware-based mHealth project in collaboration with UNICEF three years ago, we chose the Telit GM862-GPS and GE863-GPS because of extensive application notes and white papers available to the user. Combined with the responsiveness from the customer service and the engineering support team we were able to accelerate our development time and provide cost effective, field-ready prototypes in three months.

Since our cycles of development are fairly rapid we need to constantly balance development costs with manufacturing costs. The Telit modules are great to develop with because of the extensive AT command set for GPRS, FTP and other features, and having an embedded Python interpreter allows the offloading of programmatic control to the Telit module itself, freeing up the main CPU.

The main challenge when trying to scale up for manufacturing, became achieving an accessible price point since quantity production and deployment can be financially challenging for our clients and us. Luckily, Telit has struck a good balance between functionality and price with the GE865 product line, which scales into a feasible price range for our customers.

GM862-GPS GE863-GPS GE865-QUAD

INSIGHTS ON THE PAST, PRESENT AND FUTURE OF M2M

INTERVIEW WITH KEITH KREISHER, DIRECTOR OF M2M ZONE

www.m2mzone.com

telit2market: *How were you introduced to M2M technology?*

Kreisher: My introduction to M2M technology came with accepting my position as head of the M2M Zone (and related properties) in 2008 with Horizon House Ltd. I'm still no expert on the technology – I'm simply someone who follows and observes the market. I try to speak regularly with vendors in the industry, adopters of M2M technology in industries such as transportation or energy, and industry analysts to maintain an overall picture of what's going on. I also help to edit our industry newsletter which keeps me abreast of the latest happenings.

t2m: *When did you decide to launch the M2MZone.com, its pavilions and conferences at major trade shows?*

Kreisher: We launched the M2M Zone at the spring CTIA show in 2003, so it's been a good few years now that we've been doing the events. And of course, we've seen the interest in our pavilions and conferences explode over the last couple of cycles. Our CTIA pavilions have doubled in size, and the M2M Zone @ CeBIT, which is now in its third year, has grown 100 percent every year.

t2m: *Have you had any surprises in seeing how the M2M market is developing?*

Kreisher: I guess one surprise would be the continued predictions of huge growth for the industry. I hear a compound annual growth rate (CAGR) as high as 35 percent quoted frequently. After the Internet implosion of the '90s, not to mention the current economic situation, one would think we'd be a little more careful in our forecasts. I speak with salespeople who need to make this growth happen, and they're concerned about managing expectations. We've now seen investment activity slow down a bit in certain M2M sectors – think smart grid – and I wonder if that's not a bit of a pendulum swing. The positive side to that same coin is that mega-companies won't be able to buy growth easily. For example, Microsoft and Google both recently dropped their smart meter initiatives. M2M growth will be more organic, and not driven from the top downward. That ought to keep things interesting.

t2m: *What is holding back the ubiquitous adoption of M2M?*

Kreisher: I often hear people talk about a lack of standards as an impediment to M2M deployments, and I'm sure there's something to that. It seems like there are a hundred groups with an interest in M2M standards. We certainly don't need new standards for basic wireless connectivity – the IEEE and others have long since seen to that. And does anybody think that cellular, ZigBee and WiFi won't all find their niches in the M2M ecosystem? I think we're past this discussion. I'm told there are definite needs for standardization from the device level all the way up to higher-level standards regarding

Vita

Keith Kreisher is currently the director of the M2M Zone (owned by Horizon House Ltd.), which produces the largest trade events in the world for machine-to-machine communications on three continents. Kreisher has over 25 years of experience in B2B media and events, serving industries as diverse as telecommunications, healthcare and chemical engineering. His career also includes positions in the U.S. and Europe for Reed-Elsevier, McGraw-Hill and Advanstar Communications, where he has earned awards for his B2B marketing efforts and analysis. He holds an MBA from Fordham University (New York) and a bachelor of arts from Georgetown University (Washington, DC).

things like data-sets and encryption that provide easier integration and security with Enterprise Resource Planning (ERP) backbone software systems. Security and privacy issues are huge, looming questions that will surely need to be addressed in stronger terms. They are a major theme of our M2M Zone Conference @ CeBIT to be held in Hannover, Germany this March.

t2m: *If you could rename our industry today, what descriptive term for this technology might be best? M2M? Internet of Things? Or...?*

Kreisher: One thing is absolutely clear – the phrase "M2M" is, at best, imperfect. We've had endless discussions internally about phrases that include "Embedded," or "Smart," or "Connected," but they all seem either self-limiting or too generic. The "Internet of Things" is the phrase of choice in Asia but also seems limiting, and I recently heard somebody coin the phrase the "Internet of Anything," which makes a subtle, additional point. I've come full circle to the point where I prefer the phrase M2M. It's evocative and, crucially, it seems to be coming into common use outside of the vendor community. At least as interesting as the discussion of the best name for our industry is trying to define the boundaries of the M2M ecosystem. Does it include devices like tablets? What about applications like mobile payments? That's an entire conversation unto itself.

t2m: *What company (or industry segment) will do the most to alleviate privacy and security concerns?*

Kreisher:

> *We see a great need for an industry organization – one that truly represents the interests of all parts of the M2M ecosystem – to tackle security and privacy concerns.*

I don't think issues that are this endemic will be resolved by one company or segment. Equipment makers, backbone software providers, cellular network operators, developers, systems integrators and adopter companies will all have a role to play. The organization I'm talking about doesn't exist yet but it must be truly international in scope, and include all of those industry segments. It can't be dominated by any one set of interests, nor should it be.

t2m: *Do you see one country or region leading in M2M adoption? And what industry or sector is really pointing the way to the possibilities of M2M?*

Kreisher: We see differences in different industry sectors based on location, but the differences are not stark, and are mostly anecdotal. For example, smart grid deployments have been somewhat more advanced in Europe, where energy costs are higher. We see North America taking a small lead on telehealth initiatives, undoubtedly because healthcare costs are higher in the region. I think most industry people would agree that Asia is coming on strong, but I've heard divided opinions on Latin America.

t2m: *Is there a "killer" M2M app for consumers coming? What might it be?*

Kreisher: You hear a lot of talk about an energy app that will allow consumers to manage their energy consumption remotely, either through their smart phones or with a dedicated device of some kind. That strikes me as a good bet – the technology already exists and there's a solid cost benefit – but I would imagine that privacy and security concerns will need to be addressed before there are widespread deployments. It's hard to know how much consumers will be willing to change their behaviors to popularize the next "killer app." Although, who would have thought people would be willing to come together in huge numbers on social networks that are essentially quarantined? I wish I had the answer.

t2m: *Does our industry have a "Steve Jobs" and if so, whom might you name?*

Kreisher: That's a tough question, related to the "killer app" question above. I guess Jobs' great value was less as an inventor and more as someone who identified the potential of technology to enable high-demand services, and who then delivered those services. And yes, I definitely think of the iPhone, iPod, or iPad as services rendered. M2M has evolved rather slowly until now – from SCADA systems, through early MVNOs like Kore Telematics, Jasper Wireless, and Numerex, to the first GSMA modules. I don't think we've seen a Steve Jobs yet in M2M, but the industry has its icons – Alex Brisbourne of Kore immediately comes to mind.

t2m: *What kind of B2B M2M applications do you see taking off over the next few years?*

Kreisher:

> *I think telehealth applications have lagged behind deployments in other sectors like automotive telematics, logistics and smart grid. That could be about to change.*

I've had some interesting conversations recently about tying together many of the common devices within hospital networks – a huge opportunity for M2M deployments. Think about it: the average ER patient sees more than 20 devices during a hospital stay. How cool would it be for a doctor to be able to have a single interface that gives him a history of the patient directly via each device? Apparently, the biggest problem is getting M2M solutions providers to work within the hospital environment to develop systems that are fail-safe and trusted by medical personnel. I'm told that the technology is pretty easy but we need solid case studies to drive adoption.

t2m: *What will be exciting in the M2M Zone 10 years from now?*

Kreisher: I think the M2M Zone is one of the only places where M2M technology providers can go to meet actual customers – not just other M2M vendors, but senior executives from the automotive, energy, healthcare, and logistics industries (to name a few). As the M2M industry becomes better known, we'll do an even better job of delivering this audience, and on a truly worldwide scale.

2012 M2M Zone Events

M2M Zone @ CTIA Wireless 2012 New Orleans, USA Pavilion: May 8-10 Conference: May 9	M2M Zone @ CTIA Enterprise 2012 San Diego, USA Pavilion: October 10-12 Conference: October 11

UBIQUITOUS SOCIETY: TOWARDS A BETTER QUALITY OF LIFE

Suvi Lindén, *CEO and Founder of PearlCon Ltd*

>> 'Information,' 'knowledge,' and 'ubiquitous' are terms used to describe the development of societies over the past two decades. A key characteristic of that development has been the role of information technology as a development motor. Thanks to the internet, global has become local.

The World Wide Web (WWW) blew information into cyberspace and mobile phones made the world mobile, allowing people to connect easily. A 'knowledge society' pertains not only to information, but also how to use information to improve competence. The ubiquitous society is made of distributed intelligence and data that is available everywhere. Devices, machines and gadgets intercommunicate with each other and combinations of IT and telecommunication are used widely in all kinds of services and applications.

Mobile broadband offered the developing world the opportunity to take a giant leap in development. With the right leadership, emerging countries are catching up with developed countries, which are contending with the challenges of old service structures. Nimbleness is being rewarded and the pace of development is breathtaking, bringing economic growth and fundamentals for life to places where, with traditional tools, the wait for a better life would have been lengthy. Such change requires the right infrastructure and telecommunications policy, however. In my opinion, in developing countries, access to broadband is not only a legal right, as we have determined in Finland, but a human right. And countryside, broadband enables access to information and services no one even dreamed of before.

In achieving wider broadband access, the correct allocation of the radio frequency (RF) spectrum is a key issue. WRC12 made a brave decision in allocating the 700 MHz band to mobile broadband in the WRC15 agenda. Suddenly the RF spectrum has become one of the most valuable natural resource.

The 2000s was the decade of mobile technology. The 10s decade will see the explosive growth of m2m everywhere. Cellular communication between objects, machines, or sensors has led to the growth of m2m connections. m2m capabilities similar to the capabilities of mobile devices are being migrated to 3G and 4G technologies, and Cisco estimates that m2m traffic will increase twenty-two-fold from 2011 to 2016, meaning that the ubiquitous society will truly be everywhere.

The internet has been the main force behind the new economic growth. The 'Internet of Things' has every potential to be a similarly explosive technology and development step, bringing answers and tools to many global problems like climate change. Over the last decades, natural resources have been used wastefully and 'sustainable development' has often remained a subject of decorative speeches.

The growth of well-being and of earth's human population will threaten our planet's capacity to sustain that growth if we do not address these issues. Attempts have been made, but too often in vain. m2m technologies bring a new kind of effectiveness and durability; and the means to generate sustainable services with less

environmental load. They can be utilized in various application areas; for example, in green applications and services.

The idea behind developing communal ubiquitous technology is to embed information technology into the urban environment in an invisible manner, enabling the production of better services for citizens. An 'ubiquitous city' has been envisioned as an urban environment wherein solutions and devices using embedded information technology merge physical, virtual, and social spaces into one seamless entity. The primary task of ubiquitous technology is to facilitate the lives of citizens.

Aging challenges all societies. A common issue for all of us is how to maximize the benefits of communications technology to help support the everyday lives of elderly people. Innovations that use m2m technology enable – for example – higher quality health care and a safer, longer life at home for elderly people. No limits seem to exist for this innovation: a smart trash-can will notify its operator of when a garbage truck pickup is needed, or a pill dispenser will signal if the person for whom it is prescribed has not remembered to take the medicine or an intelligent airbag will call for help in an accident.

Another great possible application area for m2m technology could help us cope with the ever-increasing technical complexity of our surrounding world. A car might instruct a driver on how to add oil to the engine or a kitchen oven might automatically understand heating instructions embedded on a ready-made lunch package. Furthermore, embedded expertise could be provide practically everywhere so that people with only basic training could gain the benefits of understanding products or systems; otherwise, we will arrive at a divided society where some have expert skills and others only basic ones, with a big glass fence separating the two.

A ubiquitous society has also its own challenges. I would first mention the issue of privacy. In a free society, the thought of big brother's surveillance terrifies many people; questions of privacy have become topical. The World Wide Web is open and it is impossible and fruitless to try and control it. We need to have similar rules of conduct for both the real and virtual worlds. It is clear that a totally new kind of cross-border co-operation between different countries is needed to establish these rules.

The 'Internet of things' is a great opportunity for new business concepts irrespective of if they are dealing with media, human services or industrial applications. We need to establish the markets but we need also to take care of the rules of privacy.

As the discussion of how to protect privacy raises its head, hundreds of millions of users of social media are voluntarily putting their privacy on stage through Facebook and other social media sites. It would be a really great pity if the opportunities offered by the ubiquitous society as creator of millions of new jobs remained unused because of a lack of common rules.

The security of networks is another vital issue. We already live in a world where everything is linked to the functionality of telecommunications networks. An essential need exists for deeper and better cooperation in the fight against cyber attacks and internet crime.

No one could have predicted the enormous growth experienced in data transmissions. The development of use of tablet computers and cellular phones has been revolutionary. I do not believe that we can even imagine everything that m2m and the 'Internet of Things' will bring to our lives; they might be the key to the continuation of economic growth. I hope that, in the right manner, we can make use of these opportunities to create well-being for everyone while addressing the bottlenecks to sustainable development. <<

Vita

ITU Special Envoy for the Broadband Commission for Digital Development, CEO and Founder of PearlCon Ltd

Suvi Lindén was Finland's Minister of Communications from 2007 to 2011. She previously served as Minister of Culture in 1999-2002 and as Member of Parliament in 1995-2011.

The Intelligent Community Forum, a New York-based think-tank named Ms. Lindén "Visionary of the Year for 2011" for her commitment to ensuring affordable broadband access to every citizen in Finland.

Ms Lindén is Commissioner of the United Nations Broadband Commission for Digital Development, Member of the United Nations Advisory Board of the Digital Health Initiative. She was Chair of the Ubiquitous Information Society Advisory Board of Finland. She holds positions of trust in a number of organizations including Chair of the Education and Training Board of the Oulu Region, Chair of the Finnish Cultural Institute for Benelux, and Member of the Oulu City Council. She is Founding member of World Antidoping Agency and was Member of its Executive Board.

Ms. Lindén holds a Master of Science degree from the University of Oulu.

M2M AND BIG DATA

Bob Emmerson, *Freelance Writer & Industry Observer*

>> Big Data isn't new. It's just a trendy new term for what used to be called Data Mining. Today we can disseminate and store staggering amounts of data so we need more powerful tools to analyze it. What is new is the contribution that M2M is set to make.

M2M's biggest contribution to big data comes from parameter data, which is all around. Soil contains data on moisture, salinity, pH value and density. There's pollution data on the air we breathe. The car we drive pushes out data streams on speed, petrol consumption and CO2 emissions. And critical data on blood sugar levels, blood pressure, cancer and so on are hidden inside our bodies.

Numerous sensors measure parameter and event data and more and more sensors are being created and deployed, which in turn generates more data. And then we have the "Internet of Things". Currently there are around 1.5 billion mobile Internet users and that figure is likely to rise to over 5 billion by 2020. Therefore "Big Data" is going to get bigger and bigger.

IBM says that 90% of all the data in the world today has been created in the last two years. We have affordable technology to store it and distribute it, but why retain M2M data once it's performed the task for which the app was designed? Something that's over and above keeping records.

The data that was processed by the application and turned into useful information can be reformed, i.e. reprocessed along with data gathered from other sources, which can be both relevant and peripheral. A relevant source would come from a similar set of applications: peripheral might be apparently mundane data such as emails and phone calls.

This may sound fanciful, a solution in search of a problem, so let's take a real world example.

HEALTH CARE

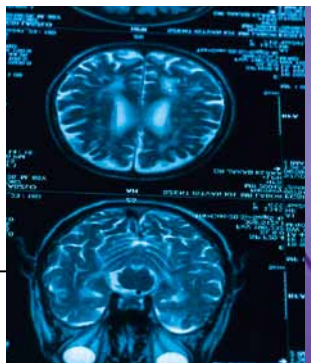
M2M is playing a significant role in e-health, e.g. are elderly patients with illness "A" taking their pills every day? It's a simple app, a very small sub-set of all the data that a local clinical facility might have on those patients. It gets bigger if it's merged with similar A-related data coming from other facilities and when analyzed the results can be revealing.

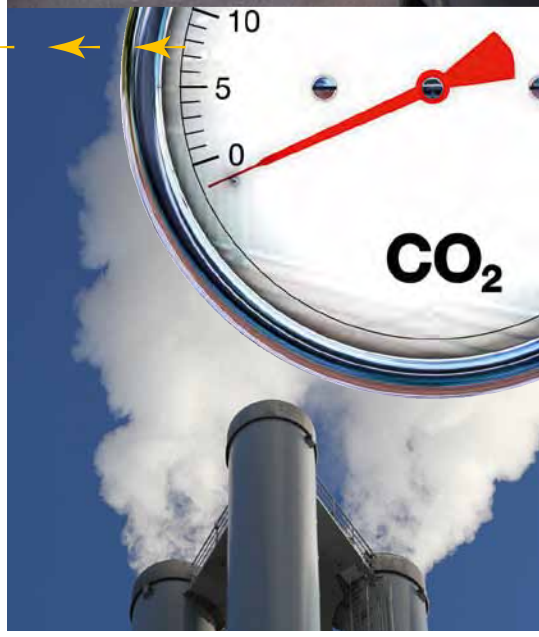
Historically, health care has been delivered by one doctor looking at one patient with only the information the doctor had at that time. But how much better might the care be if the doctor had access to information about thousands, or even tens of thousands of patients that had the same illness?

When all that data is analyzed, a process that could start with pattern recognition, the results might reveal insights into low-frequency events or situations where the signal is very small and might not be discernible when looking at very small groups.

And when data from a peripheral source is included a golden nugget may emerge. For example, air pollution might be playing a role, the number of times patients consult their doctor, or even something from the past such as a childhood illness. If the data is there and the analytical tools can handle it then M2M's intrinsic value can become even more pervasive.

The McKinsey Global Institute estimates that if the US healthcare were to use big data creatively and effectively to drive efficiency and quality, the sector could create more than $300 billion in value every year. And the similar results are waiting to be unveiled in the public sector, retail and manufacturing.





M2M AND LTE/4G

It may be a pedantic point, but LTE (Long Term Evolution) isn't 4G. However, it is very close to the 4G specification and the mobile data rates are so high that is doesn't really matter. They'll average something like 50 Mbps down and 30 Mbps up, which is out of sight for a typical M2M app. So what's the relevance to LTE?

This is a personal opinion, but for B2B applications it's close to zero. The average payload is just a few hundred bytes and latency isn't an issue. Video surveillance is often cited as a 4G app, but it is equally effective on HSPA+: you don't need TV quality images. Mobile financial trading is a candidate app because of the low latency. Milliseconds are important if you're a big-time trader, but how often is it needed when mobile?

LTE represents a complete redesign of cellular technology: it's an all-IP broadband communication network, air interface as well as core. The concept was initially discussed in 2004. Operators wanted it because: it would make better use of spectrum, a limited resource; it would be more efficient, cost less to operate; and eventually it would allow them to shut down one or two earlier generation networks and thereby release more spectrum.

LTE was not designed to accommodate the huge increase in data traffic caused by smart phones: they weren't around at the time. And the increase that looks set to become a bottleneck on 3G networks, so LTE is making a serendipitous arrival at the right time.

Analysts are pointing to the fact that there are roughly 10 times more machines than people and they go on to predict huge new revenue streams. But – and it's a very big but – while smartphones function as B2C devices, most times they are just handy, mobile computers. Therefore it's wrong to equate the dramatic growth in data traffic with M2M. It comes from apps like streaming video.

4G AND THE M2M INDUSTRY

4G is relevant to the industry because in future operators might shut down their 2G/2.5G networks and refarm the spectrum. A few operators, most notably AT&T, are going down that route, e.g. they no longer certify 2G modules. It makes long-term sense but it also causes short-term confusion and disruption. They're doing it because the same slice of spectrum can carry twice the traffic when deployed on 4G.

CDMA operators in the US will end up migrating to LTE because CDMA has hit a download wall. Running two networks that have similar functionality is expensive. The GSM camp will be running four networks, plus a few variants like EDGE. Go figure.

The M2M industry is anticipating migration and network closures. LTE represents a huge investment and a formidable challenge for the telecoms. The challenge comes from the multimedia OTT players like Skype, who get a free ride, as well as the additional cost and complexity of enabling voice over LTE. Subscribers will be able to make and receive calls on their new LTE-compliant smartphones, but right now calls will fall back to 3G. In itself that's not a big issue, but if there is a concurrent data session it will be suspended or slow down until the call is finished.

In a nutshell, it's unclear how LTE will pan out in the near- and medium-term. Therefore applications need to be future-proofed. Telit, for example, is marketing a range of modules having a single, compact form factor that is interchangeable on any regional cellular network. It gives customers the ability to choose between different cellular technologies, and it also allows applications to be upgraded, i.e. the core design of the application is maintained when migrating from 2G to 3.5G. <<

Vita

Bob Emmerson is an English national living in the Netherlands. He holds a degree in electronic engineering and mathematics from London University and now works as a freelance writer and industry observer. Bob writes about Information and Communications Technology for various technical and business publications. In addition he has produced three market reports for the Financial Times, numerous white papers and three books, the most recent being on the Mobile Enterprise

EXPERT'S VIEW

ENHANCEMENT IN SYSTEM IMPROVEMENTS

AND MUTUAL-ASSISTANCE STRUCTURES TO ENERGIZE THE M2M INDUSTRY

Won-Gyu Jang, *Ph.D. Korean Communications Agency*

>> Machine-to-Machine (m2m) is one of the hottest topics in the ICT industry.

An intellectual telecommunication service between objects, m2m transfers information perceived by sensors installed in various devices, through a wired or wireless internet communication network. Gathered information is then used to provide better quality services. Devices not only exchange information, but also know when and how to collect and process information on their own.

The Korean Communications Agency (KCA), which performs various tasks involving management of the broadcasting and telecommunications development fund, R&D planning, policy research, broadcasting and communications industry promotion; is focused on building the base from which the country can become a leader in Smart Technology through four strategic goals:

- Future oriented research and development
- Becoming the leader of the broadcasting and telecommunications convergence
- Providing sophisticated active radio services
- Efficient management of organization and administration system

To achieve the goal of promoting convergence in broadcasting communications, the Broadcasting Communications Business Unit applies various technologies in broadcasting, communications and radio to support government policies that expand services to the public, and encourage collaboration among related players in the industry.

In particular, as m2m can be converged with wide variety of industries, such as mobile office, home and auto services, healthcare, smart shipping, electronic payment, and security; the ripple effect it brings to the industry is great. Therefore the creation of new m2m services and the energizing of related industries are the main objective of this business unit.

Telematics systems including navigation, automatic toll collection, access to information and entertainment, and automatic emergency sensor response from inside the car, have been improving at a faster pace every day. Globally, more than 77 million automobiles are being produced every year. Considering the fact that over 18 million automobiles are being driven in Korea annually, it is easy to see how fast m2m is being diffusing in this market, and the potential for future growth.

Telematics consists mainly of three areas:

1. tracking & tracing for transportation management
2. navigation, road tolling, and pay as you drive (PAYD) for smarter insurance billing
3. eCall systems to cut emergency services response time.

According to a recent ABI Research study entitled "Insurance Telematics – PAYD, PHYD, and Driver Behavior Monitoring", the global number of insurance telematics users will grow at a CAGR of 90% from 1.85 million in 2010 to 89 million in 2017.

Government efforts to energize the market

Since announcing its plan on m2m in 2009, the government has fostered various businesses. The Korean Communications Commission, for instance, has built systems to monitor water quality, atmospheric condition, and weather for Chuncheon, the capital of the Gangwon Province. The National Weather Service also enhanced its weather information gathering system.

Last May, under the leadership of the Korean Communications Commission, and to boost m2m related businesses, KCA established M2M Support Centers (MSC) in Gasan-dong, Geumchun-Gu, and Seoul, which carry m2m devices, software, and various sensors to test application services, servers, networks, and monitoring devices. Individuals and SMBs with ideas related to m2m can use the center to develop and test these ideas, and the center will then provide the necessary support to take those ideas and successfully commercialize them.

Looking forward, the Korean Communications Commission plans to enhance the MSCs by introducing next-generation telecommunication technology. In 2013 it plans to create a test bed environment for development, and start trial services in metropolitan areas. It plans to secure core technology including m2m-based convergence technology by 2014, and

to expand trial services nationwide, securing leadership in the global market by 2015.

Future market trend

Despite the government's efforts and positive outlook from market research companies, the m2m market in Korea is still in its infancy. The m2m business in the 3 major mobile communication providers is still in the beginning stages, and those companies producing related solutions are currently only participating in trial businesses led by the government. It will surely take a lot of effort and time to energize the B2C m2m market which applies m2m widely in everyday life.

Also, killer applications and content are critical to energize the market. Developing various services that meet demands from various consumer groups is key for the growth of the m2m market. One of the reasons why the m2m industry's expansion into the B2C market has been slow is the consumer's negative perception of the services. The potential risk that m2m technology represents in disclosing personal information such as user location creates a negative perception and hinders expansion into B2C areas.

In order to start eliminating such concerns from the industry, the Seoul transportation authority has built smart bus-stops in the downtown area, called 'U-Shelters', to provide best traffic-condition-based information to citizens by leveraging ubiquitous m2m. This covergence system collects various kinds of information from sensoring equipment and tranmits it through an IP based wired/wireless network. Just by touching a big screen at the bus-stop allows the person waiting for the bus to find real-time information including current location of buses for each route number, estimated time of arrival, digital route maps, as well as lifestyle data such as tourism information and weather news. Starting from this transportation system, Seoul is planning to set up a smart city complex which includes all kinds of pubilc services connected by an intellectual network.

Recently, the number of Smartphone users in Korea reached 20 million. If we can develop success cases where m2m technology is applied to Smartphones it will help change the negative perception about the technology, and will also help to find more ways to apply m2m. Although currently a separate m2m device is required, if we could find ways to adopt m2m on Smartphones so that they could be used to detect or provide information about an object, we could then expect the expansion into the B2C market to happen more rapidly, and at the same time, change the perception about m2m.

We need to find a 'Blue Ocean', where there is no clear winner yet.

M2M is beginning to energize. <<

CASE STUDY

BRAZILIAN MARKET:
WHAT HAPPENS WITHOUT RESOLUTION 245?

Silvio Cirelli, *CEO, Quanta Tecnologia Ltda.*

QUANTA
www.quantatec.com.br

>> One of the most exciting and fastest growing telematics markets, Brazil, is a unique case in the world. In 2007 the Brazilian government passed Law 121 mandating that all vehicles (motorcycles, cars, buses, and trucks) either locally produced or imported come factory equipped with a telematics box (AVL). This law was then better technically defined by the transit authority Denatran, by means of Resolution 245.

This mandate is to bring to the market a huge volume of 5.5 million telematics boxes (AVL) per year comprised approximately of 3.5 million new cars, 1.5 million motorcycles and about 500 thousand trucks and buses.

Figure 1 is a good example of a device deployed in response to Resolution 245.

Tetros auto

After some legal and technical issues and seven schedule postponements everything is now settled to begin August 30th 2012.

? But what if for some reason 245 is postponed again?

With this question and in such scenario I would like to open the discussion.

? After so many delays, will it still have enough credibility to go ahead?

Many players will need to invest more money in addition to amounts already spent with no clear visibility of the return. They will have problems explaining to shareholders why they need more investments.

? And how about the GSM platforms used in the designs?

They were created using pre-2008 GSM/GPRS platforms, now the selected platforms are outdated or at least too expensive when compared with current available M2M platforms. This will require design reviews that will lead to new engineering and certification costs.

? Will Denatran succeed in implementing and keeping updated the infrastructure needed to fulfill all technical requirements?

There are many factors playing against 245's final deployment. Let's try to develop a second scenario where the Law or the Regulation is once again postponed or even canceled. Let's try to figure out how the Brazilian market would be without the Law 245.

From my humble perspective, at least up to now, resolution 245 has brought more heat than energy to the market. The only benefit we can gain is that now OEM's appreciate the discussion about connected cars, and are no longer afraid of the vehicle tracking subject anymore.

They understand now that this is not "an alien" but a customer required feature.

But prices for key components like GSM modules, GPS receivers, micro-controllers and of course AVL devices will never be the same and the expected volumes may simply disappear. Just as an example a GSM/GPRS module was sold for about U$100.00 in 2006, now it is easy to find prices near U$ 10.00. That represents a drop of 90 % in only 5 years.

So what can we foresee for such a price oriented market with "not so huge a volume" as it would be without the Law 245? There are just a few exits to this alley. One is to increase volumes and the other is to add value to get better prices for a given solution.

GSM/GPRS hardware and service prices today are close to a bottom and technically there is nothing more revolutionary new that can possibly be created with 2G data bandwidth. But if you have a great idea, please share it with us. In this case the only way to go is to produce a large volume of AVL devices at low sales price to make money from larger volumes and not from larger profit margins.

But if the market volume is "not so large" without the law, it is clear that some players must simply give up this market opening space in it or have their businesses incorporated by larger players. So, concentration into fewer capital rich players seems to be on the way.

Players may also look for other verticals like vending machines, utility meter reading, and factory automation. Some verticals were just science fiction some time ago, but now with the abundance of hardware offers and declining prices, they may become real opportunities. Another way out is to focus on some market niches, if a small company does not disappear this is one possible solution, low volume but very dedicated solution, with higher prices.

On the technical side, high end applications require larger bandwidth, so 3G seems to be the doorway. With higher hardware purchase price but with possibly better profit margins, solutions using 3G seem to be good candidates for deployment in volume in the near future. Here the competition may come from smartphones and tablets, but for automotive applications I believe that a in car specific devices with functions and robustness not found in smartphones and tablets will be better solutions since the automotive environment is much rougher than the one smartphones and tablets were designed for. And connectivity is needed anywhere.

Although Resolution 245 is an offspring from Law 121, and a law can only be changed or cancelled by another from Congress - and there is nothing like this in discussion now - I prefer to work in a scenario without the law. This is a way to set our minds into thinking about "what customers would like to use and pay for". And if Resolution 245 finally comes to market on August 30th 2012 as planned, then we will have the best of both worlds: low prices with high volumes. And since Quanta Tecnologia is one of the players designing devices for resolution 245, we are in.

This is why I wrote that Brazil is a unique case at the beginning of this article. Even without the expected volumes happening today, prices dropped as they would have with the Resolution in force. Have you ever seen this before? If yes, be welcome and join us!!! <<

CASE STUDY

VIASAT GROUP – TELEMATICS SERVICES FOR VEHICLES AND INDIVIDUALS

Roberto Cortesi, *Marketing and Communication Manager Viasat Group*

www.viasatgroup.it

>> Viasat Group is leader in Italy and worldwide for Location Based Services and Telematics solutions applied to consumers, transportation companies, carmakers, rental and insurance companies. The Viasat Group, a holding of companies and a historical brand, is well known in the LBS (Location Based Services), electronic and manufacturing markets.

Core Businesses

LBS (Location Based Services): marketing of satellite systems and services such as stolen vehicle tracking, fleet management, insurance data management, road-side assistance, concierge, and healthcare assistance.

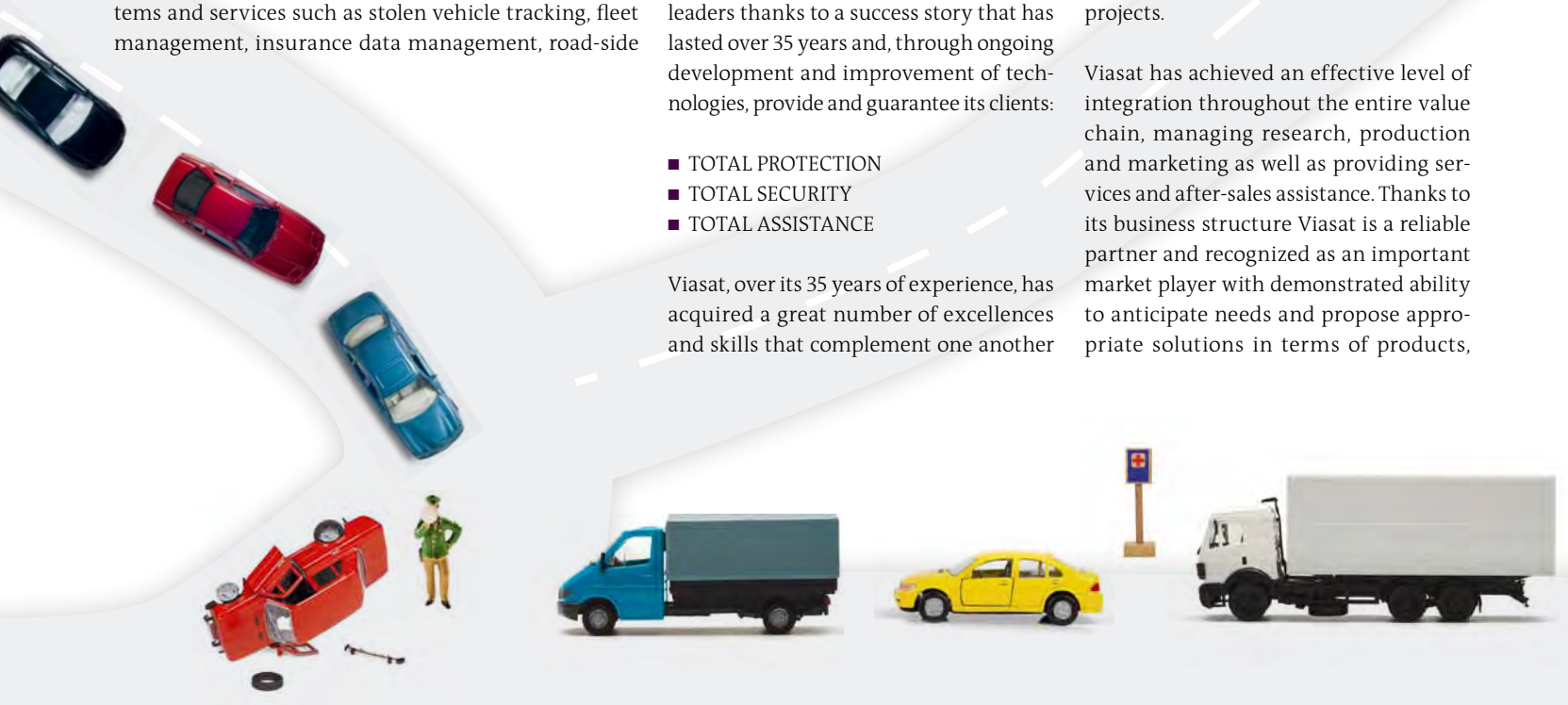
EMS (Electronic Manufacturing Services): R&D and manufacturing of satellite systems and other electronic systems.

Viasat's mission is to conceive, implement and distribute security and protection systems and services by applying satellite technologies; to become recognized by the market as reliable and innovative leaders thanks to a success story that has lasted over 35 years and, through ongoing development and improvement of technologies, provide and guarantee its clients:

- TOTAL PROTECTION
- TOTAL SECURITY
- TOTAL ASSISTANCE

Viasat, over its 35 years of experience, has acquired a great number of excellences and skills that complement one another in the field of developing and manufacturing electronic systems and IT platforms for both products and services market based on satellite positioning. The Group's strategies are aimed at satisfying clients, partners, and internal resources. Its goal is to increase competitiveness in the market, to imagine and construct a better and more sustainable future. It is also a European leader thanks to its customer base and its international partners and for taking part in important institutional projects.

Viasat has achieved an effective level of integration throughout the entire value chain, managing research, production and marketing as well as providing services and after-sales assistance. Thanks to its business structure Viasat is a reliable partner and recognized as an important market player with demonstrated ability to anticipate needs and propose appropriate solutions in terms of products,



Viasat Security

services, management and distribution. With direct control of the entire product and service cycle our customers are assured flexibility, customization, speed and efficiency. The main aspects of Viasat's transversal operating chain are:

Research and Development

Technical- engineering know-how:

- Design and development of new technologies intra-group and for third parties

- Hardware and Software engineering for new electronic modules and satellite systems
- Development of Operating Center solutions and tools providing services for B2B and B2C

Manufacturing

Considerable technical background and manufacturing facilities; layout and organizational models based on experience and optimization developed over 35 years of operational testing; several trademarks registered in the industrial sector and an important knowledge on the development and management of new production start-up. Capability stemming from 2 thousand electronic modules and systems distributed over 10.000 square meters of facility area.

On-field Assistance

Viasat's distributed, technical and assistance Centers are well located across the country (about 2,000 technical service centers). Through partnerships and investments the Viasat Group is growing its international presence.

Supply Services

The Group operates European service Centers with specialized and Multilanguage operators using a flexible platform that is customizable according to the provider, the country and the device. There is also a Web-based Control Center application which is customer accessible.

Services

Viasat Group, through its subsidiaries and its own brands (Viasat, Movitrack, TrackySat) offers a wide range of solutions for stolen vehicle tracking and recovery. Services can operate with quick response times in case of theft or accidents thanks to the high level of professionalism of its operations centers.

Fleet Management Services

Dedicated to company fleets and transportation businesses, the service is accessible via standard internet connection offering a range of features including:

- Real-time localization of a vehicle or vehicle groups
- Historical data management: system stores positions, speed, engine ignition records, and covered distances
- Statistics reports on fleet activities
- Optimization of route planning

Solutions for insurance companies

The group offers solutions to manage and analyze data and driving behaviors to reduce risk of accidents and to reconstruct them; all leading to real cost reduction with insurance.

Personal protection services

The group also offers services that guarantee immediate intervention in case of a personal accident, illness, or attack.

AWARDS

In the last few years Viasat Group has received important awards:

In 2009 the Viasat Group won the 'Balance Sheet Oscar' for small and medium sized Companies, organized and promotes by FERPI – the Italian Federation of Public Relations, under the High Patronage of the Italian President. The award is presented to companies that manage to boost their balance sheets to tackle the challenges posed by the economy, demonstrating that transparency, the desire to communicate and the clarity of their mission are all essential conditions.

On January 23rd 2012, at Palazzo Mezzanote in Milan, Domenico Petrone, President and CEO of Viasat Group, received the prize 'The Entrepreneur of the Year 2011' (sponsored by Ernst & Young) in the category for Technology and Innovation; presented to him because 'to be able to demonstrate, through significant achievements in 37 years, and through commitment, positive attitude, determination and guided by the values it is possible to build a better and successful future'. <<

CASE STUDY

ERA-GLONASS

EMERGENCY CALL SYSTEM IN RUSSIA – TIMELINE AND IVS REQUIREMENTS

Yaroslav Domaratsky, *Director of subscriber equipment development division, NIS GLONASS national navigation services provider*

>> Navigation-Information Systems (NIS GLONASS) Joint Stock Company is a Russian public-private partnership, designated by the Russian Federation Government Resolution No. 549, dated 11 July 2009, as National Navigation Services Provider. The NIS GLONASS Board of Directors includes representatives from public and private organizations with interest in the development of GLONASS technologies.

NIS GLONASS Objectives:

- Formation of an integrated technology policy for navigation services
- Creation of favorable conditions for mainstream adoption of GLONASS technologies in domestic and global markets
- Initiation and support of the development of GLONASS-based products and services in Russia and abroad
- Contribution to the development of government policy on GLONASS commercialization
- Ensure the integration of process management for the implementation of GLONASS in Russia
- Introduction and further development of the ERA-GLONASS system
- Creation of mass markets for competitive equipment and services, based on GLONASS technologies
- Development of GLONASS-based navigation information systems for use by government and large industrial sector.

Challenges

The ERA-GLONASS system is a key NIS GLONASS project with a significant social impact. The project envisions equipping all new vehicle types sold in the Russian Federation with GLONASS navigation and GSM/UMTS communication In-Vehicle Systems (IVS). In the event of a serious accident, this IVS will activate automatically and transmit the vehicle's exact coordinates and other data to «1-1-2» Emergency Response Centers similarly to the European eCall concept. Public Safety Response Point operators will attempt to contact the vehicle occupants through the terminal's hands-free communication system, and proceed to dispatch emergency services (EMERCOM rescue, police, and/or ambulance) as appropriate. An emergency signal can also be sent with a "panic" button. ERA-GLONASS can also be used to access an array of additional services – navigation, information exchange, remote vehicle diagnostics, and so on if such services are supported by the IVS.

Project Stages

2009 CONCEPT DEVELOPMENT
- NIS GLONASS is designated as National Navigation Services Provider
- Development of ERA-GLONASS business model

2010 DESIGN PLANNING
- System architecture development
- Development of vehicle terminal and ERA-GLONASS platform prototypes
- Regulatory and legal framework development

2011 PROJECT DEVELOPMENT
- Development of ERA-GLONASS technical design
- Production samples of vehicle terminals and navigation information centers
- Comprehensive testing and commissioning of pilot projects

2012 OPERATIONAL TESTING
- Operational testing of platform and terminals
- Fine-tuning the system based on test results
- Development of regional pilot projects

2013 INFRASTRUCTURE DEVELOPMENT
- Development of regional infrastructure
- Adoption of regulatory and legal framework governing system use
- Start of large-scale production of ERA-GLONASS terminals
- Commissioning of the ERA-GLONASS system (end of the year)

2014 SYSTEM OPERATION
- Full-scale operation
- Expected introduction of complementary services by third parties

Key Project Objectives

- Reduce fatality rates and the ill effects of injuries on Russian roads
- Enhance safety of freight and passenger transportation
- Develop commercial applications for GLONASS and create mainstream market for navigation devices and services
- Ensure market viability of GLONASS-based equipment and services
- Support the adoption of GLONASS technology.

The ERA-GLONASS infrastructure will serve as a distribution channel for various telematics services and provide the market scale required for rapid development of GLONASS-based navigation and information systems, services, and equipment.

Main challenges for the IVS

- Ensuring that vehicles getting new type approvals in Russia starting Jan 2013 have an IVS that meets ERA-GLONASS requirements.
- Ensuring critical mass of IVS enabling it to provide additional services for end users beyond emergency call service.

Solution

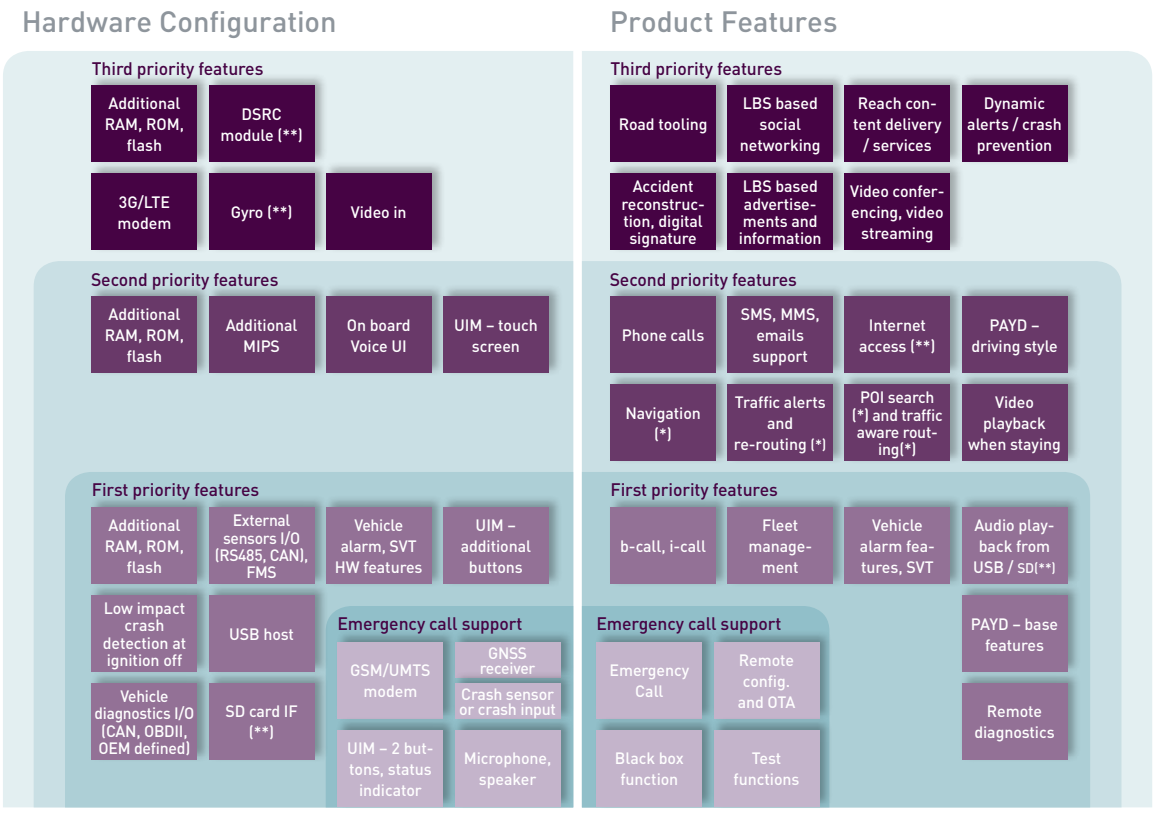
The ERA-GLONASS IVS differs from the eCall IVS in a number of specifications:

- The IVS must use GLONASS signals for position determination (combined GNSS receivers are OK)
- The IVS must use SMS as back-up MSD transmission mechanism if in-band fails
- AEC / NR requirements defined
- Periodic self testing with submission of self test results to back end
- Capability of enabling test mode from the vehicle (regular vehicle inspection)
- Restrict IVS configuration
- Restrict IVS reprogramming (mandatory for aftermarket IVS only)
- Crash severity estimation or crash acceleration profile record and transmission
- "Black box" functionality
- Both OEM pre-installed and aftermarket / retrofit IVS configurations supported.

NIS GLONASS has reviewed IVS requirements with major automotive OEMs and all interested automotive electronics suppliers since June 2010. In 2010-2011 NIS GLONASS received and addressed more than 900 comments from over 25 companies. From September through November 2011 NIS GLONASS organized public reviews of the Russian national ERA-GLONASS standard draft and IVS technical requirements and in Dec 2011 this national standard was approved in Russia with introduction date set for September 1st 2012.

NIS GLONASS has also worked with ERTICO, ACEA and individual OEM's on ERA-GLONASS and eCall requirements harmonization. NIS has attended eCall meetings since January 2010 and is an eCall implementation platform associated member. In January 2011 NIS, ERTICO and ITS-Russia signed an agreement to start ERA-GLONASS/eCall harmonization workgroups with major OEM's. The workgroup held over 7 sessions in 2011 with additional work planned for 2012.

In November 2011 NIS GLONASS together with 10 Russian and global automotive electronics companies developed ERA-GLONASS IVS prototypes and successfully conducted prototype testing with the NIS infrastructure in 3 pilot areas in Russia – the Moscow region, the St. Petersburg region, and the city of Kursk.



Benefits

With additional features added to ERA-GLONASS system NIS GLONASS expects to see enhanced reliability and QoS. NIS GLONASS believes common IVS platforms will be developed so the same IVS platform can be used by OEMs for both EU and Russian markers. NIS GLONASS envisions that additional services supported by the system beyond emergency call will enhance end-user loyalty. <<

Figure 1 - ERA-GLONASS IVS terminal versions.

CASE STUDY

SWAY Techno Solutions

TELIT'S MODULES ARE VERSATILE WITH RICH FEATURES AND PERFORMANCE. IT HAS BEEN A GREAT ASSOCIATION AND WE HAVE BEEN ABLE TO SUCCESSFULLY CONCEIVE MANY-TO-ONE PRODUCTS WITH HIGHLY INTEGRATED FEATURES.

Atul K. *Gangwar, Founder and Chief Executive*

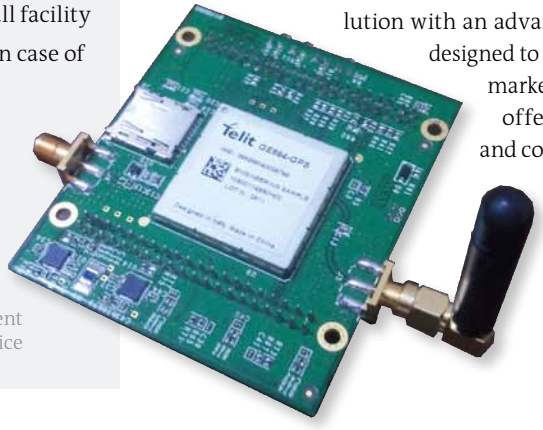
FACTS

SWAY Techno Solutions
www.swaytech.in

System
VYOM™ Fleet Management and Telematics Device

Which Telit module do you use and why?
GE864-GPS – to cover markets in Asia, US, EU; along with GPS. The compact module enables stand-alone usage or with a host microcontroller.

Features
- ✔ Real-time, active (online); and passive (SMS based) tracking
- ✔ Fleet management
- ✔ Remote monitoring of vehicle parameters
- ✔ Alarms and SMS for GEOFENCE and predefined Routes
- ✔ NFC enabled, for driver identification
- ✔ Two-way communication with driver on detection of emergency Vehicle movement detection in an 'Ignition-off' condition
- ✔ One-touch emergency call facility
- ✔ Local storage of records in case of GSM network outage
- ✔ FOTA (firmware-over-the-air) upgrade enabled
- ✔ Robust housing



VYOM™ Fleet Management and Telematics Device

>> Sway is a global provider of ICT (information and communication technology) enabled electronic products and solutions with focus on 'Green Energy'. Our experienced R&D team brings forth its concept-to-solution expertise delivering highly optimized, power-efficient, reliable and cost-effective solutions. Sway is a manufacturer and provider of GPS and GSM based fleet management and asset tracking solutions with VYOM (meaning 'SKY' in Hindi) being its comprehensive solution for this market. The solution is offered in flavors suitable to individuals and medium-to-large fleet owners, is very easy to integrate with low overhead for efficient data communication, and available with futuristic FOTA (firmware over-the-air) upgrade capability. The product is based on Telit's GE864-GPS module, which offers outstanding reliability.

The VYOM is a best-in-class GPS hardware solution with an advanced feature-set designed to meet and exceed market demands. Sway offers high-quality and cost-efficient hardware products directly to vehicle and asset tracking solution providers striving to provide customized and innovative devices that are tightly coupled with customer demand. Accelerated joint development efforts with our customers are always considered in order to achieve optimal win-win solutions. Sway brings to the market a comprehensive portfolio of fleet management solutions that is based on the most desired features from the enterprise. The solution feature-suite addresses local geography demands, driver behavior, enhanced mapping, vehicle monitoring and with the high level of integration and use of a compact module we were able to design a state-of-the-art device. The device can operate in two modes: as stand-alone or with external micro-controller security and much more. We enter 2012 with plans to make a significant impact on the telematics industry directly and through our partners who engage with companies having proven track record in the marketplace. Visit us at www.swaytech.in to learn more about our products and solutions. <<

TELIT'S GSM/GPRS MODULE MAKES OUR GPS TRACKERS NICE FEATURE-RICH PRODUCTS.

Frank Tang, *CEO*

FACTS

Atrack Technology
www.atrack.com.tw

System

AX5 – Advanced GPS tracker, Easy installation

Which Telit module do you use and why?

ATrack believes that the GE865-QUAD's compact form factor along with its consistently high quality is the smart decision among all other selections.

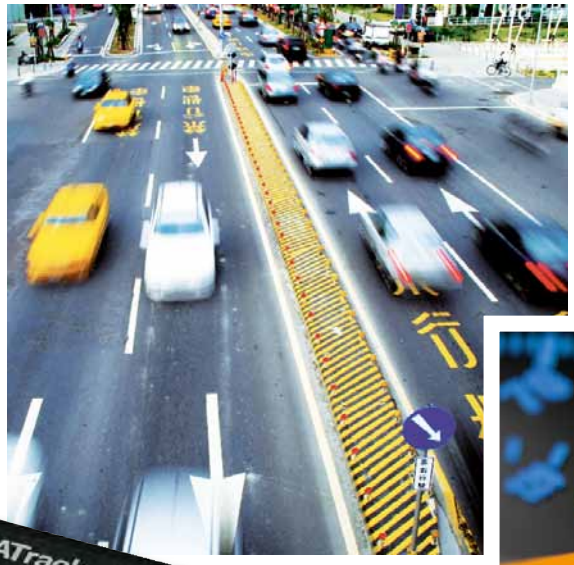
Features

- ✔ Easy installation – Plug and Play and high stability and quality
- ✔ CAN BUS support via OBDII
- ✔ GSM jamming detection & alarm
- ✔ Fast (50 seconds) OTA firmware update via GPRS from FTP server.
- ✔ 8-40V wide operating range supply voltage

AX5

AT1E Pro

>> As technology rapidly progresses, people tend to adopt more intelligent ways for a better, more secure, safe, and environmentally friendly driving experience. ATrack, realizing this trend, developed the new AX5 which aims to fulfill this market's needs in various aspects. The AX5 is a 2nd generation Plug-and-Play tracking device with a number of improvements, providing basic functions along with optional advanced features for tracing light trucks and passenger vehicles. The easy installation feature enables individual users to simply plug the device into the vehicle without much effort. Applications such as PAYD (Pay-As-You-Drive) within the insurance industry can benefit from the AX5's functionality and easy installation. The AX5, like other ATrack devices, uses the Telit GE865-QUAD module to ensure the most stable GSM/GPRS cellular communication.



In order to improve functionality and capability, as well as to enhance communication stability, ATrack decided to upgrade its mainstream tracker, the AT1(E) to the AT1(E) Pro by adopting Telit's GE865-QUAD module. ATrack believes that the GE865-QUAD's compact form factor along with its consistently high quality is the smart decision among all other module selections.

ATrack Technology Inc. is in the business of designing, developing and manufacturing AVL tracking systems and was founded by a group of professionals with over 10 years' experience in the AVL industry. ATrack understands that the stability of the tracking device is a critical success factor in the GPS tracking industry. So, following extensive research and testing, ATrack chose Telit, industry leading m2m module provider, as its primary GSM module supplier to make its GPS trackers loaded with rich features. ATrack believes that working with a reliable partner can bring the highest value to a long term successful business. <<

CASE STUDY

THE G24 AUTOMOTIVE VERSION PROVIDED US THE HIGHEST RELIABILITY THAT OUR CLIENTS EXPECT FROM STONERIDGE.

Dominik Marx, *Product Manager Telematics Systems*

FACTS

Stoneridge Electronics
www.stoneridge-electronics.com

System
MIMER Telematics Platform

Which Telit module do you use and why?
Automotive tested version of the GSM/GPRS module G24 Mot by Telit, which offers an entry level communication channel to our NEC V850 based MIMER platform

Features

- ✔ Tachograph Remote Download
- ✔ Remote Software Update
- ✔ Time-tested and market proven telematics V850 CPU Core
- ✔ GPS/WAAS/EGNOS/GALILEO Support
- ✔ GSM/GPRS Support, Global-use approved
- ✔ CAN-Bus Interface (FMS/J1939)
- ✔ General I/O Capability
- ✔ Power Backup (SuperCAP & Battery)
- ✔ Automotive-grade

MIMER Telematics Platform

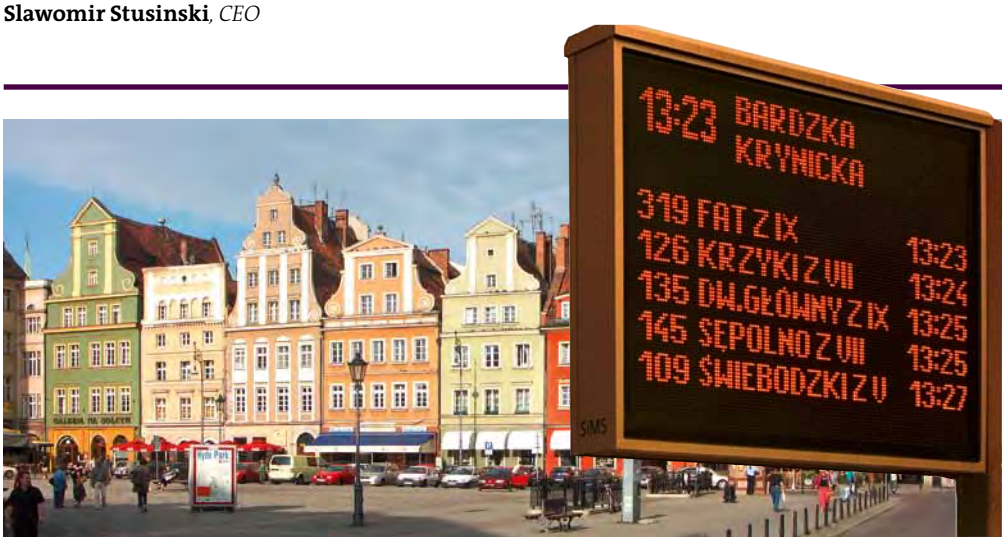
>> Stoneridge Electronics is part of the global Stoneridge Group, a leading designer and manufacturer of highly engineered electrical and electronic components, modules and systems. We have a strong reputation for developing innovative, reliable products including instrument clusters, tachographs, telematics, and security systems for the automotive industry. Needless to say, the decision for the G24 Quad-band GSM/GPRS module as the 2G communication module of choice was crucially founded on the high reliability and proven performance provided by the Motorola M2M team and later, since March 2011, carried on by the 'Mot by Telit' business unit at Telit.

Globally, today's modern commercial vehicles need to be constantly connected and integrated to the business infrastructure. Fast and reliable communications are key words in the industry as well as among our OEM and aftermarket partners such as Daimler and Scania. VERY importantly, and not only at the application level in the intelligent telematics system, the G24 ensures an unbroken and reliable connection to the commercial cellular network, across all Global MNO's (Mobile Network Operators) in both home network and roaming conditions, covering with certainty all different countries and regions in the World. <<

SiMS

WE ARE PROUD OF OUR COOPERATION WITH TELIT WHOSE EXCELLENT PRODUCTS ENABLED US TO CREATE HIGHLY RELIABLE DEVICES.

Slawomir Stusinski, *CEO*



FACTS

Zaklad Elektroniczny SiMS Bydgoszcz Slawomir Stusinski
www.sims.pl

System

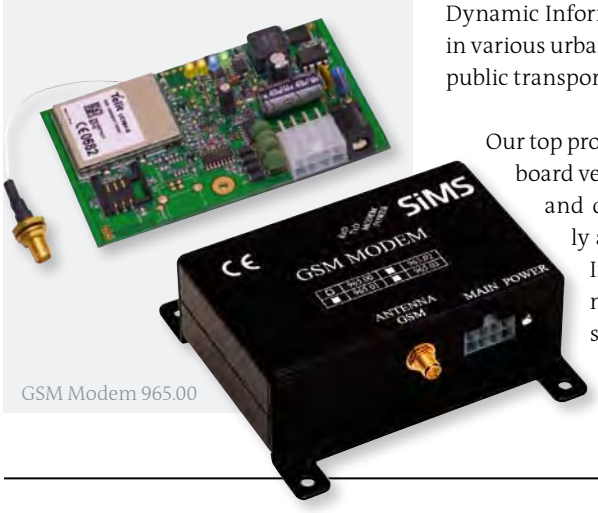
GSM MODEM 965.00 – desktop, built-in or stand-alone models.

Which Telit module do you use and why?

UC864-E – because Telit was the only vendor supporting HSDPA when we started the project and also because of good technical support and high stability.

Features

- ✔ Automotive-grade engineering
- ✔ Stand-alone simplicity
- ✔ Reliable SMS, data, and GPRS communication channels;
- ✔ Vehicle location via GPS (using external GPS Receiver – 964.00) or GSM as a backup;
- ✔ RS485/232 BUS
- ✔ USB support in stand-alone models
- ✔ Wide 12-36V DC supply voltage



GSM Modem 965.00

>> SiMS is a genuinely Polish company that has been in the market since 1990. From the very beginning of our commercial activity, we have been designing and placing into production high-class electronic equipment. Our approach is to provide complex customer service from the early stage of system design and full software support, in-house production, further implementation of the project and finally technical and hardware support for the whole system. We also lead customers' projects and manufacturing based on supplied technical documentation. Additionally, we are an OEM manufacturer for customers in the electronics and automation areas, as well as for electric energy measuring systems.

Our products are mainly destined to automotive segment customers. We provide complex equipment for the public transportation industry which focuses primarily on information systems for passengers. Our Projects in Dynamic Information Management Systems, deployed in various urban areas, significantly help passengers use public transportation on an every-day basis.

Our top products based on Telit modules include onboard vehicle modems, timetable panel modems and desktop modems. They are collectively applied in the tailoring of our Dynamic Information Management Systems. GSM modems, installed in buses, trams and stops, significantly help improve public transportation services. The main data bearer in these systems is UMTS enabled by Telit modules.

The Timetable Panel that includes a Telit GSM modem is our lead product. The principle of operation for this device is based on constant data communication between the main server and Timetable Panels all around town to provide real-time information to passengers. The Timetables show constantly updated arrival times for the mass transit vehicle calculated based on information from GPS receivers gathered non-stop via GSM modems installed in the transport vehicles. The Timetable Panels also send status information back to the main server.

The Dynamic Information Management Systems would not operate if it were not for the onboard vehicle modems. Our Onboard Computers send data via UMTS showing GPS location, operating system status and information about any possible failures in the vehicle. These CANBUS messages are then received by our desktop modems and displayed on an operator control Panel allowing remote diagnosis of failures in the bus or tram. <<

CASE STUDY

WE ARE FOCUSED ON TELIT'S MODULES QUALITY AND FLEXIBILITY.

Gustavo Tono, *Sales*

FACTS

GTE SRL
www.gte.com.ar

System

TRAX S15 – One device, multiple solutions

Which Telit module do you use and why?

The GE865-QUAD and JN3. We use Telit's modules for the functionality and quality which allows us to give our clients better solutions in intelligent and reliable AVL equipment. Good satellite reception in poor environments, small form factor and excellent quality were decisive factors in the choice of the GPS module.

Features

- ✔ CAN J1939 support
- ✔ Black box function with µSD memory card (5 years of records accumulated second-by-second)
- ✔ Fully Python user-programmable
- ✔ Advanced programming language
- ✔ 200 events, 400 triggers, flags, registers, and counters
- ✔ Math functions + - < > * / ^2
- ✔ Nano-watt power
- ✔ 8 I/O ports, 5 Serial ports, 1 I2C, 1 CAN, 4 Outputs
- ✔ Garmin FMI compatible
- ✔ Orbcomm and Skywave binary support
- ✔ Over the air Programming
- ✔ Firmware over the Air
- ✔ Sirf IV GPS
- ✔ Dual SIM
- ✔ µSD memory for 45K reports, 5 million events

>> We have been producing tracking devices since 2004 with over 140K units installed in 7 different countries. Our focus is quality and partnering on sales. Our main market is the South American region characterized by several cellular providers, multiples bands across the different countries, and poor cellular coverage. We found that Telit's 865 modules met all of our needs, with good signal coverage and no problems with roaming and band switching.

TRAX S15

The JN3 module with the latest Sirf technology was important when the time came to select a GPS module. Jamming resistance and quick cold start gave us the best performance in urban location situations.

Our TRAX S15 was designed to address the requirements of clients for a device platform suited to a complete solution for fleet management and tracking. In the development of TRAX S15 we focused on tree points: reliability, functionality, and adequate cost. Since in some of our regions trucks and cars are not late model, lacking a good electrical environment, we designed our equipment power supply hardware with protection from over voltage of up to 100V, from polarity inversion, and from short circuit on all outputs.

Advanced functions such as map grid regions, camera snapshot recorder, CAN bus connection, 196 configurable events, µSD memory recorder, waypoints and polygonal regions, integrated math functions, encrypted protocol, binary message programming, real-time multi TCP and UDP connection, and multiple serial-port for peripheral connection, were all integrated in the device.

Our clients' requirements and functionality change all the time. That is why for two years now, we have offered free over-the-air automatic firmware updating, with a simple command sent to the equipment. In order to meet some of the requirements for logistics and tracking, the TRAX S15 counts on an intelligent programmable operating system with 196 high level code lines by means of which it is possible to create complex programs that convert the device into a powerful computer. <<

SK telecom

Glorious Awards from 26 Million Customers, Greater Honor than His Best Actor Award

Triple crown in customer satisfaction with 26 million subscribers' hearty support.
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[SK Telecom's outstanding service quality wins three customer satisfaction awards]

- National Customer Satisfaction Index (NCSI) 14 Consecutive years #1
- Korean Customer Satisfaction Index (KCSI) 14 Consecutive years #1
- Korean Standard Service Quality Index (KSSQI) 12 Consecutive years #1

Global ICT Leader

EXPERT'S OUTLOOK

WHY THE ELECTRIC CAR WILL JUMPSTART M2M

Susan Kuchinskas, *journalist and author*

Telematics UPDATE
www.telematicsupdate.com

>> People have been kicking the Internet of Things concept around since before the turn of the century. "Wouldn't it be great if your refrigerator could order what you need directly from the market?"

In fact, of course, machine-to-machine communication is already quite common; the problem is that most of it takes place only within siloed applications. The Internet of Cows, tracking beef from hoof to shopping cart, doesn't talk to the Internet of Pharmaceuticals that provides a clear chain of custody from manufacturer to patient.

The Internet of Things, or IoT, when everything can provide information to everything else, is about to get a jumpstart from the electric vehicle industry. As EVs with persistent connections move onto the road in numbers in the next couple of years, they'll drive faster development in smart grids that will then power m2m connectivity in still more sectors. EVs need to connect to servers so they can find the nearest charging stations. Eventually, their systems will also alert drivers to whether there's a free slot at a charging station, allow them to make reservations and tell them what's nearby.

In October, Telefonica UK announced a partnership with Chargemaster to provide EV charging services that could evolve into this vision. At first, Telefonica's O2 Control Centre will provide m2m connectivity for the UK-wide network of charging stations. Eventually, drivers will be able to find the nearest charging point and pay through their mobile phones.

On the grid

With all these electric vehicles inhaling electricity, utility companies will need to get smarter and more connected. "EVs will generate a huge proportion of traffic on the grid, and a phenomenal increase in demand for electricity," says Matt Hatton, director of Machina Research. "Managing electricity consumption is one of the big drivers for machine-to-machine. It becomes incumbent on utilities to manage the demand."

According to Macario Namie, senior director of marketing for Jasper Wireless, which powers Telefonica's O2 Control Centre, there's an opportunity for information exchanges between cars, smart home systems and utilities. "When you get real smart is when you tie the grid into the car. If you have a lot of EV drivers making appointments to get their cars charged, you can start to do some predictive analysis of how much energy will be consumed at that station. But trying to get very disparate parties to cooperate is challenging", Namie says.

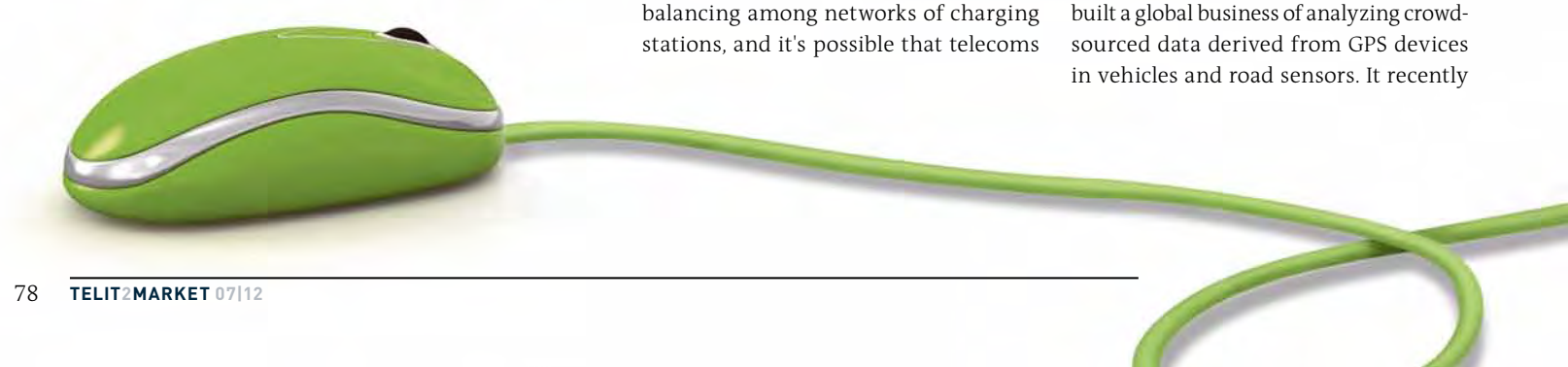
Challenging, but inevitable; some operators, including Schneider Electric in Europe and Coulomb Technologies in the United States, are already handling load balancing among networks of charging stations, and it's possible that telecoms like Telefonica, or service providers like Jasper, could facilitate that cooperation.

V2X

New cars already are tricked out with a variety of sensors and cameras, and there's opportunity to aggregate all that data with that from road sensors, third-party monitors, DSRC, traffic lights, toll booths. So-called vehicle-to-infrastructure communications, or V2X, could become part of an expanded Internet of Things that wraps drivers in a data-rich cocoon of information to prevent collisions. The system could dynamically change metering lights and traffic signals to reduce traffic jams, thereby lowering fuel use and emissions.

Anonymous, personal location data provided by GPS in Internet-connected cars, as well as the mobile phones of drivers, could be worth as much as $700 billion in value to consumer and business end users in the next ten years, according to McKinsey. Note that this value does not include revenues to service providers – it's simply the potential value of the data itself.

You can already see this happening, thanks to companies like Inrix. Inrix has built a global business of analyzing crowd-sourced data derived from GPS devices in vehicles and road sensors. It recently



acquired ITIS, a company doing similar work with cellular data aggregated from carrier partners.

Its research department has demonstrated an application that can determine where people traveled from to get to a particular destination, for a specific day of the week or time period. (It can also do the opposite: show the percentage of people who leave a location and travel to different destinations.)

Inrix is developing new business models that will let the company potentially profit from being a resource for this kind of data. Jim Bak, Inrix senior public relations and marketing manager, says this information could be vital for government planners studying where to put public transportation nodes as well as for the operator of a sports arena. Bak wonders, "If we took our emerging expertise in analytics and productize it, how can we help governments or automakers deliver better solutions?"

The matrix

Once we move from standalone applications to a broader, interconnected model, all that data becomes mashable content, according to Sam Lucero, practice director for m2m and embedded, ABI Research. He says that, in the near term, we need cheaper sensors and standard communication technologies to pull all these different data feeds together. Once that happens – perhaps in 2013 – we'll begin to see a virtuous cycle effect.

When resources from one system become relevant to other applications, Lucero says, "That's when the value of pervasive sensors becomes much more evident. That's the tipping point where sensors receive a lot more investment and development activity than they've seen to date." McKinsey calls this "big data" – enormous pools of data from mobile phones, sensors, social networks, retail POS and myriad other systems that can be captured, communicated, aggregated, stored, and analyzed. McKinsey projects that global data generation will grow 40 percent per year, and that this data could be worth as much as EU940 billion.

Where could all this go? What useful information could we derive by combining the big data from the Internet of Cows with that from the Internet of Pharmaceuticals and the Internet of Cars?

"Who knows?" Lucero says. "One of the funny things about innovation is that ... there will be inflexion points where you can't see around the corner. I think the Internet of Things is one of those fundamental technology trends where you can point to the general outlines but not really know what's going to come."

For up-to-date analysis of how automotive telematics is expanding m2m communications, sign up for the Telematics Update newsletter at www.analysis.telematicsupdate.com or attend Telematics Detroit 2012, www.telematicsupdate.com/detroit/. <<

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EXPERT'S VIEW

ESMIG PROMOTES SMART METER INTEROPERABILITY ACROSS EUROPE

Willem Strabbing, *Managing Director ESMIG*

www.esmig.eu

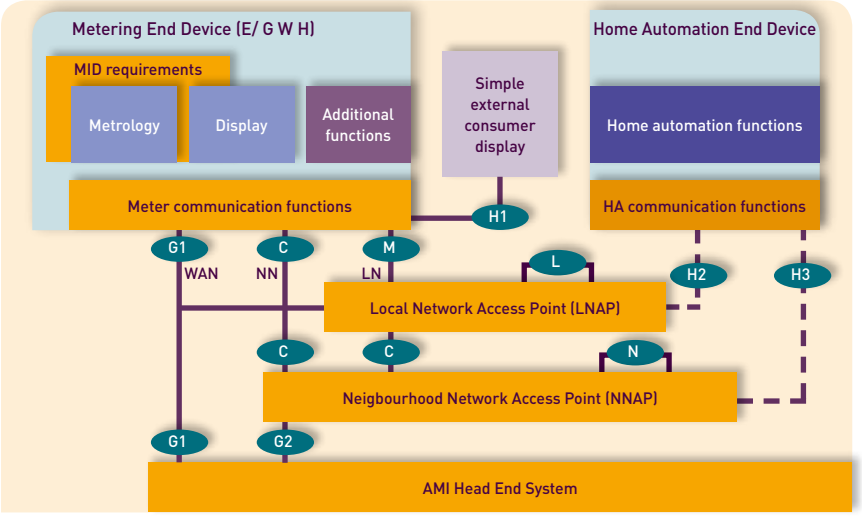
>> The European Smart Metering Industry Group (ESMIG) has conducted research with pilot programs for European application of Smart Meters which have shown that consumers can significantly reduce the amount of energy they use with the application of Smart Meters. Furthermore, beneficial changes in the times of day that people use energy can also be achieved, which help smooth out peaks and troughs in power demand, thus lowering the spare capacity that must be reserved on the supply side. ESMIG expects to see such positive behavioral changes by consumers serviced by Smart Metering technologies to become permanent, ultimately securing the significant and long-lasting effects necessary to achieve the European Union's ambitious energy efficiency improvement targets by 2020.

One of the main pre-requisites for a smooth roll-out of Smart Meters is the interoperability of such meters. Complying with open standards is a basic condition, but in and of itself not sufficient to achieve the degree of interoperability required, since many established standards leave room for broad configuration. ESMIG is therefore defining additional specifications needed, such as the selection of technologies, definition of optional features, and specifying the process of data exchange among Smart Metering components (Use Cases).

ESMIG also supports the roll-out of Smart Meters across the continent by promoting the improvement of interoperability of the Advanced Metering Infrastructure components (connecting Smart Meters with various devices, systems and communication networks). This approach ensures that:

- Different systems work effectively together throughout Europe;
- The Smart Meter market is fair and open; and
- Consumers experience a smooth switch-over to Smart Meters.

ESMIG's members are the leading players in Europe's Smart Metering market, including manufacturers, IT companies and providers of communication products and services. ESMIG has adopted a set of open standards with which members' products must comply. These standards allow for the competitive development of applications from various sources, creating business models for industry stakeholders, and



Smart Meter Interoperability

ultimately benefiting both consumers and utility companies.

To achieve interoperability, the organizations responsible for implementing Smart Meters need to do more than just adhere to EU communications standards. Such standards are intended to apply to diverse architectures used across Europe often containing a wide range of functions and options that are not necessarily always regionally applicable.

ESMIG's approach is that all forthcoming Smart Meter devices, their constituent parts, the interfaces and associated networks will talk to each other in a seamless and sophisticated way, akin to person-to-person communication. This approach goes beyond the requirements of basic standards.

All Europeans from private residents to standards regulators, from systems developers to lawmakers are invited to consider ESMIG's multi-layered Smart Meter interoperability approach as a range of Machine-To-Machine communication conditions, which together enable effective intersystem exchanges. These can be compared with the conditions needed for effective interpersonal communication:

1. Medium (speaking to somebody across a room, by phone or by exchanging emails)
2. Characters (a shared alphabet – such as the widely used Latin set of letters)
3. Language (English, French, etc.)
4. Style (level of language used to get a message across depending on the audience one wishes to reach)

Only with universal agreement on these aspects (in technical terms they are called Communication Layers) is effective communication possible. The same conditions apply to Machine-To-Machine communication. In the analogy with Human-To-Human communication, the physical medium, character set, data formats (models) and the functional behavior (Use Cases) have to be defined, which is what ESMIG is working towards.

Although at the European level ESMIG works on the basic elements of such layers, the various member states or end-user organizations have to make their final selections or definitions for these layers due to the differences in market organization and architectures. Therefore, ESMIG is also active in some member states to help with identifying the requirements for a regionally effective and interoperable infrastructure.

ABOUT ESMIG

The European Smart Metering Industry Group (ESMIG) is the European industry association that provides knowledge and expertise on Smart Metering and related communications at a European level. ESMIG's members are the leading companies in the European Smart Metering Market: meter manufacturers, IT companies, providers of communications products and services, and system integrators. ESMIG covers all aspects of Smart Metering for electricity, gas, water, and heat measurement. Member companies cover the entire value chain from meter manufacturing, software, installation and consulting to communications and system integration. By giving support to European Union Institutions, Member States and Standardization Organizations, the industry group aims to assist in the development of national and European-wide introduction, roll-out and management of Smart Metering solutions. <<

ESMIG is an Official Associate member of the Sustainable Energy Europe Campaign: www.sustenergy.org

Vita

Willem Strabbing is the Managing Director of the European Smart Metering Industry Group (ESMIG). In this position, he is responsible for the ESMIG organization and the representation of the Smart Meter related manufacturing industry in European organizations and projects. Before joining ESMIG, Mr. Strabbing was manager of the unit Intelligent Networks and Communication of KEMA Consulting. Mr. Strabbing has over 20 years of experience in advanced computer applications related to process automation. He started at KEMA in 1989 as senior consultant for power systems monitoring and control.

Standardization of Data Exchange for the energy industry and the definition of company strategies towards communication standardization now are the main topics of Mr. Strabbing's work. He is involved in strategic discussions with stakeholders in Europe regarding these issues. Currently the technology choices and standardization of the Smart Metering and Grid Infrastructure are important topics in his work. Mr. Strabbing represents ESMIG in the Smart Meters Coordination Group and the Smart Grid Coordination Group on Smart Metering and Grid standards. He coordinates the definition of Use Cases for Smart Metering at the European level.

CASE STUDY

TRILLIANT CELLREADER® MODULES
POWERED BY TELIT CELLULAR RADIOS DELIVER VALUABLE METERING DATA FOR UTILITIES

Trilliant

www.trilliantinc.com

CRDR 1010 Sentinel Meter Board

>> For the last 25 years, Trilliant has been providing integrated communication solutions, software and services that deliver the benefits of the Smart Grid to utilities and their customers. These benefits include enhanced energy efficiency, improved grid reliability, lower operating costs and integration of renewable energy resources.

Serving more than 200 utility customers around the globe, Trilliant has a rich heritage in the implementation of advanced metering infrastructure (AMI), demand response and grid management solutions, and our technology is a crucial component of one of the largest AMI deployments in North America today.

Trilliant's portfolio of solutions includes the CellReader® digital cellular modules. The CellReader solutions enable two-way communications with commercial and industrial (C&I) meters to provide real-time visibility into complex meter information for a utility's high-value C&I customers. All CellReader products are easy to deploy, easy to maintain and deliver secure, on-demand two-way communications via CDMA and GSM public carrier networks. The CellReader products offer electric power utilities flexibility of choice because they are compatible with C&I meters from a variety of major meter manufacturers.

Challenge

Global cellular networks are continuing to evolve at a rapid pace so it is vital that our CellReader modules accommodate the current networks as well as advancements with future networks. As we looked at our next generation of CellReader modules, we needed a cellular radio platform that offered the ability to support multiple networking technologies including CDMA, GPRS, HSPA and, eventually, LTE, to meet the requirements of our global customer base. Additionally, the platform needed to operate with a single firmware base and provide the same footprint across technologies in order to minimize design and development efforts.

Solution

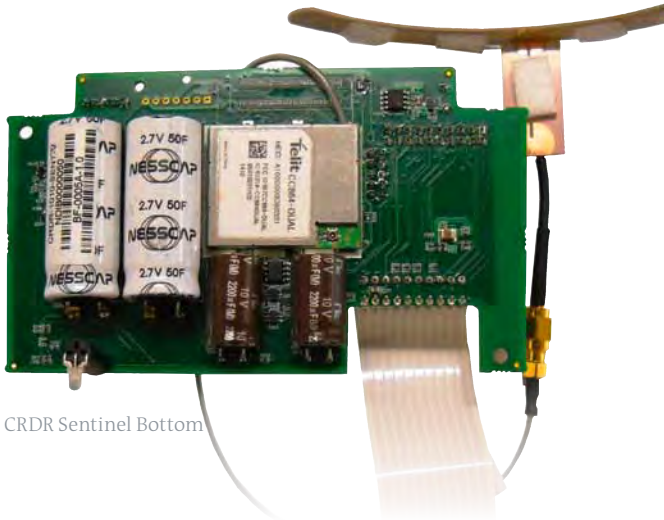
As we went through our evaluation process, there were several vendors with solutions that would meet our technology, performance and cost requirements. However, as we contacted Telit customer references, a clear differentiator began to emerge. The Telit customers provided strong endorsements for Telit's engineering and technical support. Having experienced disappointing support from other technology suppliers, these endorsements ultimately became a key factor in our decision to choose Telit. We experienced the exceptional Telit support firsthand as we encountered a technical anomaly during the pre-production testing. Telit was very responsive and quickly identified a resolution that was implemented through a firmware update. Additionally, Telit was instrumental in helping us achieve certification on several carrier networks – and when one carrier in particular posed some difficult challenges; Telit went above and beyond the call of duty to expedite the certification process with them.

Overall, the Telit cellular radio family and the Telit support were integral in bringing our next generation CellReader module to market.

Benefits

Now that we selected Telit as the standard platform for our CellReader modules, Trilliant is benefiting from superior engineering and technical customer support. The use of a standard form factor reduced the product development cycle time and resulted in faster time-to-market. Overall reliability has been improved due to maintenance of a single code base, and Telit's global carrier certification support means more options for our customers. Trilliant CellReader modules equipped with Telit cellular radios enable two-way communications for C&I meters via public carrier networks.

A C&I meter equipped with a Trilliant CellReader module is ideal for remote interval and Time-Of-Use (TOU) data collection, including all necessary register, load profile and meter diagnostic data. Interval meter data is an important element of demand-response programs in support of a utility's energy efficiency initiatives. Additionally, in some regions of the world, CellReader modules also support utilities' theft reduction initiatives. And because our CellReader modules are 100% ANSI-compliant, the wireless connectivity is compatible with the leading data server used by the electric utilities. Since CellReader solutions use today's digital cellular technology, they provide the best available wireless network coverage at the best available cost. <<



CRDR Sentinel Bottom

CASE STUDY

"SMART GRID"

FOR WASTE & RECYCLING: M2M TRANSFORMS PUBLIC-SPACE TRASH COLLECTION OPERATIONS

Richard Kennelly, *VP of Marketing*

BigBelly SOLAR

www.bigbellysolar.com

>> BigBelly Solar is a leading global provider of innovative and sustainable solutions for the management of waste & recycling, with more than 800 customers in virtually every U.S. state and 30 countries.

The BigBelly Solar intelligent waste & recycling collection system combines a powerful management console, software-enabled network command center, and family of mix and match waste & recycling stations into a toolkit that enables municipalities, colleges & universities, government facilities, and other institutional customers to reduce the operating costs associated with waste collection by 80 percent.

Recognized as a C40 Cities Climate Leadership Group best practice, BigBelly Solar is also enabling its customers becoming visible leaders in practices that are more environmentally sustainable – displacing fossil fuel usage through renewable energy, increasing recycling rates, reducing litter and associated public health concerns, and creating a messaging platform to engage users and influence more environmentally-conscious behaviors.

The Challenge: Bringing m2m to trash collection operations

In 2011, BigBelly Solar committed to evolving from our beginnings as creators of the patented solar-powered trash compactor, to being an enterprise system provider optimally managing public-space waste & recycling collection operations.

To accomplish this goal, we had to developed new and expanded capabilities for each layer of the system:

① a management console, accessible from any browser, providing customers with unprecedented visibility into their public-space waste & recycling collection operations;
② behind the scenes, a network command center to deliver software functionality to the waste & recycling stations, remote diagnostics, over-the-air software upgrades and preventive maintenance alerts; and
③ on the street, in parks and on campus, a substantially expanded family of waste & recycling stations to address a broad range of customer situations. These waste & recycling stations are capable of sensing and reporting in real time a broad range of fullness and collection activity information.

To launch this next-generation intelligent waste & recycling collection system, we needed to incorporate robust, reliable and cost-effective m2m capability.

Our Solution

Having already invented and patented the world's first solar-powered trash compactor, we had a device that replaced ordinary sidewalk trash receptacles with a self-powered, self-aware robot that compacts waste as needed to increase capacity and thereby reduce the demand for expensive and time-consuming collection trips. The "BigBelly" solar compactors, and the new "SmartBelly" non-compacting receptacles, sense fullness and collection activity, gathering information that provides unprecedented insight and control over collection operations.

But to get that information to customers and integrate these solar compactors into a "smart grid" network, we needed among other components a high-quality modem to install in the BigBelly and SmartBelly components.

After extensive research and testing, we chose Telit for three reasons:

① appropriate form factor in terms of size and shape for our products;
② good support from Telit; and
③ Telit was ahead of the competition in m2m applications, giving them and us an advantage.

Although it was not the least expensive option, we selected Telit's solution to gain these advantages and the modems have been working very well in the field.

Benefits of the System

The launch of our next-generation intelligent waste & recycling collection system, the "Smart Grid for Waste & Recycling TM", has been a great success for us and for our customers. The BigBelly Solar system sets us apart with a unique worldwide solution, and our customers are able to deliver an essential service at dramatically lower cost.

Combined with powerful historical analysis and reporting, the insights delivered through our m2m system provide transparency and control to customers who previously had to assign peak resources at all times given the absence of data to support more targeted resourcing decisions. The new visualization tools and reporting capabilities provide value-rich insights for more efficient management of operations, better activity tracking and enhanced auditing of results.

That visibility across the entire operation is also attractive at the executive level, which is under increasing pressure to justify investments and provide measurable and verifiable results to their stakeholders.

Data-driven insights, on-site compaction and a full range of zero waste recycling options – all powered by solar energy and utilizing advanced information technology – are a powerful combination. In times where customers of all types face difficult budget pressures, the ability to reduce collections while improving service levels is not a nice-to-have, it's a must-have. BigBelly Solar is helping customers remove 7-8 out of every 10 trash vehicle trips from the streets, reducing the carbon footprint and fuel cost drain for vehicles that typically average less than 3 MPG.

The BigBelly Solar intelligent waste & recycling collection system is a true asset for cities, universities, park systems, and corporate leadership looking to dramatically reduce their environmental impact while simultaneously achieving substantial budgetary savings. <<

CASE STUDY

THE BEST STRATEGY WE ADOPTED IN TERMS OF PRODUCT PORTFOLIO WAS TO CHOOSE TELIT. THE WIDE RANGE OF PRODUCTS IS ALLOWING ITECH TO BE BEST POSITIONED IN THE M2M MARKET.

Adriano S. Yamaoka, *Sales Manager*

FACTS

iTech
www.grupoitech.com.br

System

UTW – GSM/GPRS autonomous telemetry modem with IOs

Which Telit module do you use and why?

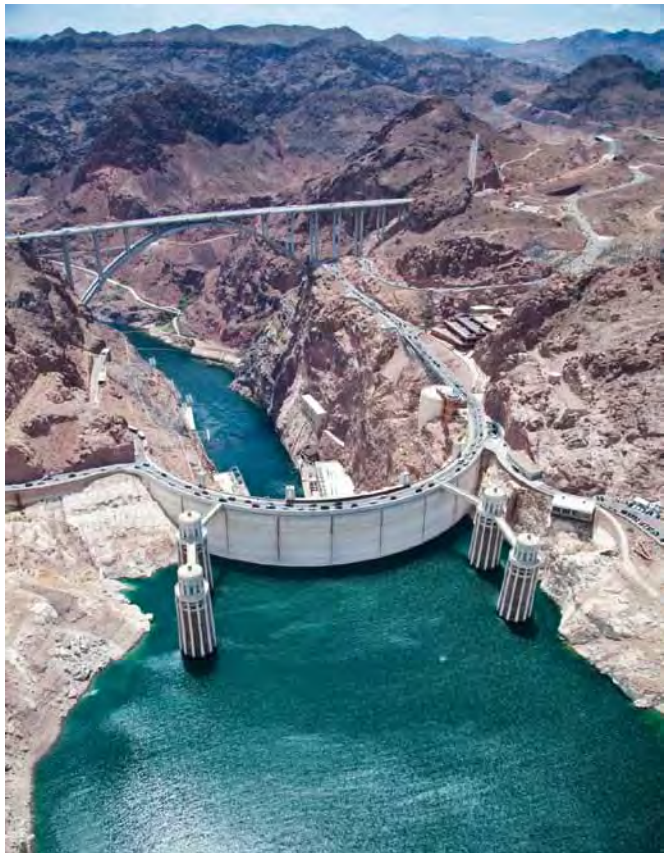
The G24 Quad for its high quality standard and TCP-IP stack stability. The platform's form factor was also a consideration.

Features

- ✔ Internet GPRS – serial port RS232/ RS485 adapter
- ✔ Stand Alone Operation, automatically managing connection to GPRS and App servers
- ✔ Compatible with most industrial protocols
- ✔ Configuration and firmware upgrade via serial port or remotely through GPRS
- ✔ Support for up to 2 SIM Cards
- ✔ I/Os: 8 bidirectional digital ports and; 4 analog 12-bit-ADC inputs
- ✔ Low-power modes and internal battery-charging control
- ✔ EEPROM Memory bank; Flash and Micro SD Card for data-logging

UTW

>> iTech is a company focused on distributing TELIT modules and an extensive variety of electronic components. Committed to offering innovative and cost-effective solutions to the Brazilian and Latin American electro-electronics markets, this organization is dedicated to supporting different market segments, providing as added value, project customization, a high level of technical support, certification and production management.



With experience acquired over the years in m2m cellular modules, iTech has developed a portfolio of finished products for basic connectivity and AMR applications including the remarkable UTW (Wireless Telemetry Unit).

UTW is a device designed to meet the requirements of utility companies for Smart Metering connectivity via cellular network. The ruggedized hardware has many input-output signal options which enable quick and complete integration with different devices like measurers, data collectors, CLPs, sensors, and triggers. When the UTW connects to Central Control, a transparent communication channel is established allowing data transfer without any changes in protocol or communication mode. This feature enables the integration with many SCADA and bridge softwares in the market. Additional features such as dual SIM card connectors – for overlapping operators; the possibility of coupling external and internal batteries; Supercap and solar-panel power round out this product's advantages.

Local design capability allowed iTech to be flexible customizing the UTW to different customers, establishing a competitive advantage in the market. One of the most significant of these cases has been with the local energy company in São Paulo. The project started in 2004 with a simple GPRS modem and in 2010 it became a complete solution with much more than meter reading. Energy backup with supercaps and tri-phase power supply with digital alarms in case of lack of supply power were also added. These new features were added for the benefit of other internal areas in the energy company, providing them real time information for metering, call centers, and maintenance, which has caused these areas to also start sponsoring the project, supporting it with investments for deployments in 2011. <<

IPM SYSTEM
Effizienz durch Intelligenz

IT IS NOT ENOUGH TO HAVE WISHES, ONE MUST ALSO ACCOMPLISH THEM. IT IS NOT ENOUGH TO HAVE KNOWLEDGE, ONE MUST ALSO APPLY IT.

Markus Emmert, *CEO*

FACTS

IPM SYSTEM GmbH
www.ipm-system.com

System

Efficiency through intelligence with the IPM SYSTEM®

Which Telit module do you use and why?

GE865-QUAD

Features

The IPM SYSTEM® enhances, promotes, and secures

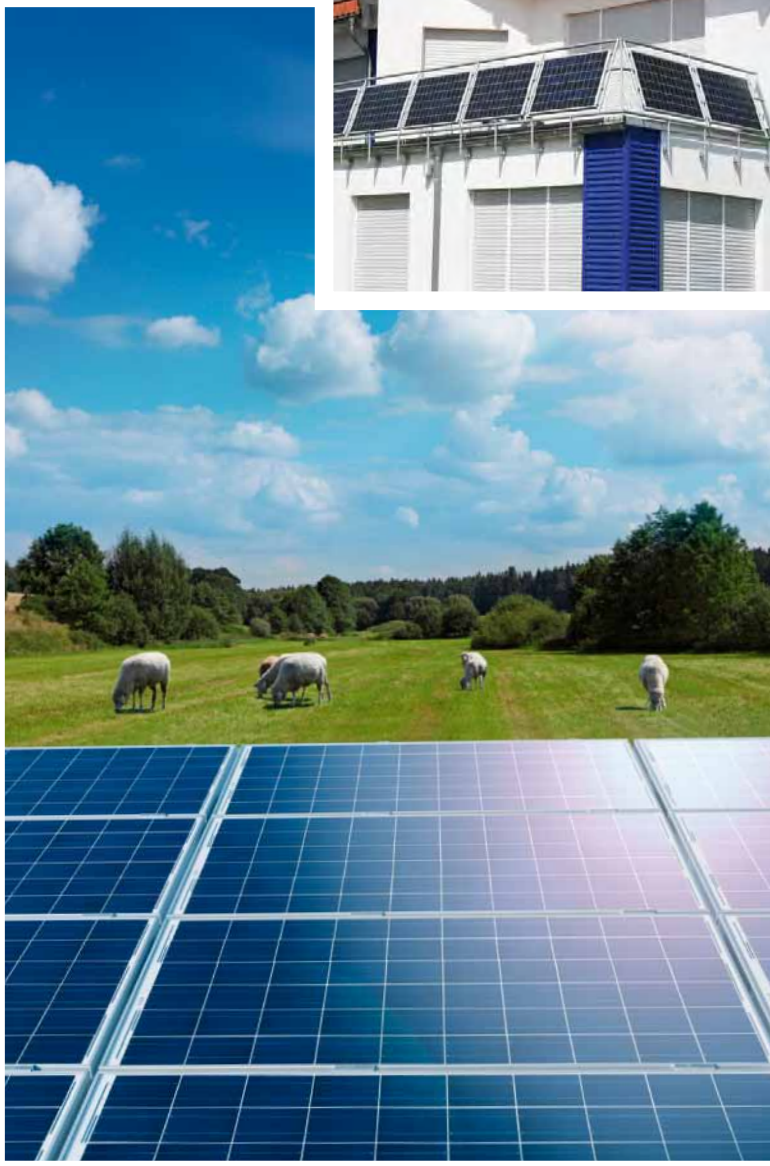
- ✔ Competitiveness of PV
- ✔ Environmental and climate protection
- ✔ Global expansion of PV
- ✔ Development of practical products in line with market requirements for practical applications
- ✔ Technological advances and fostering of Germany as a production location
- ✔ Creation of new and sustainable jobs and enhanced employee motivation

IPM SYSTEM®

>> IPM SYSTEM GmbH is a company active in the field of renewable energy sources. It has developed an innovative control and regulation system designed to optimize photovoltaic systems (PV) – the Intelligent Power Management System, IPM SYSTEM®.

Goals and requirements

- Enhancement in competitiveness of photovoltaic systems
- Promotion of environmental and climate protection by global use expansion of PV
- Development of practical products in line with market requirements – "from practical applications – for practical applications"
- Employee motivation and creation of new and sustainable jobs
- High quality, continually improving, and greater customer benefits



We achieve our goals by meeting the high standards we demand from the IPM SYSTEM® in service, service commitment, and continuous quality improvement. The IPM SYSTEM® is a control and regulation system designed for enhancing the efficiency, transparency, flexibility, and safety of PV systems. Retrofitting is also possible. <<

Original size.

BUNDLED PERFORMANCE

TELIT'S GPS|GLONASS AND CELLULAR EXPERTISE PLUS THE PERFORMANCE OF GPS AND GLONASS ALL BUNDLED IN A ONE-STOP SOLUTION

Precise localization and reliable data transmission – simply combine the new Jupiter SL869 GPS|Glonass standalone module with any cellular modules from Telit's portfolio.
The Jupiter SL869 operates with all main navigation satellite systems in the world – GPS, Glonass, Galileo and QZSS – guaranteeing superior performance compared to GPS-only receivers by adding compatibility to the Glonass satellite family. It is equipped with a powerful ARM9 core and internal flash memory to run software and store Extended Ephemeris files, enabling a TTFF in less than 1 second on hot-start and less than 35 seconds on cold-start. Together with one of the Telit cellular modules, including those with embedded e-call software such as the GE864-QUAD Automotive V2, the GE865-QUAD, or the GL865-QUAD or DUAL, you get an unbeatable bundle for your location aware m2m device.
So, turn these benefits into competitive advantages for your project by buying from one vendor, enjoying access to Telit's global design-in and post-sale support, and bringing your device to market faster. Telit is the fastest-growing machine-to-machine (M2M) innovator in the world providing an unmatched portfolio of modules and services. We look forward to supporting you.

"with Telit know-how, you know now"
www.telit.com

Join the Telit Technical Forum: www.telit.com/techforum

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QUALITY
INVESTMENT PROTECTION
BUSINESS SCALABLE
EASE OF INTEGRATION

Telit® wireless solutions
Making machines talk.®

WE APPRECIATED TELIT'S SUPPORT INTEGRATING OCARI INTO THE ZE51-2.4 PLATFORM.

Valéry PRUNIER, *R&D Program Manager*

FACTS

EDF Group
www.edf.com

System

OCARI, an industrial wireless sensor system for constraint environments

Which Telit module do you use and why?

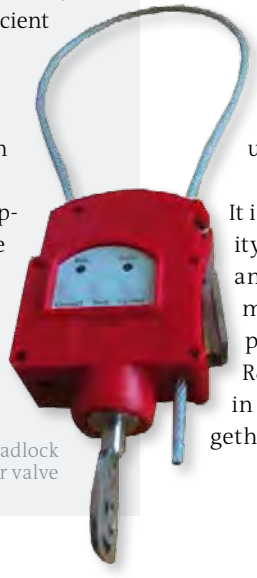
ZE51-2.4

Telit recommended design partners who have experience in designing connectivity cards and getting them certified.

Features

OCARI differs from protocols like ZigBee, WirelessHART and ISA100.11a for having the following features:

- ✔ MaCARI, a deterministic access method to the RF medium supporting the relay of time-constrained packets.
- ✔ EOLSR (Energy efficient OLSR), a proactive energy efficient routing strategy supporting nomad-ism.
- ✔ SERENA, an activity scheduling mechanism based on a three-hop coloring algorithm helping reduce interference and thus optimizing a node's energy consumption.



Wireless padlock for valve

>> The EDF Group is a leading player in the energy industry, present in all areas of the electricity value chain, from generation to trading, along with network management and the natural gas chain. The Group has a sound business model, evenly balanced between regulated and deregulated activities.

It is the leader in the French and British electricity markets and has solid positions in Germany and Italy. The Group has a portfolio of 38.1 million customers in Europe and the world's premier nuclear generation fleet. Given its R&D capability, its track record and expertise in nuclear generation and renewable energy, together with its energy eco-efficiency offers, EDF offers competitive solutions that reconcile sustainable economic development and climate preservation.

OCARI is an industrial wireless sensor network protocol now running on Telit's ZE51 platform. It is designed for applications in power plants including remote monitoring of personal dosimeters, machine monitoring, premises monitoring, and smart fire detection system.

Telit is our partner with strong background in RF technologies like ZigBee. And that is why we will continue to collaborate with Telit in R&D and in product development. <<

CASE STUDY

XEMEX

RELIABILITY IS ESSENTIAL FOR METERING. TOGETHER WITH TELIT WE CREATE IT.

Gerard van der Hoeven, *CEO*

FACTS

Xemex
www.xemex.eu

System

NTA 2.1 GPRS, comms modules for the Netherlands.

Which Telit module do you use and why?

We use the GE864-QUAD for its reliability and cost benefits. Together with Telit we developed new firmware to streamline metering operations.

Features

- ✔ Communication modules based on open standards, such as DLMS and NTA8130
- ✔ Modular communication modules attached or added next to the metering devices
- ✔ M-bus wireless and wired to exchange data locally between meters
- ✔ GSM/GPRS to haul data stored in the module to central servers

NTA 2.1 GPRS

>> Utilities in Europe are faced with a daunting task – pressured by governments – to make consumers more aware of their energy consumption. Smart Metering is a crucial element in this task, collecting and presenting consumption data in a secure and reliable manner.

Xemex has been a front runner in the Smart Metering field for over 15 years, supplying well over a quarter million reliable and proven gateways. Together with Telit we have optimized our products to become more reliable and secure.

According to a Datamonitor research, the global smart metering market for residential customers will reach $5.7 billion by 2015. Smart metering is gaining unstoppable momentum. Over 60 million residential smart meters are forecast to be shipped in 2015.

Xemex also expects to see substantial growth in modular metering, when communication needs into the home become fully bidirectional driven by more prevalent use of solar panels and electric vehicles. Xemex's technology is ready for that future. <<

IMETER. A GPRS SMART METERING SOLUTION

Mateu Crespí, *Head of Smart Metering Department*

FACTS

Aqualogy Solutions (Agbar Group)
www.agbar.es

System

iMeter. The flexible Smart Metering solution

Which Telit module do you use and why?

The GE865-QUAD module family was used because of its small size, compact design and performance.

Features

- ✔ Ultra low consumption components and design
- ✔ Long-lasting battery life
- ✔ Compatible with the top meter and flow meter manufacturers
- ✔ Remote configuration tools
- ✔ Customizable water consumption histograms
- ✔ WAN Communication via secure APN access over GPRS
- ✔ Enabled for use with a number of GPRS network operators

iMeter

>> The Smart Metering department of Aqualogy Solutions is in charge of:

- Design and Development of Smart Metering solutions
- Operation and Maintenance of Smart Metering solutions
- Set up & deployment of Smart Metering solutions

Our main market segments are Water utilities, Municipalities and large consumers. We also, specialize in solutions for harsh environmental conditions related to water such as high humidity and extreme temperatures. We aim to leverage from Agbar's unique water business knowledge and build our own solution tailored to this vertical's requirements. We are solution integrators, bridging technology with the water business.

CHALLENGE

Our market experience has pointed to a lack of reasonable cost solutions suitable for very humid conditions. The challenge was to create a cost efficient IP68 GRPS data collector.

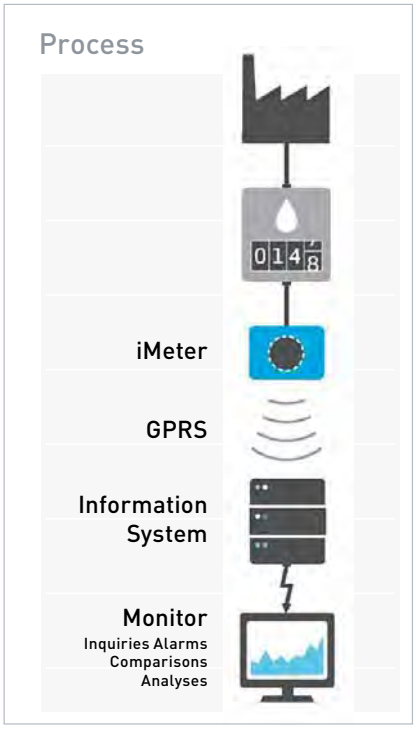
SOLUTION

Telit was chosen due to its world leadership, constant evolution and maturity. Specifically, the GE865 family of modules was used due to its features which completely fit with our requirements. The development process has proceeded without problems with the 1st-class support received from Telit experts.

BENEFITS

The result was a robust IP68 GPRS datalogger with optimized energy consumption and small size fitting in any water pit environment.

This solution helps provide complete control over metered consumption at the most efficient cost. <<



CASE STUDY

WITH TELIT'S EXCELLENT SUPPORT AND SUCH HIGH QUALITY MODULES, MORE AND MORE CUSTOMERS ARE SATISFIED WITH BEIJING YUPONT PRODUCTS. WE'VE RECEIVED ALSO STRONG AND SEAMLESS TECHNICAL SUPPORT.

Fu Jinzong, *Technical Director*

FACTS

Beijing Yupont Electric Power Technology Co., Ltd.
www.yupont.com

System

FKGA4X – energy metering technology and system.

Which Telit module do you use and why?

The GC864 product family for being one of the smallest GSM/GPRS quad-band modules with industrial connectors in the market and for the Telit Unified form factor.

Features

- ✔ Integration of the modern communication technology
- ✔ Applications in electric energy metering technology and the power marketing technology
- ✔ Supports the GPRS, CDMA, SMS, optical fiber network, and other communications modes
- ✔ Integrated TCP/IP protocol stack and serial multiplexer
- ✔ One of the smallest, most complete platforms for m2m solutions

DJGZ23-YP10

FKGA43-YP09

>> In November of 2011, State Grid Corporation of China (SGCC) held its first open tender for AMR products. Beijing Yupont Electric Power Technology Co., Ltd., or "BEIJING YUPONT", won the tender worth over 70 million, with very high score in the technical appraisal, commanding praise from experts and competitors. BEIJING YUPONT, founded in 1996, is a publically traded high-tech company mainly sponsored by the North China Electric Power Research Institute. The Company boasts transparent ownership and a rational organizational structure that integrates modern enterprise systems and culture. It is mainly engaged in the development of electric power metering and automatic meter reading technologies, geographical information system (GIS), electric power meters, and load control terminal products. The company's software organization is certified by the China Software Association and its hi-tech department is recognized by the Beijing Science & Technology Committee. BEIJING YUPOINT also has considerable technical strength in aspects of electricity consumption marketing, electric power metering and automatic meter reading.

In this particular effort, Beijing Yupont entered two products: the "SGC Concentrator System" and the "FKGA4X System" in the winning offer. The SGC intelligent concentrator is a wireless and concentrated reading system fully researched and developed by "Beijing Yupont". Since the system's wireless communication capabilities allow it to collect data from handheld devices and terminals it can improve work efficiency, eliminating human errors and ensuring the accuracy and scientific validity of the data. Additionally, because it allows managers to detect conditions such as power line loss, improvements and modernization of management can be facilitated within the power company. The FKGA4X System integrates modern communication, hardware, and software technologies of the computer space into the electric energy metering, and power marketing technologies. It supports GPRS, CDMA, SMS, optical fiber network, and other communications modes. The Telit GC864-Dual makes it possible to run the customer's application inside the module, thus making it one of the smallest most complete platforms for m2m solutions. <<

MORE THAN JUST A SUPPLIER OF OEM COMPONENTS, TELIT ACCOMPANIED ITRON THROUGHOUT THE DEVELOPMENT PHASE OF OUR ELECTRONIC VOLUME CONVERTER – CORUS COMPACT

Patrick Borgato, *Product line Manager*

FACTS

Itron
www.itron.com

System

AMR solution for reading gas C&I delivery points

Which Telit module do you use and why?

Itron selected the GE865-QUAD modem for its GPRS and GSM data communication features, ultra-low power and voltage, and its compact size.

Features

- ✔ T, PT, PTZ gas volume converter
- ✔ Pressure range: 0.7 / 6 bar abs.
- ✔ Compact size
- ✔ Five (5) year battery life time with daily readings
- ✔ DLMS Cosem protocol (IEC 62056-53)
- ✔ Quad Band GSM/GPRS modem
- ✔ Remote (over the air) firmware download
- ✔ User-friendly interface for simplified commissioning (GSM reception level, GPRS data traffic, SIM card detection, etc.)
- ✔ Field changeable battery
- ✔ Installation possible in hazardous area (zone 1)

CORUS Compact

>> Itron, a leading technology provider to energy and water utilities worldwide, offers resource management solutions to the gas industry including advanced measurement, data collection and management systems. Our end-to-end metering solutions enable effective resource management as gas demand continues to rise worldwide.

In Europe, the directive concerning the common rules for internal natural gas markets (2009/73/EC) requires member states to implement "intelligent metering systems" and to equip 80% of consumers with smart meters by 2020. It states that providing frequent information about gas consumption and associated cost will empower consumers to manage consumption and enable their active participation in the gas supply chain.

Very early, Italy mandated the deployment of smart meters on the distribution network for all gas customers (Regulation 155/08). Consequently, Italian gas utilities needed to upgrade their installed C&I metering base in order to introduce remote hourly readings and improve their services.

In response to these needs, Itron developed the CORUS Compact, a new generation electronic volume converter. The CORUS Compact is specially designed for diaphragm and small range RPD's used for low-end industrial installations. Its compact size allows it to fit in the limited space of small cabinets. Data transmission to central systems is achieved via an external GSM/GPRS modem remote reading solution. CORUS Compact embeds a GE865-QUAD modem from Telit for GSM/GPRS communications. Aside from it being a cost-effective solution, the consumption and voltage of power supply were the main criteria for the selection as this device operates several years on a single lithium battery.

More than just a supplier of OEM components, Telit accompanied Itron throughout the development phase of the CORUS Compact. The support to ensure conformity to the RTTE directive has undoubtedly contributed to the accomplishment of the project deadlines and quality of the product. Finally, let us not forget the great expertise and availability of Telit's people.

Configuration of CORUS Compact

After being introduced in Italy, the CORUS Compact will be commercialized by Itron during 2012 on a worldwide basis thanks to the quad-band GPRS feature of GE865-QUAD modem. <<

EXPERT'S OUTLOOK

SMART METERING AND SMART GRIDS – THE NEW SMART ENERGY FUTURE

Jonathan Spencer Jones, *Editor, Metering International*

www.metering.com METERING INTERNATIONAL

DEPENDING ON WHERE YOU LIVE, YOU MIGHT BE HEARING QUITE A LOT RIGHT NOW ABOUT SMART METERING AND SMART GRIDS.

>>Pretty much across the globe, from the Americas to Europe and Asia to Australasia, countries are starting to install these technologies to upgrade and take their energy sectors forward into the foreseeable future.

The power grid – a brief background

Historically the power grid has developed with large, centralized generation, usually from coal, gas or, in water rich countries, hydro. This power has then been transported, often over long distances, via high voltage transmission and low voltage distribution grids to the consumers, be they businesses or residences. In most cases the consumer has a meter, which simply records the amount of electricity used and once read, enables the utility to bill for the consumption.

But this scenario is now changing, driven by two main factors. One is advances in technology, which, just as in other spheres of life, is bringing in more automation, and the second is the need to conserve earth's natural resources and our environment in general.

Towards smart meters

The meter has traditionally represented the sole point of "contact" between the utility and its customers. For almost a century, from the 1870s and 1880s when the earliest mechanical meters were developed, meters have evolved with some electronic technology finding its way into them in the 1970s, leading to the point today where they are fully electronic.

A key step forward was the inclusion of communication functionality which enabled automated meter reading (AMR) to take place. Up to that point each meter had to be physically read by human eyes but with AMR the meter reader could walk or drive down a street and collect the readings to a laptop or handheld device.

This has now been largely superseded by meters with two-way communications capability, enabling the utility not only to read the meters but also to communicate back to them, for example for firmware updates and for downloading applications such as demand management. This technology, comprised of the meters and associated communication infrastructure, is known as advanced metering infrastructure (AMI).

Ageing infrastructure

While utilities in most countries normally have strict requirements from their local regulators on the accuracy of meters and their replacement cycles to ensure that the meters are relatively modern, the same cannot be said about the rest of their infrastructure. Indeed in most, if not every country, the broader grid is ageing.

Further, in many countries the expansion of generation capacity has not kept pace with the increase in demand, brought about by population growth and economic advancement, placing further stress on these systems. It has been common practice that utilities would replace their infrastructure over time, if and when needed. The current accelerated replacement of meters and grid infrastructure is in many cases being driven by governments and associated market forces, principally in consideration to sustainability (in developed countries) and to a lesser extent loss reduction (in developing countries).

To gain perspective, the International Energy Agency (IEA) has estimated that the global deployment of smart grids can help reduce CO^2 emissions by between 0.9 and 2.2 Giga-tons (Gt) annually by 2050, equivalent to the annual emissions of over 700 mid-sized power plants **www.iea.org**

And in the United States, although there aren't specific federal environmental targets to meet, over four billion dollars have been made available in stimulus funding to support accelerated rollout of smart metering and smart grids.

What is smart grid?

In broad terms the "smart" in the grid pertains to the introduction of sensing and automation with sensors and IT, enabling monitoring and control in (near) real-time. Thus for example, in the case of an outage the utility could become aware of it and from knowing its location could isolate it and dispatch a repair team, all even before customers become aware. With multiple parameters collected by meters, the power quality and status of elements such as transformers can be monitored, providing advance warning of abnormal operating conditions.

But the smart grid is much more. It envisages integration of high levels of renewable energy, particularly from wind and solar, which because of their unpredictability require more advanced control and storage options. It envisages comprehensive demand management services to administer consumption, both through time-of-day related tariffs as well as direct utility control. It envisages smarter homes and buildings that are also more energy efficient. It envisages microgrids, which form part of the larger grid but which can be "islanded" to operate independently, as would be the case of a community with its own renewable generation. And it envisages the increase in uptake of electric vehicles.

Vita

Jonathan Spencer Jones is editor of Metering International and Editor in Chief of Engerati.

SMART METERS ARE SEEN AS THE FOUNDATION, AS THE POINT OF COMMUNICATION WITH THE CONSUMER.

Towards smart grid

So far so good and the principle sounds straightforward. The practice is another matter, however. For a start there are the costs involved which by one estimate place the global smart grid expenditure at $35.8 billion in 2013 (declining gradually thereafter as the initial push tapers off)

www.pikeresearch.com

Then there is strict oversight – utilities cannot simply spend money willy-nilly. They have regulators checking their expenditure specifying what they can recover from customers through their tariffs, and as with any investment, a cost-benefit analysis is mandatory.

But there is also a whole range of technology issues, many of which are still in the research and development stage, and those surrounding the management of the data that will flow in the smart grid, which for many utilities will be of the order of terabytes per year. One of the most important of these issues is interoperability, which simply means that meters and equipment from one manufacturer must be able to work alongside those from another manufacturer. Related to that, with technology evolving as rapidly as it is, the need also emerges to establish the so called 'future proofing', i.e. ensuring that equipment under fielding will be able to be functional, alongside newer equipment, over its expected lifetime.

But perhaps the most significant issue is cyber-security, with concerns that hackers could gain access to the grid and potentially unleash untold havoc on individuals, towns or even entire countries. Accomplishing this requires standards and guidelines and many hundreds of people are working on these activities in individual countries and globally.

Moving forward

Smart metering and smart grid offer the pathway to a smarter and more sustainable energy future. It is a long haul that will not happen overnight and indeed will undoubtedly continue to evolve as does the technology on which it is being built. That is why for those of us working in this field, it is not only challenging but also highly exciting and rewarding. <<

EXPERT'S VIEW

SMART HOME OF THE FUTURE: NEW SERVICE CONCEPTS

Svetlana Grant, *Project Manager Embedded Mobile Program*

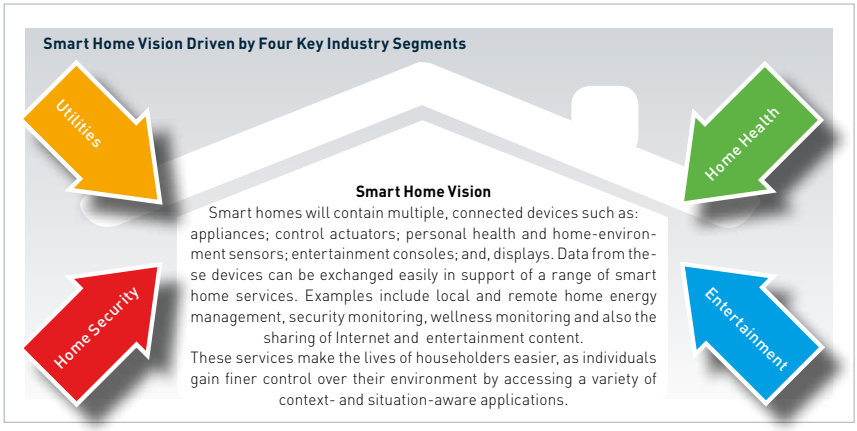
www.gsma.com

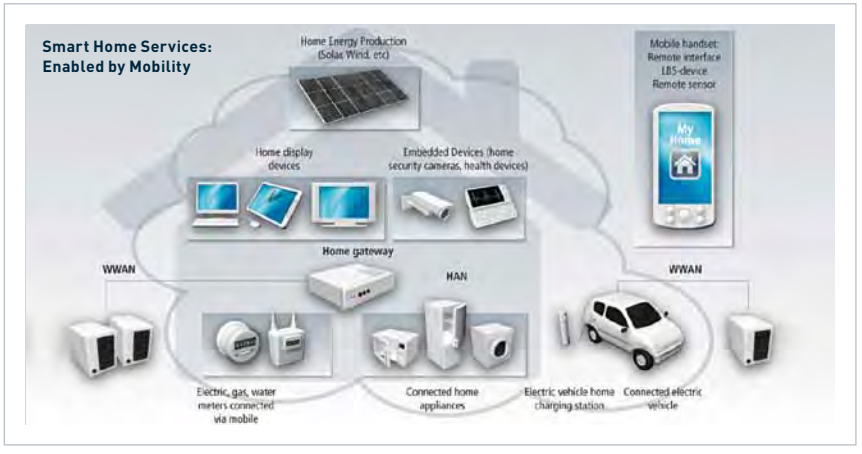
>> The existing niche home-automation market is being transformed by the mass-market availability of connected smart devices that enable a wide variety of new smart home services. Both the utilities and communications sectors are playing a significant role in this transformation.

On the one hand, utility companies are widely deploying smart meter and smart grid technologies, driven by public policy commitments in Europe and North America. This development is taking place in parallel with a growing consumer awareness of the need to use energy responsibly and the potential to use new technologies to control household expenditure. In some countries, the growing adoption of home electricity generation capabilities and home charging points for electric vehicles is leading to the use of a wider range of smart utility devices in the home.

At the same time, a sharp decline in the cost of broadband connectivity and embedded chipsets, along with the emergence of low-power technologies for home area networking, are providing an expanding technological platform for the proliferation of smart home devices.

Mobile connectivity will be a crucial piece of the smart home puzzle. Without mobility, smart home services will lack the reach and coverage required for the mass-market, and an omnipresent interface for remote monitoring and control. The smart home of the future will deliver a range of innovative services to homeowners using a variety of intelligent, connected devices. These devices will range from utility meters that measure energy, gas and water consumption to household appliances, solar panels and electric vehicle charging infrastructure that both consume or generate electricity; together with other connected devices from the entertainment, health and home security sectors. It will be the combination of these devices, the data they provide, and the control actions they enable that will contribute to a rich array of smart home services, as illustrated below.





Compared to the home of today, the smart home of the future will contain far more connected devices. Market research-house Parks Associates, for example, forecasts that the number of connected devices and sensors in an average US home will increase from four today to sixteen in 2015. At that time, 13% of all US households are forecast to have energy management systems installed and nearly 20% are expected to have monitored security systems in place – up from 2% and 18% today respectively. In the smart home of the future, these devices will be integrated into intelligent, interconnected and interoperable systems.

Smart Home Services

For consumers, the main value of smart home services will be in having information and control of connected devices in the home no matter where they are. Consumers will be able to monitor and control multiple in-home devices on different display units ideally using a same, easy-to-read interface, with the mobile handset serving as the primary device for remote access to the home information. For full mass-market reach, the smart home ecosystem will rely on a com-

bination of mobile and fixed networks to provide both primary and back up connectivity for smart meters and home gateways.

The core smart home services briefly outlined below are only a small sample of what will be possible in the homes of the future:

- Utility providers will track usage of electricity, water and gas and provide this information to households to help customers track their current and historical consumption patterns, as well as the amount of energy being generated by solar panels and wind turbines, and the charging status of electric vehicles. Homeowners will want to ensure that they are appropriately reimbursed for any power their home is feeding into the grid. They will also be able to access information about the cost of electricity and other utility services, taking advantage of any incentives for energy efficiency. Homeowners will be able to monitor all of this information remotely using their mobile handsets.

- Smart home energy gateways will be integrated with connected devices, such as security cameras, remote health monitoring devices and sensors, and electric vehicles charging infrastructure, to enable homeowners to control this equipment remotely. Consumers will be able to control their use of electricity and other utility services, by switching on and off various white goods, lighting or heating appliances, not just from inside the house, but also from the office or during the commute home. Mobile handsets that are aware of their location will be able to automatically trigger events, such as turning off the central heating system when a consumer leaves the proximity of their home.

- Smart meters, home energy management systems (HEMs) and assisted living systems will all be part of the integrated home solutions. HEMs will be able to regulate the usage of household appliances and charging of electric vehicles based on the time of the day or dynamic prices for electricity. Gas, electricity and water sensor readings will be able to provide advanced analytics to enable homeowners to become more efficient.

The value proposition behind these smart home services is a better quality of life and more energy efficient living that will bring with it some financial savings for households. Connectivity will also make it simpler to install and use household appliances. Having bought a new device, consumers will be able to connect it and download all the needed drivers online, similar to how they download apps from App Stores today, and then view the performance of this device, along with others they own, in a single online "home place".

Read the GSMA Smart Home report on the GSMA Utilities website: http://www.gsma.com/documents/vision-of-smart-home-report/20919

With the homeowner's permission, information about connected devices and the ability to control them will also be available to various businesses. Notwithstanding recognized issues pertaining to privacy and security of personal data, we expect that businesses will be able to derive considerable value and deliver innovative new services from such data, for example:

- Demand-response functionality will enable utility companies to improve the operation and efficiency of their networks by switching household appliances on or off to manage the overall load on the utility network, subject to agreements with individual households. By accessing information about ancillary power generators, such as solar PVs and electric vehicles, utilities will facilitate the settlements of payment and also anticipate and control any unanticipated power surges that may damage distribution networks or compromise the regulated quality of services.

- Asset monitoring will allow device manufacturers and retailers to monitor the performance of household devices and save costs by running remote diagnostics and maintenance. They will also be able to use the information gathered to inform their research and development activities.

Mobile networks are enabling the connected devices environment in the home, while supporting the design and delivery of new services. Mobile networks will connect a growing range of devices from smart meters to security cameras and gaming consoles in the home. Meanwhile, mobile handsets and tablets will provide a screen and an interface for monitoring and controlling smart home devices from anywhere with mobile coverage. Inside the walls of a smart home, mobile networks will coexist with various short-range wireless technologies. Moreover, suppliers from the mobile ecosystem will also contribute sophisticated functionality and service applications, building on their established consumer applications expertise.

For companies that currently focus on single-category services such as energy supply, entertainment or security monitoring, the emerging smart home market will create an opportunity to widen their service offering and extend their relationship with homeowners. Gaming providers, for example, may add wellness monitoring to their service portfolio, while communications providers could become primary suppliers of home-security and energy demand management services.

Vita

Svetlana Grant has over 10 years of experience in mobile industry analysis and research. She has been part of the GSMA's Embedded Mobile program since 2009, leading the development and publication of the first release of the Embedded Mobile Guidelines, and focusing on the issues of provisioning large volumes of embedded devices. Svetlana currently manages the smart utilities work stream, working with mobile operators and vendors on the development of smart energy opportunities, and participating in the regulatory and standardization work for the smart grid and the smart home.

If the smart home concept is to progress beyond its infant stage, business and institutional organizations need to embrace a long-term vision of the smart home, the service concepts that will emerge and the capabilities needed to support these services on a commercially viable basis. <<

CASE STUDY

LOW-COST, USER-INSTALLED TELEMATICS PROVIDE RICH BENEFITS TO DRIVERS

www.crimsoninformatics.com

>> Today's telematics devices do a great job of collecting very precise data. Yet, the data do not provide a good indication of driving behavior. Crimson's core expertise is translation of large amounts of raw data into descriptive information that paint a clear picture of a driver's strengths and weaknesses. Telit plays a crucial link in Crimson's value chain," stated Steve McKay, CEO Crimson Informatics.

It's all about the information. Crimson Informatics, based in Richmond, Virginia, provides data analytics and captures capabilities for our customers in four primary segments:

- Auto insurance carriers
- Fleets
- Consumers
- Transportation research

Crimson has a unique combination of competencies in insurance, engineering and high-volume data processing that provides answers to common questions like:

- *"I'm a good driver. Why do I have to pay insurance premiums that are just based on my age or gender or credit rating?"*
- *"I think I drive OK, but where are areas I can improve?"*
- *"My teen (or other loved one) claims that they're driving safely, but how can I be sure? How can I help them get better?"*
- *"I've built a database of my good driving habits with one insurance company already, but if I go to another, do I have to start all over?"*
- *"Someone else owns my driving data and they told me that it might be sold to third parties. How do I keep control of my data?"*

THE CRIMSON SOLUTION

Data Gathering

Data from four sensors provide a clear picture of an auto's position and motion through space. Acceleration, roll, pitch, yaw and heading readings are measured at desired intervals and transmitted to secure servers, using a Telit GSM module.

The device that records this data is self-installable by the driver into an OBDII (On-Board Diagnostic) port that is standard in all cars built for use in the U.S. since 1996 and those built for Europe since 2003.

The Crimson Device

The Crimson OBDII device is a powerful data gathering tool, packed into a ⅞" x 1¾" x 1¼" shell. The device includes these sensors:

- 3-axis accelerometer
- 3-axis gyroscope
- 3-axis magnetometer
- GPS

OBDII

GSM communications are handled on the desired schedule by the Telit GE-865 QUAD module. According to Milam Walters, Crimson's COO, "We chose the GE-865 due to small footprint and maximum connectivity requirements. We have customers in the EU and North America and we wanted a single device configuration that worked well in our current countries and those we have targeted for the future."

Data Analytics

The data gathered provide a basis for analysis, but this is just step one for Crimson. Sophisticated techniques are applied which first calibrate the device for a particular vehicle, then interpret device sensor readings. It is in this interpretation that the value of the data gathered and transmitted by the device is unlocked. Data gathered through continuous logging or when specific events occur is sent to central servers and reviewed by a set of "Analyzer" algorithms, proprietary to Crimson. The Crimson Analyzers answer questions such as:

- Where is the vehicle now and where has it been driven for the last 30 days?
- When and where did hard brakes/high accelerations/high speeds occur?
- Has an accident occurred?
- Has the vehicle passed into or out of any pre-defined boundaries?
- What is a score that indicates overall driving behavior?
- What components of the score indicate driver behaviors that should be reinforced or discouraged?

Information Presentation

Through Crimson's user portal – www.mydriveiq.com – consumers have access to a rich set of information generated by the Analyzers. The Dashboard Summary provides an overall driving score, summary statistics for the prior 30 days, and a score history spanning 3 months. Specific driving recommendations are listed that point out observed behaviors and suggest what to do more (or less) of. For a more detailed look, drivers can review charts that plot daily readings of miles driven, maximum acceleration, number of hard brakes and when driving occurred during more risky times of day. There is even a mapped view of each route taken for the prior 30 days, with flagged locations for events like hard brakes and maximum speeds. Users can

User Portal www.mydriveiq.com

configure preferences and add Geo Fences with alerts generated when their vehicle enters or departs pre-set boundaries.

Data Privacy

Crimson's consumer model is built on the foundation of personal and private data ownership. Their customers rest

User Portal www.mydriveiq.com

assured that their driving data belongs to them and never provided to third parties. At the consumer's request, aggregated driver data can be provided to Crimson's insurance partners for discounts, but detailed data like specific locations is held confidential. Thus, when a consumer wants to move to another insurance carrier, they can take their history with them for discounts out-of-the-gate. Crimson values the privacy of its customers.

What makes the Crimson solution unique?

- Crimson brings together deep expertise in the areas necessary to provide an integrated solution to the automobile telematics space, namely insurance, management of massive datasets, engineering and consumer marketing. This knowledge has led to development of a solution that manages collection of large amounts of data, management and aggregation of that data, the application of leading-edge analytics to generate actionable information, and user-friendly information presentation.
- There are a number of OBDII devices on the market capable of gathering GPS and accelerometer data. The addition of gyroscopic and magnetic sensors provides additional data points that are used to validate readings and more precisely determine driving behavior.
- The Crimson device uses the OBDII port for power only and requires no interface to the car's computer. This unique self-contained design maximizes compatibility and eliminates the possibility of adverse effects on auto electronics.

With the support of Telit's flexible and reliable solutions, Crimson is positioned to capture new global markets, create better drivers and increase the safety of road travel for all. <<

GE865-QUAD

CASE STUDY

WITH TELIT'S EXPERT SUPPORT AND HIGH QUALITY MODULE, CASTLES EXPANDS ITS GLOBAL REACH.

Dale Laszig, *SVP Sales*

FACTS

Castles Technology
www.castech.com.tw

System
VEGA 5000

Which Telit module do you use and why?
GC864-QUAD, UC864-E/G and CC864-DUAL. Telit is especially responsive and willing to go the extra mile throughout all phases of development and certification.

Features
- ✔ Large memory capacity
- ✔ PCI PED2.0 certified
- ✔ EMV 4.0 L1 and L2 certified
- ✔ 32-bit high-speed microprocessor
- ✔ Open architecture Linux Operating System
- ✔ Large backlit LCD Display for optimal viewing
- ✔ Portable design with handset and base unit
- ✔ ZigBee interface for easier communication among multiple handsets and devices

VEGA 5000

>> Castles Technology Co., Ltd., established in 1993, is a leading manufacturer of smart, secure payment technology for major financial institutions, retailers, and buyers. Headquartered in Taipei with a branch office in Beijing, Castles' 100 employees, including world-class engineering and sales teams, provide marketing and technical services to customers all over the world. The Castles extended family of products includes contact and contactless smart card payment systems, PIN entry devices, and fixed and portable EFT POS terminals. Acknowledged standard bearer for many globally recognized brands, including Citibank, Seven Eleven, IKEA, and Bangkok Bank, and rated sixth largest POS manufacturer worldwide in 2010 by The Nilson Report, Castles attributes its growth to core values of quality, security, and unprecedented customer service.

Our challenge – servicing a very diverse population of customers worldwide

Faced with growing demand for wireless payments solutions from a diverse customer base, Castles began a search in 2011 for high-quality, competitively priced wireless technology to form the basis for a new portable terminal that could operate anywhere in the world.

The solution - a universally compatible hardware and software interface

Castles found a unique solution in Telit, a supplier of modules for embedded technology in cellular networks. Telit has its own GSM network stack which enables it to create common hardware and software interfaces that work across all wireless technologies. The CC864-DUAL - 2.5G CDMA 1XRTT and CE910 (CDMA 2.5G 1XRTT Data Only) were of particular interest to Castles with near-term production dates and approvals from Verizon, Sprint, CrossBridge, Wyless, KORE, Aeris, and Bell.

Benefit – a new star joins the Castles constellation of products

The Vega5000 is a defining product for Castles Technology, with broad appeal for many of the company's channel partners, processors, and retailers. Castles' Vega5000 is a portable terminal that can seamlessly support multiple communications protocols through Telit wireless connectivity. Designing the Vega terminal series in partnership with Telit has given Castles the ability to meet global demand for high-speed, high-volume electronic payments processing. <<

SOLUZIONI PER L'**INNOVAZIONE** DEL BUSINESS

WIRELESS 4 INNOVATION

LA **RIVISTA**

WIRELESS4INNOVATION

É l'unico periodico italiano focalizzato sulle soluzioni Mobile & Wireless a supporto del business.
Ogni numero ospita contributi indipendenti firmati dai più autorevoli specialisti italiani e internazionali sui temi di maggiore interesse: Mobile Internet, Field Force e Work Force Automation, Mobile Office, Wireless Supply Chain, Mobile Marketing e Payment, RFId e molto altro.

IL **SITO**

WWW.WIRELESS4INNOVATION.IT

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LA **NEWSLETTER**

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PER **INFORMAZIONI** E **ABBONAMENTI**

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CASE STUDY

WE SELECTED THE POWERFUL TELIT MODULES FOR THEIR PRICE PERFORMANCE RATIO. WE APPRECIATE THE SUPPORT IN PRODUCT DEVELOPMENT AND INTERNATIONAL HOMOLOGATION OF OUR UNIQUE M2M PRODUCTS.

Peter Calis, *CEO*

FACTS

RFI Engineering B.V.
www.rfi-engineering.com

System

G-router, an intelligent wireless data communication device

Which Telit module do you use and why?

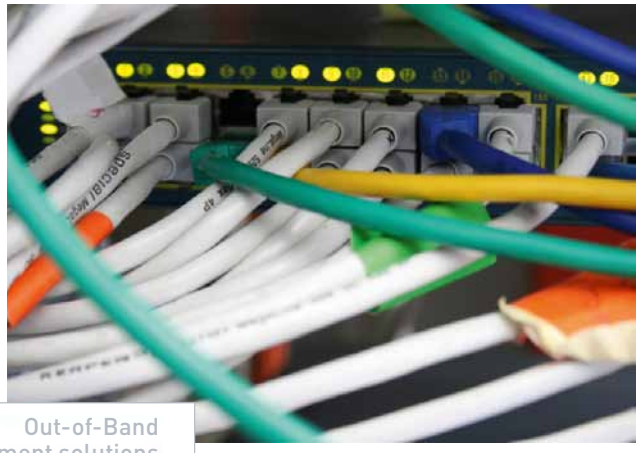
The powerful G24 GSM module, embedded in RFI Engineering's modular, multi-technology software design resulted in the carrier-grade G-router.

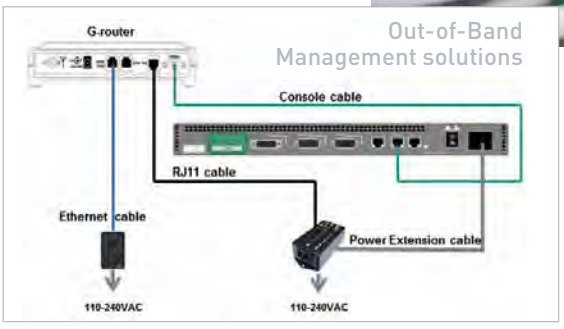
Features

- ✔ Easy installation and user-friendly interfaces
- ✔ Over-the-air upgradable via the Remote Update Manager, available as an Application or as a Stand-alone product, through which the software of all RFI routers can be updated
- ✔ The robustness and versatility of Linux, which makes it relatively easy to implement customer changes, or add new applications
- ✔ The adaptable GSM/GPRS driver
- ✔ The Remote Power Switch option; a typical application for the switch is to remotely reboot a network device

G-router

>> RFI Engineering, a global broadband and telecommunications company offers equipment for an extensive array of managed services, including a multitude of hosted applications. Services are currently a crucial element for the everyday operation of most companies. A Service Level Agreement (SLA) specifies the availability (uptime) for these services at above 99.99%.





Any malfunction in the customer's network is a significant disturbance severely impacting the SLA level. The issue is also compounded by the fact that most of the time it is not clear if the fault lies with the gateway/modem or the optical fiber connection. A backup connection to the gateway/modem, as an alternate route to the optical fiber network, is therefore indispensable. An incumbent operator will need to route such traffic over its own analog lines.

Broadband and telecommunications companies globally face the situation that the provisioning of such analog lines is cumbersome and may take up to several weeks delaying the start of services to the customer. Moreover, more and more "analog traffic" is being routed over VoIP circuits stopping any possible management information to or from the gateways/modems.

RFI Engineering's G-router monitors "managed" customer gateways/modems via a wireless nationwide GSM/GPRS network, providing an instantly available and redundant link for maintenance and support purposes. The G-router buffers system information from the gateway/modem so events/faults can be backtracked providing extra diagnostics information enabling fast fault cause identification. The G-router also manages a "remote reboot" function through the control of a remote Power Switch – also designed by RFI Engineering. A customer gateway/modem/server can therefore be remotely switched on and off as needed. Rebooting may clear fault situations caused by transient errors or network anomalies eliminating time consuming site visits by technical staff enabling higher SLA scores.

The G-router, powered by Telit's powerful G24 GSM module and the Remote Power Switch communicate over the GSM network, i.e. independent from the operational network, and are therefore classified as "Out-of-Band".

When the global broadband and telecommunications company promises its customers an uptime of 99.99%, RFI Engineering helps to keep that promise. <<

TELIT ENABLED US TO PROMOTE OUR PRODUCTS WORLD-WIDE DUE TO THE PENTA-BAND FEATURE.

David Eygoren, *CTO*

FACTS

Türkonet İletişim Bilgisayar ve Elektronik Sistemleri San. Tic. A.Ş.
www.turkonet.com.tr

System

SIGNAL-3G Back-Pack-Solution

Which Telit module do you use and why?

We use the Telit HE910 module in our product because it was the best performing unit among all 3G modems we have tested so far.

Features

Provides fast and reliable live cellular video uplink solution for Broadcasters, News Agencies and Corporations.

- ✔ Penta-band Support
- ✔ Up-to 21Mbit Speed
- ✔ Small physical dimensions
- ✔ High receive Sensitivity
- ✔ Separate TX and RX antenna connections
- ✔ Low power consumptions
- ✔ Excellent Local Product Support and Technical design help; during initial stages.
- ✔ Wide Range of OS driver availability.

SIGNAL-3G Back-Pack-Solution

>>Turkonet is a major cellular video-uplink solution provider. We are using the HE910 for an application that allows any regional, national, or international TV broadcaster or news agency to accomplish live video plus audio uplink from the field to the head-end for either ENG (electronic news gathering) or program contribution purposes.

Whereas cellular-uplinking compares in quality and transmission delays to a satellite uplink-truck, cost is a fraction of satellite and requires very minimal initial equipment investments compared to satellite uplink trucks or microwave trucks. Cellular-uplinking is also fast and easy to deploy due to the size of the equipment.

The reason for selecting the HE910 module is because having penta-band UMTS capability with HSPA+ gives us the ability to sell the final product worldwide without worrying about the local 3G frequency coverage while at the same time giving our customers peace of mind that when they need to send their news reporter to other regions or countries they can do so without having to worry themselves about local 3G frequencies or modem requirements. <<

EXPERT'S OUTLOOK

AT THE CROSSROADS:
BROADBAND IN DEVELOPING COUNTRIES

Laurence Cruz, *freelance writer based in Los Angeles / USA*

>> With many cities in developing regions at a "flipping point", broadband can make the difference between progress and chaos.

Of all the world's developing countries, Afghanistan may be the poster child for an economy struggling to emerge from the abyss of chaos. Centuries of foreign occupation have left a legacy that includes rampant poverty, obliterated infrastructure and perhaps the greatest concentration of land mines on earth.

So when it comes to rebuilding countries like Afghanistan, one could be forgiven for questioning whether broadband should be a priority. Absent such basic infrastructures as water, sanitation and roads, should luxuries like broadband wait? If not, what role should broadband play? Can it somehow jump-start economies that have stalled or, like Afghanistan's, hit rock bottom?

A wide range of experts insist broadband has a key role to play in economies of all stripes. The Broadband Commission for Digital Development recently stated that expanding access to broadband infrastructure and services must be "a top policy priority for countries around the globe, developed and developing alike as well as least developed countries". In a similar vein, the Intelligent Community Forum (ICF), a New York-based think tank, identifies broadband connectivity as one of several "critical success factors" in the creation of any smart community, along with things like a knowledge workforce and digital inclusion.

Developing countries that ignore information and communication technology (ICT) by zeroing in only on perceived short-term needs are like towns in the Old West that ignored the advance of the railroad, says Louis Zacharilla, co-founder of the ICF, which studies the economic and social development of 21st century communities.

"You have to look at the future because you're going to be in it very soon – like next week", Zacharilla says, adding that lower-cost technologies like satellite and wireless mean that countries don't have to choose between addressing long-term and short-term needs. "The good news is you can do both in that it does not take a great deal of investment today".

Underscoring the point, the ICF in 2007 gave its Visionary of the Year award to Afghanistan's Communications Minister, Amirzai Sangin, for his agency's swift rolling out of broadband infrastructure that was used to support national elections. Over a period of 36 months and with the help of international companies including Cisco and Globecomm Systems, the agency deployed digital phone service to 11 provinces and connectivity to 34 provincial capitals via satellite and micro-

wave networks, in addition to connecting 40 ministries and government offices via fiber optics and microwave.

ICF Chairman John G. Jung called the endeavor "true nation building using broadband as one of its technical keystones".

CITIES AT THE "FLIPPING POINT"

The link between broadband and economic growth and job creation is well documented. But broadband is also key to solving a slew of other challenges facing developing regions, says Prof. Mel Horwitch, dean of the Central European University Business School in Budapest, Hungary.

"Emerging economies can deal with the issues of megacities, pollution, health, traffic, access to government, crime and terrorism by becoming smart – using broadband and ICT and having an engaged citizenry", says Horwitch, an expert on entrepreneurship and innovation management.

Furthermore, Horwitch says cities that have yet to adopt broadband and other smart technologies are at an all-important tipping point – a "flipping point", as he calls it.

"Cities will flip positively or they will not", he says. "I believe this is an important issue for the emerging world generally. If these regions don't come together and understand they need to change and get smart, they're going to fall further behind and maybe there's a point of no return".

The Eastern European region is a case in point, Horwitch says. It has produced just one contender in the annual crop of 21 nominees for the ICF's "Intelligent Community of the Year" award. That's something Horwitch and colleagues at CEU Business School aim to change. With the help of a $7.5 million gift from billionaire investor and philanthropist George Soros, the business school is creating an institute for entrepreneurship and innovation, part of which will be devoted to the fostering of intelligent communities in the region and beyond, Horwitch says.

CITIES LEADING THE WAY

In developing and developed countries alike, it's typically individual cities or communities that set the standard for use of broadband and ICT, with regional and national governments later catching their vision, Zacharilla says. Examples include the cities of Eindhoven in Holland, Taipei in Taiwan, Sunderland in the UK and Waterloo, Canada.

"These intelligent communities inspire regional and national governments to look at them and say, 'Hey, that's a great lab we've got over there. It's getting international recognition – let's take a closer look'", Zacharilla says. "It becomes viral and spreads throughout the region or country".

It can also "leap" to places in other countries due to a network effect among cities engaged in the intelligent community movement, Horwitch says, adding that cities should strive to be part of this community of communities. "It should be a part of the strategy of any community not to be left out", he says.

Experts say common characteristics among successful smart communities include strong participation and commitment by government, academia and the private sector, as well as a means for citizens to participate in the community's destiny – for example, via an e-government platform. "It's not simply technology – leadership and buy-in are essential", Horwitch says.

BROADBAND TARGETS

The Broadband Commission recently challenged governments to achieve several ambitious broadband targets by 2015. It called on countries to make their broadband policy universal and affordable; for 40 percent of households in developing countries to have Internet access; and for Internet penetration to reach 50 percent in developing countries and 15 percent in least developed countries. (Internet penetration in the developing world currently stands at 21 percent, according to the International Telecommunications Union – a specialized agency of the United Nations for ICT.)

"It is vital that no one be excluded from the new global knowledge societies we are building", the commission states. "We believe that communication is not just a human need – it is a right".

Horwitch echoes the need for developing countries to be proactive in determining their destiny. "Communities need to go beyond simply reacting; they need to have sense of strategy and mission", he says. "They need to make a decision that they're going to become smart".

Zacharilla agrees. "If Afghanistan can do it, certainly some of the other countries that are wrestling with this issue can think about it as well", he says. <<

This article was originally published on "The Network", Cisco's Technology News Site (http://newsroom.cisco.com/).

Vita

Laurence Cruz is a freelance writer based in Los Angeles. A UK transplant, he has worked as a reporter with The Associated Press in Seattle and as an environmental reporter for The Statesman Journal in Salem, Oregon. He has a BA in English from Oxford and an MA in Communications from Washington State University.

EXPERT'S VIEW

IFSEC International
COMMERCIAL & GOVERNMENT SECURITY • FIRE
14-17 May 2012, NEC Birmingham, UK
www.ifsec.co.uk

CONVERGENCE IN THE SECURITY INDUSTRY OPENS NEW BUSINESS OPPORTUNITIES FOR THE M2M SECTOR

Charlie Cracknell, *Eventdirctor, IFSEC International*

>> Security will be one of the fastest growing sectors for m2m according to analysts Analysys Mason in its latest report entitled 'Machine-to-machine device connections: worldwide forecast 2010–2020' "Smart electricity meters, ubiquitous surveillance cameras, connected Porsches – all are in our m2m future," comments Steve Hilton, author of the report.

As one of the early adaptors of m2m technology, the security sector is now recognizing the business and operational potential in adapting wireless technologies. Analyst Berg Insight forecasts that shipments of wireless m2m modules for security applications will reach 21.4 million by 2015. At the same time, the number of wireless devices monitored from an alarm receiving center and similar will grow from 7.0 million in 2010 to 39.2 million by the end of 2015.

A key trend which supports future uptake of wireless technologies is the convergence of data and telecommunications over Internet Protocol (IP)-based networks which now bring IT and security closer than ever. CCTV surveillance systems are a great example as many of them rely on transmission over IP networks, rather than the traditional video circuit.

A new research report from business research & consulting experts Frost & Sullivan, which investigates the move towards convergence in the security market, has identified a real step change in the role different business stakeholders play in the procurement of security solutions. Emerging technologies combined with the need to use a common IT-based communication protocol for the management and control of integrated systems now sees the IT department sitting at the core of fully converged solutions more than even before.

What Frost & Sullivan's research ultimately reveals is that whilst convergence will not happen overnight (predicting the move from event-based intelligent preventative systems in the not so distant future – circa 2015 – to the culminating shift to fully integrated systems likely to happen post-2020), emerging technologies such as Physical Security Information Management (PSIM) and Security/Software as a Service (SaaS) are helping sustain the future growth of the security industry and make fundamental steps towards convergence.

Acknowledging that converged systems are still at an embryonic stage, the report highlights a need for quality reference sites that can demonstrate the real return-on-investment this move can bring. Providing grassroots evidence of the cost efficiencies that can be achieved will help many businesses justify the upfront investment of overhauling their existing legacy system. The report highlights that converged systems could sit more comfortably with new build projects as part of the business case for reduced energy consumption in smart/green buildings.

A paradigm shift in perception and uptake of SaaS is going to be instrumental in the security industry achieving convergence. Another key point to make is that some emerging technologies, including high resolution cameras are still in their infancy so innovation across the industry will be key to moving convergence forward.

As security solutions evolve to become a profit center with increasingly complex systems, they will require a dif-

ferent purchasing approach with perhaps marketing, operations and financial departments taking an active role alongside IT. HR and fire/safety professionals are also set to play an increasing role in the procurement decision with 96 percent of participants stating that they use access control for time and attendance purposes.

Some of the most interesting findings from our research are based upon fundamental changes to the decision-making process within organizations which move from single products and systems to converged solutions.

The cost to overhaul existing legacy systems without a clearer understanding of the return-on-investment converged systems will bring over the long-term is currently still a barrier. This could well see converged systems sitting more comfortably with new build projects as part of the business case for reduced energy consumption in smart/green buildings.

Also feeding into this is the important point that whilst CIOs and Chief Security Officers (CSOs) are the top two decision-makers when purchasing physical security equipment, there is a greater need to communicate with CIOs in a language they understand - ROI must be better communicated to this audience. This is further evidenced by Service Level Agreements (SLAs) and solid business cases being cited as the top two factors CIOs want to see in converged system propositions.

To download a copy of the report, please visit http://www.ifsec.co.uk/convergence.

With regards to the critical decision factor for CIOs to make the investment in convergence, they made several key points including the fact that decision-making related to physical and logical security is still largely separated in small to medium sized enterprises while there is strong integration in large enterprises. They made the point that without strong regulations, the current lack of standards does little to incentivize smaller organizations to move.

The research highlights conflicting views on this point. CIOs claim however that they would have no preference when it comes to physical/logical integration, most feel they would prefer IT integrators/vendors as they have more relevant skills, whereas in the case of physical/building automation, CIOs would prefer to work with building management/automation vendors. In terms of what integrators and vendors can do to help this situation, end-user education is vital. Frost & Sullivan highlights the following key points:

Show clearly how convergence can provide:

- Clear cost savings (substantial)
- Operational efficiency gain
- Reference sites (similar organizations in similar vertical markets with similar problems/needs)
- Case studies

IFSEC International is in a unique position bringing together over 25,000 security professionals from over 100 countries across the entire buying chain; from manufacturers and consultants, to installers, integrators and end-users. IFSEC provides a comprehensive platform for the convergence market; bringing together product innovations and services vital to those responsible for the complete security and facilities portfolio, and will benefit all security sectors. <<

Vita

Charlie Cracknell is Event Director for IFSEC International, the world's largest annual security and fire event.

CASE STUDY

LIFESAFER OFFERS

REAL-TIME SOLUTIONS FOR MONITORING CONVICTED ALCOHOL OFFENDERS

Tasos Georgopoulos, *Product Manager*

www.lifesafer.com

>> LifeSafer, Inc. is a leader and innovator in the development and application of alcohol ignition interlock technology by court systems and other government agencies to control drinking and driving behavior of convicted DUI offenders. Interlock devices work to measure Breath Alcohol Concentration (BrAC) by having the offender blow into a handset containing a fuel cell chamber. The breath sample is measured by the device and translated into an equivalent Blood Alcohol Concentration (BAC). This data is then recorded and reported to court and monitoring authorities.

LifeSafer was an originator of the ignition interlock industry, introducing the first interlock to meet National Highway Traffic Safety Administration standards in 1992. With over 70,000 LifeSafer interlocks installed in the U.S. and over 800 service providers, LifeSafer interlocks have been used by more than 500,000 people and are the most widely used in the U.S. today. Utilizing the electronic reporting systems and target tracking cameras developed for the interlock system, LifeSafer is applying this technology to home arrest alcohol monitoring of convicted DUI offenders and continues to lead the development and introduction of new and innovative products to the criminal justice and corrections agencies.

Challenge

Each year there are 1.4 million arrests for drinking and driving in the U.S. Interlocks are rapidly becoming mandated for all DUI convictions. Additionally, over 5 million of the 7 million individuals incarcerated or on probation or parole committed their crimes under the influence of alcohol, drugs or both. As the increase in alcohol related offenses increases, it is creating an enormous backlog for the court system. Thus, the long term trend is to technologically monitor these individuals in the community.

LifeSafer's jurisdictional clients in state and county court systems are seeking more timely information to aid probation officers and monitors in tracking activities of convicted alcohol offenders. They are especially interested

LifeSafer FC100 Camera Interlock

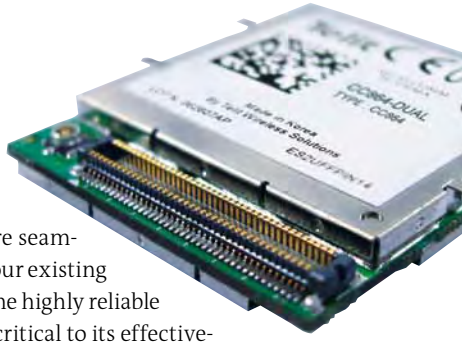
in real-time tracking and reporting. In an effort to respond to this demand, LifeSafer has explored the use of real-time monitoring technology for ignition interlock devices as well as home monitoring units.

With current devices, authorities have to wait 30 to 60 days before the DUI offender's monitoring information is downloaded during a scheduled visit. LifeSafer seeks to use wireless technology and GPS tracking to afford real-time, up-to-date tracking and notification of activities of convicted DUI offenders. As part of the development process, many different technologies were considered to better understand how these technologies could be successfully implemented into LifeSafer's hardware and firmware as well as their reporting processes.

Solution

Enabled by the Telit CC864-DUAL module with GPS capabilities, LifeSafer developed technology that was integrated into their next generation ignition interlock and home monitoring devices. The LifeSafer FC100 wireless ignition interlock device and the HMU2 wireless home monitoring unit, allow for real-time tracking, positioning and reporting.

"By equipping the FC100 with Telit wireless technology, we are now able to provide law enforcement, probation and parole authorities with the ability to monitor DUI offenders in real-time and immediately respond to incidents, keeping both the driver and other motorists safe," said Richard Freund, Founder of LifeSafer. "Telit's



CC864-DUAL

compact modules were seamlessly integrated into our existing product and provide the highly reliable cellular connectivity critical to its effectiveness." The real-time features track the offender while they take their alcohol test, record whether they passed or failed the test, provide a photo of the offender while taking the test as well as provide the location of the offender. Once the test results are confirmed, the information and photo are then uploaded in a matter of seconds. This allows monitoring authorities to be proactive in reviewing the offenders' test records and in locating those individuals who fail their tests.

Benefits

LifeSafer's FC100 wireless ignition interlock system provides law enforcement with real-time tracking of DUI offenders in their vehicles to deter drinking and driving, while the LifeSafer HMU2 wireless home monitoring unit provides the same technology and real-time monitoring of an individual while at home or at work. Both units utilize LifeSafer's patent-pending target tracking camera system using LED technology to allow for photo capture in any lighting.

Utilizing Telit technology, LifeSafer can wirelessly and securely transmit daily reports, immediately notify authorities of offenders who exceed alcohol limits and contact emergency responders if a user attempts to circumvent the device. Authorities can view data instantly online with the LifeSafer Plus system, including all logged and time-stamped photographs, driver locations, Breath Alcohol Content (BrAC) levels, retest results and tampering attempts.

These real-time devices enable law enforcement to spend less time tracking the activities of DUI offenders and other offenders who are early-released into the community and are almost immediately able to dispatch 911 to apprehend offenders who violate their probation due to alcohol use. As municipal budgets are reduced across the country this technology allows courts and law enforcement greater work efficiency to provide quality service and monitoring of the growing population of alcohol offenders. This is part of the reason why LifeSafer is recognized as the leader in providing state of the art devices to keep our roads safe. <<

CASE STUDY

INNOVATIVE SMART FARM SYSTEM WITH WIRELESS REMOTE CONTROL

Ki-Hwan Kim, *CEO*

Greenhouse with Smart Farm System

>> Farmers are getting smart with m2m communication. Seongju County in Korea has introduced the 'Smart Farm System Establishment Project,' which supports automatic management of farming facilities according to weather conditions using real-time data communication.

Disys, short for Digital Image Systems, founded in 2000, is a small giant, with unlimited possibilities and potential in mobile solution development. As a leading service provider, Disys is skilled in all manner of I/O connectivity technology including cameras, storage, sensors, command control transmission, and etc. For the smart farm project, Disys and Telit cooperated for 10 months on system development and demonstrations with 'UC864-K,' a WCDMA (HSDPA) wireless data communication module designed by Telit.

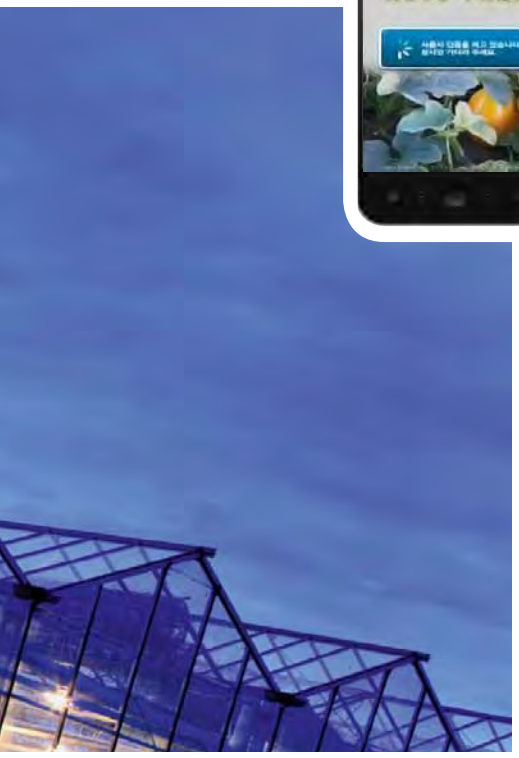
The UC864-K is a complete 3.5 G wireless data module designed to be fully compatible with Telit's GSM/GPRS and CDMA products in the compact family. This enables integrators and developers to design their applications once and take advantage of the truly global coverage and service flexibility afforded by the combination of the two most prevalent cellular technologies worldwide, with the additional option to select a tri-band UMTS module with the UC864-G variant.

Its fast speed of 7.2Mbps at 2.1 GHz allows the device to transmit data and voice information simultaneously. With its ultra-compact design, and extended operating temperature range, the Telit UC864-K is the perfect platform for medium-to-high-volume m2m applications and mobile data and computing devices. Additional features such as, integrated TCP/IP and UDP, and a three-channel ADC provide extended functionality, adding value to Disys' application without adding cost. The UC864-K's extensive interface set, which includes IIC and user definable GPIO, provides ease of integration of peripherals and actuators.

UC864-K

Presently the cultivated area covered by major fruit and vegetable growing facilities nationwide 50,767ha and the number of vinyl greenhouses growing major fruits and vegetables is about 640 thousand. The application of m2m-based smart farm systems is expected to increase in the future. Seongju County integrated the 'OCTOPUS

www.disys.kr



Smart Phone Application

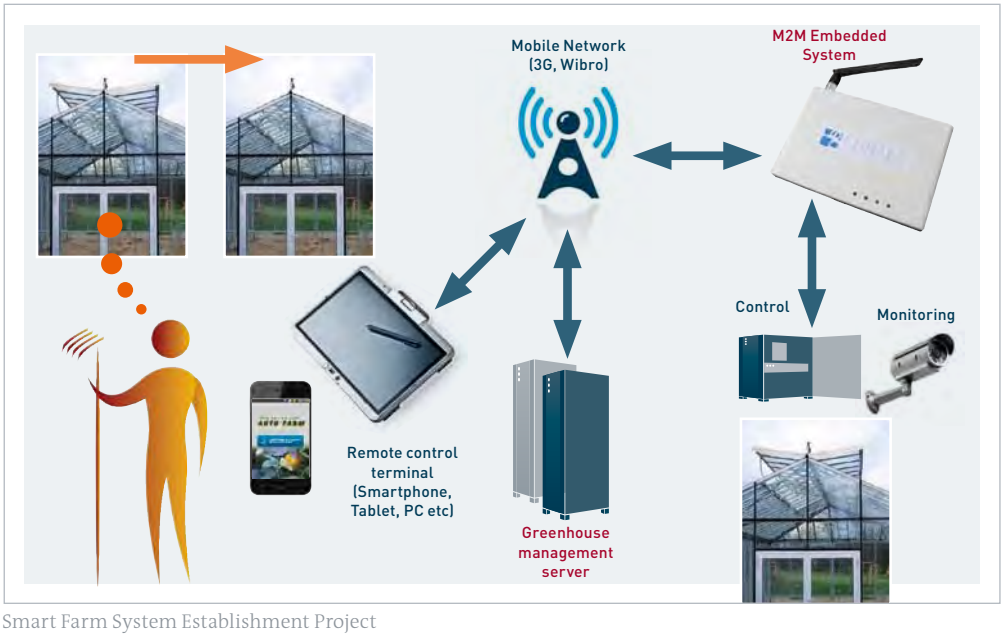
achieved by the system which takes actions such as automatically opening and closing facilities (vinyl greenhouses) according to previously established environmental cultivation standards.

"Innovative Smart Farm system with a wireless remote control is a strategic and important project for Disys and the nation itself with respect to sustainable agriculture. m2m equipment, related software and services were tested at the 'm2m General Support Center' arranged by the Korean Communications Commission during the development of the smart farm system. This was greatly helpful. We plan to rapidly develop the best products by closely cooperating with relevant companies and supply them to the market," said Kim Gi Hwan, CEO of Disys. The company plans to focus on raising the domestic market awareness by rapidly developing and supplying optimized products meeting customer demands in the various areas and increase its market through the cooperation between relevant institutions and communication companies.

Once this system was rolled out, the oriental melon farms in Seoungju County were able to get rid of inefficient work such as manually managing cultivation facilities or opening and closing vinyl greenhouses one by one in response to weather conditions. Especially improved were those crops highly affected by changes in sunlight since the facility opening and closing times were not consistent under manual operation; as were those crops easily damaged when farmers could not react quickly enough to rain or heavy snow. The introduction of this remote control system enabled immediate and simultaneous action in response to changes in environmental condition throughout all farm facilities. Additionally, surveillance cameras helped prevent theft of crops and because the temperature or humidity sensors allowed for proper control of growth and development conditions, crops are expected experience an enhanced quality as well. "Innovative Smart Farm system with wireless remote control is a strategic and important project for Telit. We're delighted to help with our technology to support sustainable agriculture in Korea and hope to expand our experience to a broader variety of cultivating segments", said Dominikus Hierl, CMO at Telit Wireless Solutions.

In the future, the 'Smart Farm System' can be widely applied not only to oriental melon farms but also to various other cultivations under structure including watermelons, strawberries, and tomatoes. Many businesses are expected to be able to utilize this system such as livestock barns where the system could be used, for example, as a security and tracking device to control foot-and-mouth disease outbreaks. <<

(Open Control & Tele Operating Platform Unit System),' a wireless remote control system with an embedded m2m communication module, to the existing cultivation farms for more efficient management of the oriental melon crop, which is a very representative crop in the region. Thanks to the embedded Android open mobile OS, the design of this m2m platform incorporates a wireless (3G/4G) module and a robust number of data I/O and control commands. With it farms can check weather information (sunlight, temperature, humidity, rainfall) or access and operate surveillance cameras via smartphones, tablets or PCs from anywhere at any time. Collected data is sent to the integrated server system at cultivation land management using the 3G/4G communication network. Remote control is



Smart Farm System Establishment Project

M2M Enables 'Smart Farm' - Automatic Crop Management

Seongju Oriental Melon Farm Automates Facility Management System Expandable to Various Segments including Healthcare, AMI

■ ZOOM UP - Telit Wireless Solutions

Oriental Melon from Seongju is flawless masterpiece crop in Korea. Now it will be sweeter and cheaper thanks to M2M. 'Smart Farm System Project' supports automatic crop management of facilities using real-time data communication based on various weather condition including amount of sunshine, temperature, humidity, and rainfall etc.

Machine-to-machine is an intellectual telecommunication service between objects, which transfers information perceived by sensors installed in various devices, through internet wired/wireless communication network. Gathered information is used to provide better quality services.

OCTOPUS Farm Overview

OCTOPUS - Open Control & Tele Operating Platform Unit System

- Various connectivity available toward main system (body) just like octopus
- Open mobile OS Android embedded, wireless (3G/4G) module incorporated All sorts of data I/O and control command is possible based on M2M platform
- OCTOPUS Farm: Remote management system through OCTOPUS platform

■ Need to reform semiautomatic operation
: Limited managing work rely on electric motor only for open/closing

■ Complement required beyond open/closing control
: Monitoring/Surveillance feature for malfunction of the system

■ Demand of Smart Farming for the greatest harvest
: Make best use of wireless network such as 3G/4G through smart phones, tablet PC. Eliminate farmers'② laborious job to examine facilities

■ Scalable to security, sensing, control
: In addition to automatic open/closing operations and surveillance camera, easy to develop various kinds of extended M2M system such as crop-dusting based on humidity, temperature

Smart Farm System Project is driven by Telit Wireless Solutions, Inc., a global leader in machine-to-machine (M2M) wireless technology, with its WCDMA (HSDPA) wireless data communication module 'UC864-K.' Disys, a mobile solution company, has cooperated in system development and demonstrations for 10 months from January to November. They integrated 'OCTOPUS (Open Control & Tele Operating Platform Unit System),' a remote wireless control system with an M2M communication module loaded, with existing cultivation farms for more efficient management. Using 3G/4G communication network, OCTOPUS transfers data to integrated management server system and opens or closes facilities -vinyl greenhouses- automatically based on previously established cultivation environment standards.

"M2M equipment, related software and services were tested at the 'M2M General Support Center' arranged by the Korean Communications Commission during the development of the smart farm system. This was greatly helpful. We plan to rapidly develop the best products by closely cooperating with relevant companies and supply them to the market," Kim Gi Hwan, CEO of Disys.

From this system, the oriental melon farms in Seoungju County were able to get rid of inefficient work such as manually managing cultivation facilities or opening and closing vinyl greenhouses one by one due to weather conditions. Especially, crops were affected by changes in sunlight since the facility opening and closing times were not consistent, and were easily damaged when farmers did not cope with rain or heavy snow quickly. The introduction of this remote control system enabled them to take immediate action.

Also, the surveillance cameras could prevent theft of crops, and the temperature or humidity sensors can control growth and development conditions of crops properly, which is expected to help enhancing quality as well.

UC864-K is a complete 3.5 G wireless data module designed to be fully compatible with Telit's GSM/GPRS and CDMA products in the compact family. Its fast speed of 7.2Mbps at 2.1 GHz allows the device to transmit data and voice information simultaneously. It is designed in a subminiature size of 30mmX36mm and weight of 10g, and is not greatly constrained by temperature changes. It is a perfect product that can be easily connected to most M2M applications and wireless data communication devices. Additional features such as, integrated TCP/IP and UDP, and a three-channel ADC provide extended functionality, adding value to the end application without adding cost.

In the future, the 'Smart Farm System' can be widely applied not only to oriental melon farms but also in various cultivations under structure including watermelons, strawberries, and tomatoes. Many businesses are expected to be able to utilize this system such as livestock barns in which the system could be used as a security and tracking device in case of foot-and-mouth disease outbreaks.

"Innovative Smart Farm system with a remote wireless control system is a strategic and important project for Telit. We' re very delightful to help with our technology to support sustainable agriculture in Korea and hope to expand our experience to a variety of cultivating segments," said Dominikus Hierl, CMO at Telit Wireless Solutions.

Telit® wireless solutions
Making machines talk.®

Disys' Know-how in M2M

Wide experience in mobile software development including smart phones
- Mobile development partner of Samsung Electronics

Skill in all sort of I/O connectivity
- Camera, storage, sensors, command control transmission etc.
  => Manifold project experience with Samsung mobile phone

Digital imaging technology
- Developed wide range of mobile TV receiver (T-DMB, ISDB-T, DVB-H, AT-DMB)
- H.264 S/W decoder

Technical competence in developing Control client for smart phone (mobile app.)
- Manifold iOS, Android application

Integrated management system connected to server
- set-top box control / data management
  => Digital Information Display, Digital Picture Frame

Contact Digital Image Systems Co., Ltd.
539-17 Bokhyeon-Dong Buk-Gu, Daegu, Korea
TEL: +82-53-384-5300 FAX: +82-53-384-5307
http://www.disys.kr

SENSILE TECHNOLOGIES

WE CAN REALLY COUNT ON TELIT'S SUPPORT THROUGHOUT OUR PRODUCT DEVELOPMENT.

Jean-Marc Uehlinger, *R&D Director*

FACTS

Sensile Technologies SA
www.sensile.com

System

NETRIS: Your Key to Smart Telemetry

Which Telit module do you use and why?

GE865-QUAD
We use this module due to its compact size, performance and quad-band capability.

Features

- ✔ Leak detection alarm
- ✔ Prevention of water pollution
- ✔ Battery-powered, easy-to-install system
- ✔ Weatherproof housing
- ✔ Remotely configurable

NETRIS®

>> Sensile Technologies supplies solutions for remote monitoring of storage tanks. We are a market leader in remote monitoring of oil and gas tanks with over 40,000 systems installed in over 40 countries. Thanks to the optimization of logistics, our solutions help our customers reduce over 6 tons of CO_2 daily.

We have recently expanded our portfolio of applications to further reduce human impact on the environment. Based on a new regulatory requirement in Denmark, manure tanks located near water are required to have a monitoring solution that triggers an alarm as soon as the level in a manure tank drops. The alarm is to be triggered as early as possible to prevent any significant amount of manure from ending up in the nearby river, creating disastrous pollution.

To address this application we adapted our existing autonomous, robust, and easily installed NETRIS system. Keeping the same Telit GE865 module with revised electronic and firmware as well as a high precision sensor, our solution is fully compliant with this new regulatory requirement. Our battery-powered solution is so compact and easy to install that the investment from farmers is kept to a minimum. Telit was the obvious choice for this version as well, as we could build on the excellent reliability of the GSM module which is required in order to prevent a catastrophe.

Once our system is installed in the manure tank, the farmer is assured to receive an alarm as soon as a drop in the tank level is observed. With this alarm, a manure leak into the environment can be stopped before reaching the catastrophic levels caused today when undetected leaks from full manure tanks reach water streams. The farmer can, of course, momentarily deactivate the alarm to drain the tank and use the manure to fertilize his fields. Such solution is another example of how a small investment can have a major impact on the environment. <<

CASE STUDY

PARTNERING WITH TELIT HAS ENABLED ALARM.COM TO PROVIDE LEADING TECHNOLOGY SOLUTIONS FOR SECURITY, ENERGY MANAGEMENT, AND HOME AUTOMATION, ALLOWING CONSUMERS TO MONITOR AND CONTROL THEIR HOMES AND BUSINESSES FROM AFAR. **Jay Kenny,** *VP of Marketing*

FACTS

Alarm.com
www.alarm.com

System

Wireless Interactive Alarm System

Which Telit module do you use and why?

We use the GE865-QUAD because of its fast data communication, small module footprint and the ease of adding new high performance features.

Features

- ✔ A single platform for Interactive Security, Home Automation and Energy Management
- ✔ Rapid, wireless installation
- ✔ Reliable, fast communication of alarm activity
- ✔ Dependable security, even with line cuts and power outages
- ✔ Web-based system monitoring and control
- ✔ Real-time system activity alerts
- ✔ Two-way voice emergency response
- ✔ Integrated mobile apps for iPhone, iPad, Android, Kindle, Windows Phone 7 and BlackBerry devices
- ✔ OTA (over-the-air) system programming
- ✔ Easy migration to other communication standards

Alarm.com Wireless Communication Module

>> Alarm.com is the industry leading technology provider of interactive security solutions. Since 2000, Alarm.com has been dedicated to delivering security, convenience and control through the integration of wireless, web and mobile technologies for residential and commercial customers. With advanced wireless monitoring and an unparalleled hosted services platform, Alarm.com helps protect hundreds of thousands of homes and businesses throughout North America. The company develops innovative solutions to deliver better security, interactive services, video monitoring, energy management, and home automation for today's home and business owners. Alarm.com's products and services are exclusively offered through a network of thousands of licensed and authorized Security Dealers.

The decision to utilize the Telit GE865-QUAD in Alarm.com's next generation communication module was driven by several factors. As Alarm.com continued to innovate and expand its product offerings, the company sought an equally flexible, trusted and capable partner to support its increasing advances in product development as well as future functionality requirements. Thanks to the powerful capabilities packed into the Telit module, Alarm.com was able to integrate all key solutions onto a single board. Likewise, the scalability of Telit's module platform to support future offerings with different requirements, without the need to completely re-engineer the Alarm.com integrated communication hardware, was another factor that drove the partnership.

Today, Alarm.com's vision in interactive security services continues to drive innovation and product improvements for its customers. Alarm.com offers smarter security through a secure, dedicated wireless communication path, 24-hour backup battery power and protection against the common vulnerabilities of the phone line being cut, the Internet connection going down, or the security control panel being damaged. Alarm.com has also changed the way customers use their security system by introducing interactive services and allowing access and control via a mobile phone or the web. With Alarm.com, customers can arm or disarm their security system remotely via their web account and free mobile apps, receive proactive alerts for both alarm and non-alarm events, and get instant notification for things like kids coming home from school, a water leak in the basement or a home intrusion.

Alarm.com has extended the value of its platform by introducing energy management and home automation to its integrated solution. Now, users can remotely control or set intelligent automation rules for their lights, thermostats, door locks and small appliances. Leveraging the Alarm.com platform, customers have a true whole home management solution at their fingertips. <<

THE ONLY STAND ALONE LIVE VIDEO SECURITY SYSTEM FOR LARGE CABIN AND LONG RANGE BUSINESS JETS DEVELOPED WITH A TELIT MODULE.

Thierry Décamps, *CTO*

>> OVIV's patented radar and communication technology led to the development of the flagship Sentinel ground security system which is specifically tailored to meet the demands of operators and users of business jets and VIP aircraft, including worldwide ability to:

- Within minutes, establish a secure perimeter around the aircraft parked on the ground;
- Immediately notify any intrusion in the protected perimeter to the pilot, owner, or any other designated person via an SMS text message;
- Deliver real-time video images of an on-going intrusion anywhere in the world over GSM/GPRS networks or through an HTML5 web app on a 'remote control' smart phone;
- Be quickly and easily deployed without the need to retrofit or modify the aircraft.

The system also enables the pilot or security officer to monitor the aircraft on-demand to determine when non-standard, unusual or basically unsafe events occur.

Since every event is logged by the on-board computer, retrieval and review of this information is both extremely precise and effortless later on. This also makes visual pre-flight activity more efficient.

OVIV's Sentinel is self contained in a robust, watertight and dust proof travel case which houses a central unit (calculator), a battery, a remote control – which operates in GSM/GPRS mode or through an HTML 5 app – and a pod. The latter is a streamlined fairing, housing a proprietary radar capable of detecting any intrusion into a pre-established operating range and four cameras covering a 360° perimeter.

The product has been approved by Dassault Aviation and is an option for the entire range of Falcon Jets.

OVIV Security Technologies, based in Merignac, France, specializes in the design and manufacturing of comprehensive m2m stand alone systems. It is a proud EADS Development Partner company and member of Aerospace Valley through the Bordeaux Technowest Aeroparc cluster. <<

FACTS

OVIV SECURITY TECHNOLOGIES
www.oviv.fr

System
Sentinel 280L

Which Telit module do you use and why?
UC864-G: chosen for its ultra-compact design, extended operating temperature range and for its global network coverage.

Features
- ✔ Real-time video over GPRS
- ✔ Real-time reporting of battery, temperature, alarms (time stamped recorded films)
- ✔ Monitoring and remote data via Smart-phone application & HTML5 web apps
- ✔ Embedded video and data server
- ✔ Adaptive network configuration
- ✔ Worldwide network capabilities with private IP
- ✔ Battery powered, fully autonomous system
- ✔ External BUS: CAN, RS232, Ethernet, I2C, 1-wire, USB, GPIO

Sentinel 280L

2J

antenna conceptor

european manufacturer

your partner for antenna solutions

2J is an established company providing antennae solutions for various telematic applications. Highly qualified design team utilizes latest design methods focusing on high quality, short delivery times and competitive pricing.

- development and production in Slovakia/UK
- 3D/EM modeling
- rapid prototyping
- customized solutions
- anechoic chamber
- RF cable assemblies

external antennae

embedded antennae

low profile antennae

combined antennae

To find out more about 2J products and services
visit **www.2j-antennae.com**
or email **sales@2j-antennae.com**

COMBIVOX SECURITY PRODUCTS

WE APPRECIATE TELIT'S TECHNICAL SUPPORT AND GOOD QUALITY.

Fulvio Facecchia, *Marketing Manager*

FACTS

Combivox SRL Unipersonale
ufficioacquisti@combivox.it

System

Multivox GSM a GSM phone dialer with keypad

Which Telit module do you use and why?

In our system, we use the GC864 for voice calls and SMS messaging. We selected Telit for its reliability.

Features

- ✔ 4 speech alarm messages
- ✔ 4 input sms messages
- ✔ 16 telephone numbers
- ✔ Programming through keypad and LCD display
- ✔ Remote programming through GSM modem or locally through a PC
- ✔ Multilanguage menu
- ✔ GSM functions: automatic SIM expiry, signal strength, credit balance remaining
- ✔ 2 OC outputs programmable remotely or through free-of-charge SMS
- ✔ Remote query capability for alarm status, SIM expiry, credit remaining, and programming of 5 telephone numbers

Multivox GSM

>> Combivox SRL has been in operation since 1978 as a manufacturer of security systems for both home and industrial use. Rich know-how acquired by the company in the field of telecomunications made possible the development of revolutionary products that have changed the security market. In fact, the Combivox GSM phone dialer is and has been the industry's first in Europe and worldwide.

Combivox was the first company to apply a GSM engine to electronic security alarm devices. The application was determined by a simple requirement i.e. to build a device capable of providing a higher level of resistance against tempering or sabotage.

Since the early 2000s, Combivox has been using various models of Telit GSM engines in its devices including the GM862 and the GC864. Combivox is currently using the Telit GL865 engine because it is innovative and it can be easily soldered. Additionally, the GPRS capability allows us to use the same GSM terminal to channel data via the Internet and not only the voice channel. Continued use of Telit modules over the years has also been determined by the good service we receive from Telit; and we are also proud to be able to say that the sharing of Combivox's know-how in the GSM field has allowed Telit technicians to improve their products.

The implementation of a GSM communicator in the remote control panel has broadened its functionality and performance allowing it to send voice messages via SMS, or system information easily and quickly.

The GSM voice menu channel makes it possible for the user to manage key functions of the device remotely. Today, even over GPRS WEB, the user is able to remotely manage system functions, simply by browsing with a smartphone or tablet, since the web pages make functional access quick and intuitive. <<

EXPERT'S OUTLOOK

M2M TAKES A STAND ON SECURITY

Peggy Smedley, *Editorial director of Connected World Magazine, and host of The Peggy Smedley Radio Show*

www.connectedworldmag.com

>> A confluence of different technology trends are helping to ensure safety and security become more realtime than ever before. Many of today's m2m applications will still only require low data rates to continue to be successful – fleet tracking and engine diagnostics. However, there are other areas that will greatly benefit from the increased data speeds.

Take the progression to LTE (long-term evolution) as an example. General high-level requirements of the LTE network, such as reduced cost per bit, reduced device power consumption, and packet-switching optimization are well aligned with the needs of m2m. Using LTE in remote surveillance, for instance, HD video could be transferred in its original quality to assist with monitoring realtime situations via CCTV, as well as benefiting investigative proceedings with improved quality for identification purposes.

Surveillance video for the government is a relevant example. Digital video in high definition can be transmitted with virtually no delays or buffering from remote sites to monitoring locations, such as police departments or traffic-monitoring organizations. This would allow for more complete and timely analysis.

Homing in on a practical use case for public safety, let's take a closer look a video surveillance camera located at a local transportation hub, like a bus stop or train station, in a high-risk crime area. The camera is monitored by the local police department and is preprogrammed to watch for persons not following a certain arranged pattern of behavior, such as walking into an alleyway behind the bus stop. When such an action takes place, an alert is sent to the authorities who then decide whether or not to take action or to monitor the situation more closely.

In such a case, the video-surveillance camera is connected via wireline, yet also backed up wirelessly to ensure redundancy. But the camera also contains embedded intelligence that provides analytics that help to capture movement and manage the associated data for the person who makes the decision as to whether or not the suspicious action warrants further attention.

Not all levels of security rely on high-speed data networks, nor do they monitor fixed assets for that matter.

BUILDING ON M2M

Existing m2m technologies play a key role enabling asset security across multiple vertical markets. Take the construction industry as one example.

One might think that equipment theft in construction isn't all that common. After all, moving heavy equipment off of a jobsite shouldn't go unnoticed. However, organized equipment theft rings continue to pop up across the country. In fact, millions of dollars of equipment is stolen from construction sites and farms every year. Organized theft rings are likely to develop in areas with a high concentration of equipment and a large number of potential buyers of used equipment. A report published by NER (National Equipment Register) cites several factors that contribute to theft, including the high value of heavy equipment, opportunities to sell stolen equipment in the used-equipment market, low risk of detection and arrest, and poor equipment and site security.

The good news is m2m is changing the way equipment managers are monitoring fleets, improving the chance of recovering stolen assets. In 2007, NER reported only 6.5% of all stolen equipment was recovered. Today, NER says approximately 19% of stolen equipment is recovered. While the numbers

are still low, the trend toward recovering stolen equipment is moving upward, and this is due in part to advancing technology.

Telematics collects and disseminates vehicle-tracing data through a wireless network in order to track location and machine health. This not only allows users to find stolen vehicles, but also tracks equipment maintenance in order to alert a user before an asset needs servicing. Here is how the technology works: hardware installed on an asset collects data about the equipment location and transmits the information via a cellular or satellite signal to software where a realtime decision is made.

While cellular is commonly used for these tasks in metropolitan or suburban areas, these signals don't reach some of the more remote and rural locations. This is where satellite comes in. While this method of connectivity has a low level of adoption in construction due to a hefty price tag, a higher rate of data transfer could make satellite more cost effective. IsatData Pro is a new low-rate data service. IsatData Pro is being sold directly to manufacturers and distributors, but the end result of a higher rate of data transfer will make satellite more suitable for new markets.

So who adopts the technology? Some technology-savvy construction companies are working directly with key players in m2m to implement telematics within their fleets; however, this scenario is still somewhat rare. It is more common for many of the North American manufacturers to include a telematics system standard on new equipment. For example, this past year Caterpillar announced its redesigned Cat Product Link. The Product Link hardware is installed in Cat machines in the factory – and comes standard on new equipment. The hardware collects data about equipment health and usage and transmits the information via cellular networks in metropolitan areas or low-Earth-orbiting satellites in rural or isolated locations. The hardware disseminates data wirelessly to the VisionLink interface, allowing for scheduled and exception-based reporting. John Deere also offers a telematics solution – JDLink – that collects, transmits, and manages information about where and how construction and forestry equipment is being used, as well as critical machine health data.

It is only a matter of time before we see that percentage of recovered construction equipment increase even further. As technology increases the risk of detection and arrest, the organized crime surrounding equipment theft could go down.

Security continues to be a market ripe with opportunity for m2m. Existing machine-to-machine technologies are playing an active role across the board. Many believe with the emergence of high-speed networks, such as LTE, the potential for even better solutions are right around the corner, helping security become more realtime than ever before. <<

Vita

Peggy Smedley is an internationally known speaker and highly respected personality in the media world educating businesses and consumers on the latest technological advances shaping everyday lives.

An outspoken advocate and supporter of connected devices and machine-to-machine technology, Peggy is the quick-witted host of The Peggy Smedley Show, the editorial director of Connected World magazine and its sister publication Constructech, as well as the president of Specialty Publishing Co.

Based in the Chicago area, Peggy is a renowned author and an award-winning editor having earned numerous honors for editorial excellence. She has also been a guest on television business and news programs and has been a voice on many national commercially syndicated radio shows.

Connected World magazine is the definitive resource on connectivity trends and machine-to-machine communication. As a multi-media resource – magazine, its website, and The Peggy Smedley Radio Show – all have proven to be the authoritative voice that set the direction for influential individuals looking to take m2m innovation and emerging technology to the next level. By shaping the way readers embrace m2m and connected devices, Connected World helps make the present look more like the future.

EXPERT'S VIEW

TAPPING THE HUGE HEALTH CARE MARKET

BY RESHAPING THE PUBLIC'S PERCEPTION OF REMOTE MEDICAL CARE

Wisely Li, *Section Manager of Cloud Service Technology Center, Innovative Digitech-Enabled Applications and Services Institute (IDEAS), Institute for Information Industry (III)*

www.ideas.iii.org.tw

>> With the rapid change in global demographics, health care for the elderly has become one of the areas of applications in machine-to-machine (m2m) with greatest potential. According to the latest report "Global Telemedicine Market Analysis" from MarketResearch.com, the global telemedicine market is anticipated to grow at a CAGR of around 19% during 2010 - 2015.

Market growth will be driven by efficiencies gained from the implementation of automated processes. In order to satisfy the needs of different groups however, differentiated and localized services will be key to success for m2m application in this space. Wisely Li, Section Manager of the Cloud Service Technology Center, Innovative Digitech-Enabled Applications and Services Institute (IDEAS), Institute for Information Industry (III), who has been a keen observer of the remote treatment market and its technological development, spoke with Telit about opportunities and challenges facing Taiwan's m2m medical care industry.

According to Section Manager Li, Taiwan's health insurance system is already well-rounded. So when developing remote medical care, one has to focus on providing health care based on the needs of medical institutions and then move on to expand into various value-added services. As for technological development, at the proof-of-concept stage, the R&D team should first investigate the core values of remote medical care to create various scenarios for the application of technology and then draft matching proposals to proof the technology. All applications must be run under private cloud infrastructure to ensure data integrity. Later the team should have professional medical institutions verify that expected cost benefits can be achieved when data is maintained and controlled consistently. Only when this is completed will the team then be able to work with relevant medical service providers to get proof of service and then aim for service commercialization.

Take self-monitoring of blood glucose for example (see figure 1). The diabetes patient checks her/his blood glucose level daily and sends the data along with daily diet and exercise records via computer or mobile phone to the hospital, which monitors the information in real-time for change in the patient's medication and blood glucose and in return provides customized health education. The patient can also communicate with the hospital via telephone, texting or email if necessary. Besides supporting the medical care operation, the computer application software acts as a virtual heath educator or health

assistant providing personalized interactive heath education teaching on a case by case basis. All interaction records are fed back into the computer system so the heath educators can collect and process this information making case management more efficient. Furthermore, the huge human resource cost savings from remote medical care can be directed towards improving the quality of medical services.

When it comes to the proof-of-business stage, the goal is to test the application software on all kinds of interactive service delivery devices and to ensure that both the payment and revenue models are viable when commercialization begins. For the end customer, the needs of different groups must be differentiated and satisfied in terms of the professional service demand type and message delivery speed. Also it must be proved through the Design Lab that the expected ROI can be achieved. Overall, long-term care and health management for corporate employees are areas that demonstrate vast potential for m2m application in Taiwan.

Whenever remote medical care is mentioned, people always show concern about data accuracy and transmission security. For these two challenges, Li said, Taiwanese laws require that all medical equipment in Taiwan obtains either an official certification from the Taiwan government or from the U.S. FDA. In addition, equipment for quality control deployed to medical institutions, regularly helps users keep remote care equipment calibrated. And thanks to the rapid pace of technological development, this equipment is able to automatically transmit its data to back-end data processing centers for personalized health analysis. This automatic and personalized service processing not only significantly reduces human error but also improves the service quality of case managers. To ensure protection of patient's privacy, all data transmission and storage must be done over a private cloud infrastructure with security technology as sophisticated as that used by the banking industry.

Currently, the biggest challenge confronting remote medical care in Taiwan is designing application software that is more attentive to users' needs so that they can confidently trust it. But that's easier said than done. To expand Taiwan's remote medical care market will take efforts from all parties involved. When that happens, we shall be able to change users' habits and in turn promote reshape the sector. <<

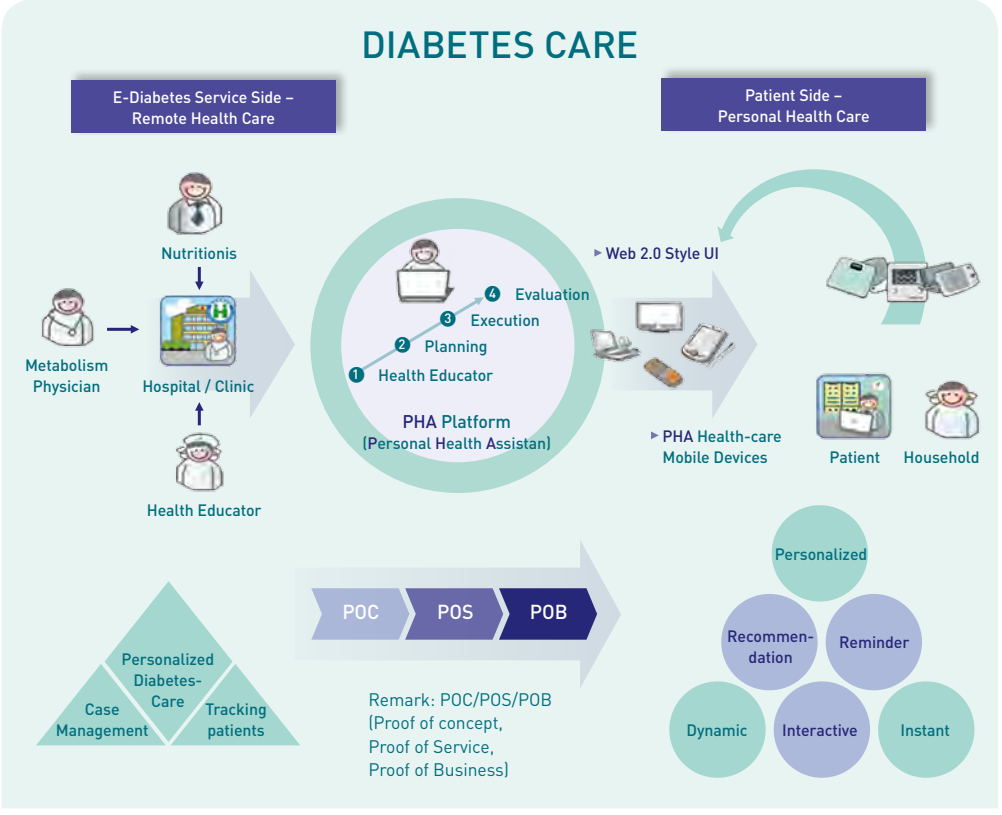


Figure 1: PHA for Diabetes Care Scenario (source: III)

CASE STUDY

USING THE WIRELESS TECHNOLOGY AND THE "CLOUD" TO REMEDY HEALTHCARE

Kent Dicks, *MedApps*

>> The ubiquitous conversation about the "Healthcare Crisis" in the last several years has created the environment necessary for taking action. The facts are well established: the population is living longer and more people are getting sick, with fewer professional resources to care for them; meanwhile healthcare costs continue to rise at an unsustainable rate. The sheer magnitude of the situation causes medical care to be doled out in a reactive and more costly manner, as medicating and hospitalization are increasingly utilized.

Payers, providers, and others who are financially responsible for patient populations across the spectrum of care, have demanded relief and need immediately actionable solutions.

MedApps has developed a Remote Health Monitoring Platform, using cloud computing, m2m and other wireless technologies, that can help these organizations connect with more people under their care, more efficiently. MedApps effectively links patients with their care providers and electronic health records in a simple, streamlined fashion to enable proactive healthcare management and take pressure off care providers, while driving down costs in the healthcare sector.

Telehealth Emerges

Telehealth began as the utilization of electronic communications to extend care services to patients remotely, outside of a clinical setting. Remote patient monitoring (RPM) is ideal for managing chronic diseases such as hypertension, CHF, and diabetes. The objective of RPM is to stabilize and stay ahead of the condition – proactively avoiding a more costly healthcare scenario. Consistent, accurate data and adherence to prescribed therapy is key to success.

While initial telehealth systems have demonstrated solid efficacy, widespread adoption has been hindered by high cost and lack of infrastructure to support deployment and maintenance of equipment. Typically, these systems are cumbersome, wired to a fixed point of care, using proprietary equipment that is often complex for the end user to operate – bringing the perception that their cost and static nature outweigh their benefits.

MedApps®
MOBILE HEALTH MONITORING

www.medapps.net

HealthAIR with devices

Previous efforts disappointed because a core set of challenges had not been addressed. Affordable technology had to be developed and widely accessible in order to be utilized in an effective manner, and a streamlined connectivity and delivery platform had to be put in place.

Shifting to mHealth

Advances in cellular technology, the internet and cloud computing over the last decade have made the benefits of telehealth more accessible than ever before. MedApps has played a key role in establishing a new "mHealth" (mobile telehealth) eco-system – featuring smaller, lower cost, mobile devices that are simple to use and dynamically controlled through the "cloud". MedApps' dedicated devices provide a simple, automated communication link between retail health monitors – like glucose meters and blood pressure monitors – and users' personal health records or their care provider's electronic health records (EHR).

The MedApps System has made the efficient aggregation of near real-time health data easier and more affordable than ever. While the data is vital, user adoption and patient compliance are equally critical to the success of any remote health monitoring program. Without them, the true potential of enabling people to take a more active role in their health management can never be realized.

To promote adoption, MedApps designs its products to fit discretely into users' lifestyles; along with flexibility, simplicity is a must.

While HealthPAL is MedApps' wireless solution for integration with peripheral Bluetooth health monitors, the new HealthAIR connects via cable to incorporate lower cost USB monitors. The design team's objective in its development was to make HealthAIR as small and discreet as possible to minimize the perception of "clutter" associated with wires running here and there. Moving to an even smaller form factor posed challenges, but the team found a perfect fit with Tellit's GE865-QUAD GSM module. The small size and low profile allowed the HealthAIR to be very compact without giving up functionality or incurring prohibitive costs.

HealthAIR has been successfully rolled into MedApps' line of technology solutions products that work invisibly in the background – allowing the patient to focus on managing their condition and complying with their prescribed therapy.

Build the Platform & They Will Come

First generation telehealth demonstrated that throwing new devices at doctors and nurses and expecting them to thankfully incorporate the latest gadgets into an already over-burdened system was not a recipe for success – dropping off the latest app on the virtual doorstep of healthcare providers is no solution.

These lessons are also seen in the technology industry as a whole. If a product or service doesn't make life easier for the user, it will fail in the market. With this in mind, MedApps' goal was to move beyond just making devices, and to provide a platform that would ensure the collective success of the mHealth Eco-System bringing the promise and benefits of remote patient care to more people than previously feasible.

The solution was in the "Cloud"

The new era of technology has become less about the product and more about the services and eco-system that surround it. For example, iPad and Kindle are merely vehicles to deliver the value of the infrastructures that Apple and Amazon have created.

That's what MedApps' CloudCare Platform is about: providing efficient, scalable, cost-effective connectivity, with flexible integration to support hardware and firmware in the field. MedApps utilizes an intelligent cloud-based environment to distinguish itself from their hardware-based competitors at every point that touches the care provider and the patient.

The open cloud-based platform facilitates easy integration with different OEM devices and EHRs, allowing MedApps devices to connect to peripherals in a "plug-and-play" model, automatically downloading and configuring profiles and drivers, while data is seamlessly integrated into the clinical back-end – all in the "cloud".

As the healthcare industry evolves, standards and regulations surrounding it will do the same. Similar to using proactive steps to effectively care for people, cloud-based solutions provide an effective means to anticipate and address the rapid changes in healthcare technology. <<

Using MA105 HealthPAL for Home Health

CASE STUDY

LEAD A GOOD LIFE

Peter J. Rohleder, *CEO*

Lavandoo Health

www.lavandoo-mobile.com

>>Home – and self-monitoring of vital signs are becoming increasingly relevant in the prevention and treatment of "lifestyle diseases", such as obesity, diabetes, hypertension and other cardiovascular ailments. Regular monitoring of blood pressure with advanced home – and self-monitoring devices – allows the chronically ill to better manage their condition maintaining a watch on their progress together with their doctors and caregivers.

mHealth, especially in the context of "lifestyle diseases", can significantly reduce costs, improve efficiency and support a higher quality of life, wellness, and health consistent with patient's desire for living healthier, more active and independent lives. Wireless products and services represent a significant development potential within the healthcare sector. According to Berg Insight, December 2011, the number of home – and self-monitoring medical devices will grow at a compound annual growth rate (CAGR) of 18.0 percent between 2010 and 2016. In the US and Europe alone it is estimated that for approximately 200 million people home – and self-monitoring is becoming an ever more important prevention and treatment option.

Lavandoo Health, having recognized this potential, adopted a three-pronged approach with its 'Lead a Good Life' healthcare & lifestyle coaching services which consist of leading edge medical devices with full mobile connectivity, a mobile and web-based 'Lead a Good Life' lifestyle coaching platform for "lifestyle diseases" (obesity, diabetes, high blood pressure or cardiovascular problems) and 'Lead a Good Life' Smart Clinics. This concept is grounded in a patient-centered approach geared towards promoting lifestyle, wellness, and health wherein major emphasis is put on self responsibility of patients and users. Cultivating a data driven participatory culture results in a shift in the interaction between doctors and patients, where the doctor becomes more of an interpreter, coach and trusted advisor and the patient is responsible for capturing all relevant long term vital-sign data to enable customized treatments.

At the forefront of societies' health challenges are "lifestyle diseases". Political spheres in many countries around the world have realized that mHealth can enable more informed decision making and enhanced quality of prevention and care. In January 2012 the President of Colombia, Juan Manuel Santos, and his Minister of Health Dr. Beatriz Londoño announced the main objectives of Colombia's strategic public health policies for 2012-forward to be: 1. strengthen prevention and health promotion – the President reiterated the phrase "prevention is better than cure"; 2. improve the quality of care, which includes the humanization of services and utilization of best suited mHealth technologies.

How such innovative and far sighted public health policies might get implemented can be gleaned from the collaborative solution approach started in Colombia by Lavandoo Health. Our 'Lead a Good Life' medical devices, system, and platform enable people to capture, transfer, process, interpret and store health and vital sign related data in order to assess and improve their wellness and overall health situation. We realized that once we triggered people's interest in their health status and gave them easy-to-use self monitoring medical devices to capture their dynamic vital sign data, that there would be a fair chance they would change and try to live healthier, more proactive lives.

Telemedicine helping patients live self-responsible lives leveraging connectivity technologies in the healthcare industry allow for new care models and better patient care. Therefore we have started a project that includes a telemedicine solution: Patients who do not live close to leading medical institutions can be looked after much more effectively, connected to state-of-the-art medicine, expert diagnosis and treatment and, through active, ongoing prevention and monitoring, take personal responsibility for their lives. The controlled release and monitoring of medical data by patients themselves helps minimize potential conflicts, since the clear advantages of controlled use of the patient's medical information outweigh possible drawbacks.

India was selected as the pilot region for this project. The country is one of the largest "direct payment markets" in the world since only some five per cent of the population has health insurance. "Lifestyle diseases" are extremely prevalent in India. The World Health Organization (WHO) estimates that approximately 100 million people are affected by diabetes and the number of overweight and obese people is approaching the 200 million mark. 'Lead a Good Life' mHealth solutions offer state-of-the-art medical equipment and platforms to clinicians, nutritional consultants and fitness coaches, who collaborate with their patients to deliver better prevention and active countermeasures to these diseases.

Blood Pressure / Blood Sugar Business Model

clue medical

The Middle East at the forefront of mHealth

Middle Eastern countries are equally affected by "lifestyle diseases". In fact, over 40 per cent of the population in that region suffers from diabetes and/or obesity. The reasons for this are unhealthy diets, lack of exercise, and little awareness of health issues or health education. There we discovered that the interest for "high-tech" medical products and services is exceptionally high, coupled with a very open, warm and mutually trusting partnership at all caregiver levels. Of particular importance to tackle the unsustainable burden of "lifestyle diseases" in all Middle Eastern societies is a on-the-ground sustainable commitment to local support and in particular support from individual health institutions, doctors and caregivers adopting and using leading-edge mHealth solutions to fight such epidemics. The high-quality standards on the ground for example in Saudi Arabia, Qatar, Abu Dhabi with excellent hospitals and highly committed teams of medical personnel represent huge challenges, but also opportunities for providers of mHealth in the region. New, innovative telemedicine solutions and comprehensive systems are essential if the challenges of the enormous burdens on the various healthcare systems are to be overcome.

The collaboration between numerous partners is an essential prerequisite for market success. In the healthcare sector, no company, big or small, can by itself cover the mHealth value chain. For this reason, Lavandoo Health works together with dedicated strategic partners. This begins with technology support in the m2m sector, the integration into existing mHealth solutions for the secondary market and continues through to the establishment of joint, scalable business models. When we developed the Lead a Good Life Qikster prototype – a Bluetooth m2m gateway – we received tremendous technology support from Telit over the course of development cycle, covering the use of chipsets, antennae and evaluation by specialized Telit engineers of our design. This means that even a smaller company as we are is able to develop the best possible technical solutions with superlative efficiency. So we remain constantly on the look-out for local and global technology, marketing and sales partners who can help Lavandoo Health realize its global ambitions through strategic partnerships.

Where then, is the industry heading and which are the hurdles to overcome along the way? mHealth is still in its infancy; technologies and support platforms are still very novel and are only now becoming suitable for mass deployment due to falling prices, availability of easy-to-use medical devices, smart phones, tablet computers, and ubiquitous internet access. This effort is not about silo technology, but a means of bringing efficient, innovative and easy-to-use mHealth services to the market that is governed by the infrastructure supporting them, including broadband roll-out and comprehensive global data networks coupled with falling data transfer rate plans. Further, the willingness, on the part of cost bearers, to include mHealth services in their reimbursement schedules represents an essential step for mass availability of such mHealth solutions. Here, our 'Lead a Good Life' products and systems have a major role to play since we can integrate easy-to-use "vital sign sensors" in the context of comprehensive, vertical mHealth solutions.

Our individual health and health consciousness will change in the long term as a result. For example, sensors in our clothes or in the driver's seat of our cars might constantly measure our heart rate, ECG and many other vital signs and transfer the data to medical call centers tasked with monitoring our individual health in real time. High-risk cardiac outpatients with arrhythmias or Atrial Fibrillation can be monitored with excellent efficiency by their doctors with something like our Lead a Good Life clue medical. Of particular importance for the success of mHealth solutions however, is a more positive attitude by society toward the healthcare service chain and greater willingness by patients to shoulder their individual responsibilities within the health and wellness chain for their own health. Good health cannot be taken as a given. 'Lead a Good Life' Lifestyle coaching services can support active lifestyle changes but personal good health comes with an individual commitment: What can I actively do to have a healthy long life – and not ask society for easy health solutions. Ask what you can do yourself to improve your health. We, like President Santos of Colombia, strongly believe: "prevention is better than cure". <<

Vita

Peter J. Rohleder is Founder and Chairman of Lavandoo Group AG in Frankfurt, Germany. In 1984, Rohleder worked as Managing Partner and co-founder at SCG St. Gallen Consulting Group. After a merger with Mercer Management Consulting he became a Vice President and Senior Partner. In the years 1990 through 2008, Rohleder was board member for various national and international companies. Rohleder studied Business Administration and Law at the St. Gallen Graduate School of Business Administration (HSG) and the University of Zurich. In 2003, he was awarded the prestigious European Innovation Award by the Wall Street Journal Europe and has twice been a finalist for the Swiss Technology Award.

CASE STUDY

Cardiojet

THANKS TO SUPPORT PROVIDED BY TELIT HQ AND THEIR LOCAL PARTNER WE WERE ABLE TO BRING INNOVATIVE PRODUCTS FOR HEALTHCARE IN A SHORT PERIOD OF TIME.

Andrei Lebedev, *Board director*

FACTS

Medical Telemetric Systems
www.telmed.ru

System

Cardiojet – portable electrocardiograph

Which Telit module do you use and why?

We use the GE865-QUAD because of its small footprint, performance, and quad-band GPRS capability for worldwide operation.

Features

- ✔ 12-leads ECG
- ✔ Rechargeable Li-Po battery
- ✔ Easy to use
- ✔ Low weight and size
- ✔ GPRS and Analog/acoustic transmission
- ✔ Voice prompts
- ✔ Voice tag recording

Cardiojet

>> Medical Telemetric Systems specializes in research, design and manufacturing of cardio-telemetric devices for diagnosis of cardiac symptoms and remote monitoring of patients with chronic heart disease. These portable devices are suitable for use by physicians in their medical practices and by patients themselves at home, at work, or any place else they require. The company focuses on cutting edge technologies that bring medical care closer to the patient enhancing their quality of life.

Cardiojet is a small and easy-to-use electrocardiograph. It records the patient's ECG and transmits it to a medical center equipped with the Cardiojet Terminal software, where qualified cardiologists can access the patients' ECG received and perform evaluation and diagnostics. With a simple push of a button, patients can send their ECG for evaluation from virtually anywhere: home, office, etc.

The first device in the Cardiojet family was designed to transmit ECG via the acoustic channel only, utilizing a telephone voice call. Then, taking guidance from physicians' feedback, concerned with even minimal distortions to the ECG signal that could occur during transmission over analog channel, we added the ability to transmit the ECG over the digital channel.

Current versions of Cardiojet devices include a GPRS communication module, which allows for clear, undistorted

transmission of the ECG signal. Our choice for the GPRS communication module was Telit's GE865-QUAD because of its small size, rich set of features, high level protocol support, and low-power consumption. Among others, we employ some unique features of the GE865 such as voice digitizing, which we use to record a voice tag for patient identification. The digitized voice tag is transmitted via GPRS along with the ECG data to the medical center and is used for identification against the patient's records.

Thanks to support provided by Telit HQ and their local partner we have been able to bring innovative products to the healthcare market in a short period of time. The current version of Cardiojet allows transmission of ECG data over a digital communication channel, while still supporting transmission over an acoustic/analog voice channel. This product truly brings a new level of comfort and mobility to the cardiac patient's life. <<

SEQUOIA Technology Group Ltd

TELIT HELPED US SIGNIFICANTLY ON THE VERY COMPLEX GATEWAY MODULE SOFTWARE WHEN SETTING UP THE DESIGN WITH MCEL IN AFRICA

Tim Clayton, *Wireless Business Manager*

FACTS

Sequoia Technology Group
www.sequoia.co.uk

System

Sequoia Expedited Results System (SERS)

Which Telit module do you use and why?

We used the GC864QUAD-V2 because of GPIO, Python, easyGPRS.

Features

- ✔ Very low cost GPRS enabled thermal printer using commonly available 58mm paper rolls.
- ✔ Gateway enables true scalability in number of printers served by it – the only limit is server resource.
- ✔ Gateway and printers perform robust handshaking to ensure 100% of sent data to a printer is received 100% of the time and correctly.
- ✔ Gateway queues messages for when the printer is available/ offline – no data lost.
- ✔ No user training required for printer – just plug it in.
- ✔ Printer runs on 12V battery or AC power.

SMSprinter 055

>> Sequoia has designed, tested and piloted a GPRS based printer and Gateway system to allow central HIV test laboratories to print test results directly in any African rural clinic with GSM network coverage. Sequoia has worked extensively with The Clinton Foundation in Mozambique and the country's Ministry of Health (MOH) to realize this HIV Early Infant Diagnosis project. The project aims to reduce the instance of HIV pass through from mother to child at birth by getting HIV test results communicated back to the local clinic very quickly compared with months it has traditionally taken with old delivery methods. The Sequoia system utilizes the Telit GPRS GC864QUAD-V2 module in its thermal printer technology to vastly reduce the time and cost of transporting results from the laboratory to clinics – from months to a few days. Sequoia ensured confidentiality, error free and guaranteed complete delivery of all test results within its complex gateway and automated monitoring software. The SERS system is scalable on a continental scale. Central labs in each African country monitor the whole process and can interrogate every clinic's results statistics and print status. The system is very low cost and is entirely scalable. At every clinic with its Telit powered printer all messages sent, pending or queuing are viewable from one (or more) screens enabling the test lab to review any messages queued but not yet downloaded and to interrogate the clinic as to the reasons. African countries like Mozambique are expanding their capabilities to diagnose and treat HIV Mothers-to-be because the pass through of HIV from Mother to child is around 40% if untreated versus <1% when treated before birth. Mozambique now has 270+ regional clinics each with a Sequoia GPRS printer and has fully embraced the SERS system. The Sequoia system helped over 20,000 children in the first 6-month pilot run according to Mozambique's MOH. The Clinton foundation is now installing thousands of Sequoia GPRS printers and software into Kenya, Botswana, Zimbabwe, and other countries as a result of the pilot in Mozambique. This project was kicked-off by The Clinton Foundation calling Sequoia Technology Group Ltd – acknowledged cellular wireless experts in the data area - to develop a SERS system for CHAI. <<

EXPERT'S OUTLOOK

OVERCOMING HURDLES IN THE WAY OF WIDER M2M HEALTHCARE

Jeremy Cowan, *editor and co-founder of M2M Now magazine and www.m2mnow.biz*

www.m2mnow.biz

>> Corporate take-up of machine-to-machine (m2m) connectivity is expanding fast, and yet there is a growing sense that the business-to-business opportunity may one day look like loose change if consumer applications find a receptive audience. However, to deliver profitable, consumer-focused m2m services, providers need to develop effective ecosystems and establish viable business models.

There's no shortage of market research in the m2m arena, and much of it is pointing to exciting prospects in business-to-consumer (B2C) services. Only some of it, however, is pointing to the very real business challenges facing m2m service providers here.

In its report entitled 'M2M Global Forecast & Analysis 2010 – 2020', at the end of 2011, Machina Research estimated that global m2m connections will rise from one billion at the end of 2010 to 12 billion at the end of 2020. And, says the study, connections will be dominated by consumer electronics (such as cameras, TVs, and music players) and intelligent buildings (handling security, air-conditioning, heating & ventilation).

James Brehm, senior strategist and consultant at Arizona-based research firm, Compass Intelligence wrote in M2M Now recently, "We are on the cusp of an era where every device that can benefit from being connected via a cellular connection to the internet will be connected to the internet and other devices. These already include cars, electricity meters, health and wellness devices, surveillance and other complex systems; and the process isn't always a simple one.

"To meet the promise that m2m holds, the industry requires an ecosystem that enables non-traditional companies to look for new business models, simplify and accelerate the 'on-boarding' process, hide the complexity from the end user, and thus provide a simple and seamless customer experience," said Brehm.

eHEALTH BARRIERS AND BENEFITS

But recently the most focused assessment of the consumer opportunity has come from Market Strategies International. Keri Christensen, vice president of the company's Communications Division. MSI led a series of interviews with 1,500 consumers aged 18 and above to establish whether emerging m2m services were even on the radar of most US consumers. Health Monitoring and Home Energy Management eclipsed the interest in Property Security & Tracking, People & Pet Security, and Mobile Banking applications.

For reasons of space here, I am concentrating on Health Monitoring. In all, 60% of those questioned said they found it very or somewhat appealing. So, if first mover advantage is what matters to you most, then consumer product development in this sector must look attractive. But let me offer a few words of caution.

Not only is there a low level of consumer awareness of the benefits of "telehealth" and "telemedicine", but there is an even greater stumbling block in the lack of a reliable business model. After all, who are the remote medicine and health monitoring services aimed at? Patients are still largely unaware of such services. Healthcare providers within doctors' surgeries, clinics and hospitals need to see beneficial clinical outcomes. While private medical insurers (especially in North America and Asia) and public health funders (in Europe and parts of the Middle East) have yet to be won over to the economic benefits of such healthcare provision.

In a tough economic climate like this, consumers are understandably concerned about how they will pay for health monitoring devices, and wonder if the cost will be borne by the insurer or healthcare

provider who benefits too. Faced with such business challenges, that 60% level of interest no longer looks so attractive, does it? And we haven't even started on the complexities of the business partnerships necessary to create and deliver effective services.

M2M HEALTH TRIALS UNDER WAY

Don't be discouraged however. There are plenty of trials and pilot projects under way or recently completed. Verizon Wireless and the US' National Institutes of Health (NIH) have begun a program in Arizona called Care Beyond Walls and Wires (M2M Now Feb/Mar 2012, page 8). And the European Space Agency is funding trials in Italy (M2M Now Nov/Dec 2011, page 26) involving medical services provider Telbios, satellite services operator, Telespazio, and satellite network specialist, Hughes Europe.

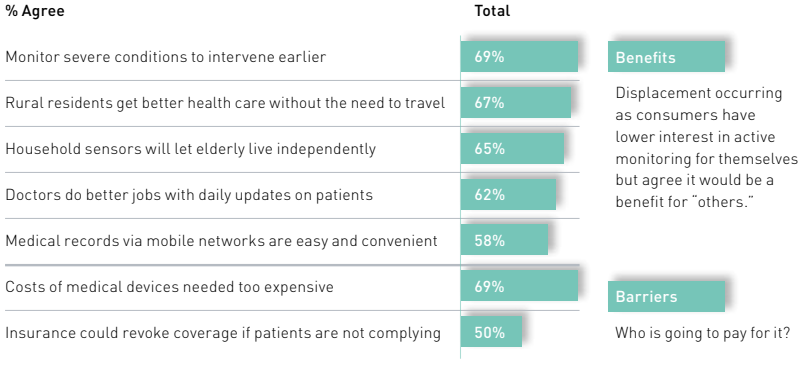
With almost a quarter of Italy's population of 60 million now aged over 65, the IGEASAT initiative (Integrated General E-care Access for homecare via Satellite) appears to have side-stepped the huge cost of expanding the terrestrial broadband infrastructure. It provides patients with:

- A daily list of activities and drugs to be taken
- Telemonitoring of health indicators such as blood pressure and heart rate
- Video consultations between patients and clinicians, and
- Treatment-related information via the patients' home TV.

To deliver this service the project required a central satellite multimedia service centre, full-time technical support, a home terminal, and an interactive TV set. Trials took place in the Lombardy region and the island of Elba. Although technically and clinically successful, work is continuing to develop a profitable business model.

The clinical evidence was positive in another telehealth study (Davis R., Continua Health Alliance Overview Presentation, v13.9) in which 89% of health agencies reported improved health outcomes after monitoring patient conditions and prescription adherence in real time. Over three quarters of health agencies (76%) reported a reduction in unplanned hospitalizations, and the same number saw better patient self-care in proactively managing disease.

Potential Benefits/Barriers in Health Monitoring



Source: Market Strategies International

THE BOTTOM LINE

The fundamental question is: will the drivers behind the creation and adoption of m2m-delivered healthcare and wellbeing services be strong enough to break the inertia of a market that – for safety reasons alone – has to be conservative in its outlook?

Yes, there are also powerful vested interests in keeping the status quo, not the least of which, the pharmaceutical companies which rely on extensive drug regimes that may be undermined by a doctor's easier intervention with non-drug therapies.

However, for those backing m2m as a means of improving healthcare in "under-doctored" regions worldwide, there is cause for optimism. Economic delivery of care will be a strong motivator for healthcare funding agencies (both private and state) in a time of falling healthcare expenditure. And as shown above, better clinical outcomes can also be achieved through m2m. Finally, patient convenience will play a part, particularly as less mobile population groups such as the elderly and the very young learn the benefits of being cared for closer to home. <<

Vita

Jeremy Cowan is the Editor and Publisher of **M2M Now** and Co-Founder of WeKnow Media Ltd (WKM), its parent company. A widely experienced journalist and editor, he has been covering voice and data communications worldwide since 1994. He founded Prestige Media Ltd (PML) in 1998, publishers of the leading telecoms business magazine and portal, VanillaPlus and **www.vanillaplus.com.**

M2M Now covers machine-to-machine communications (M2M), embedded devices, connected consumer devices, smart grids & metering, and the Internet of Things. Led by its web portal, M2M Now provides news, blogs, videos, feature articles and white papers from around the world. The magazine covers business strategies, research reports, C-Level interviews, revenue models, best practice features, and Case Studies in a wide range of industry verticals. These industries include communication services for advertising & media, agriculture, automotive, fleet management & logistics, healthcare, manufacturing, transport & telematics, retail & point of sale, security, utilities and many more.

EXPERT'S VIEW

DYNAMIC GROWTH IN THE FUTURE M2M MARKET IS EXPECTED

Dr. Walter Börmann, *VDE Director of Communications + Public Affairs*

VDE www.vde.com

>> Major opportunities currently exist for the electrical and IT sectors by way of smart grid, cloud computing and smart home technologies. However, innovative support strategies must be executed today in order to tap into the potential for tomorrow. The different technology bases on one hand and information technology on the other play key roles in all applications. Therefore, the intensive promotion of basic information and communication technologies – particularly microelectronics, embedded systems, microsystems technologies, and optoelectronics – is extremely important, regardless of current application projects, so that they can be available in the required quality and in time for future use in economically viable applications. Otherwise, we run the risk of depriving promising development in the coming years of their necessary technology base. This is the conclusion reached by the VDE study, "Basic Technologies in Information and Communication Technology (ICT)", conducted by VDE's Information Technology Society.

VDE has identified a particularly dynamic field of application in the form of machine-to-machine communication (m2m) and has devoted an entire position paper to the subject. Sustained market growth is forecast for the coming years. In the long run, m2m services and devices have the potential to establish themselves as an integral part of everyday life in an "Internet of things". "m2m is clearly a trend for the future, yet one which requires a great deal of research and development today in order to reach its full economic potential tomorrow," said Prof. Dr.-Ing. Ingo Wolff, Chairman of VDE's Information Technology Society.

Key economic roles of basic ICT technologies

The VDE study "Basic ICT Technologies" emphasizes the central role of information and communication technology as a key technology and the driver of innovation in nearly all economic sectors. Equally important are the economic significance of basic technologies and the establishment of strategic funding. In addition to the intensive promotion of current application-oriented projects, the application-independent promotion of basic ICT technologies is worthy of the highest level of engagement.

m2m communication: an endless success story?

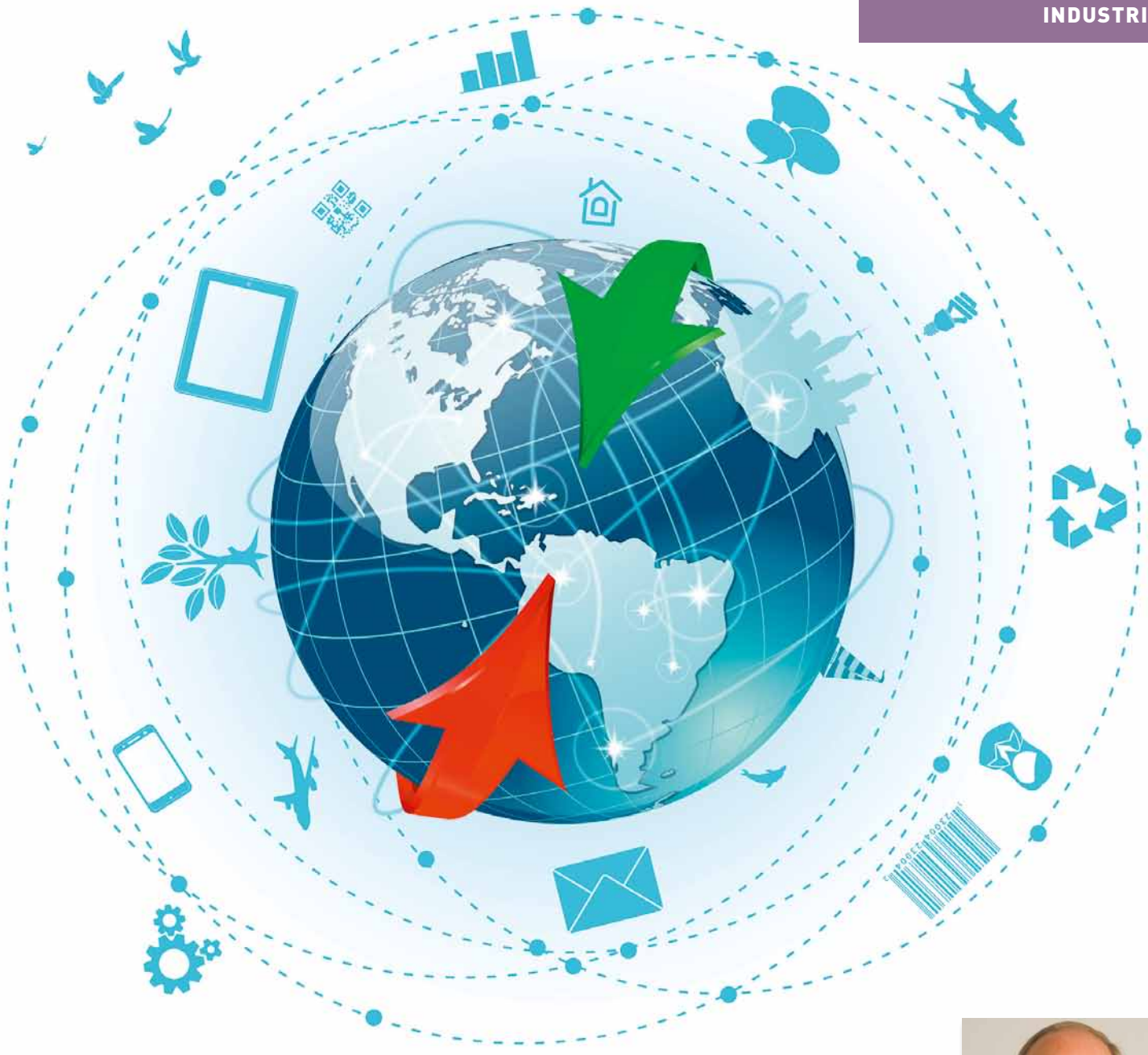
m2m is already used today in many converging technologies such as smart metering/smart grid, car-to-car communications and telemedicine. In the household setting, for example, "smart" washing machines or dishwashers with an intelligent energy system can be programmed to switch on during particularly cost-effective and resource-efficient hours. An industrial example is the remote control of industrial plant processes. Often m2m applications do not only unlock turnover and cost-saving potential, but also contribute to climate and environmental protection. And according to VDE analyses, applications developed and known today are only the beginning of a rapid era of development with no end in sight. The development potential of the m2m market is equally as great.

From m2m to the Internet of things

The nearly unlimited possibilities of m2m communication result from the fact that in principle all machines – and not just machines in the classical sense – can be networked together and communicate with each other. This makes it possible to increase the efficiency of existing applications as well as develop completely new applications. Previously isolated parts of a business process can be centrally analyzed and integrated henceforth; actuators are remotely controlled and control and regulation processes can be performed over long distances. Wireless data transmission cost-effectively opens up new channels of communication with moving machines. Problems with hardware development for the m2m terminals, which are multi-layered and complex due to the different technologies, standards and applications of the machines, can be mitigated because software can be used to imprint specific system properties onto the hardware for all standard technologies. Efficient service management will have to play a key role given the vision of dozens or even hundreds of wireless sensors in a person's environment.

The future m2m market

According to estimates from the WWRF (Wireless World Research Forum), 7 billion wireless receivers (including mobile,



WLAN, digital short range devices, RFID, and other specialized solutions) will be installed worldwide in the year 2017. One hundred billion mobile terminals are expected for 2020, the majority of which will be dedicated to m2m applications. The possibilities and the markets for future applications seem limitless. m2m especially opens new market opportunities for mobile operators and also creates the basis for new types of use and new business models in nearly all sectors of the economy – from home automation, healthcare and consumer electronics on smart grids, to the fields of industrial automation, transportation and logistics.

The m2m field provides vast (and currently difficult to estimate) potential for economic development. The examples set by fiber-optics technology and mobile communications prove the importance of the early availability of basic ICT technologies – if economic benefits are to be reaped. Today these technologies and their development into everyday life can no longer be ignored. They are mass markets and economic engines. Whoever wishes to profit from the opportunities of tomorrow must create a foundation today and pursue innovative support strategies for basic ICT technologies. And this is the quintessence of the VDE analysis.<<

Vita

Dr. Walter Börmann is Manager Communications + Public Affairs at VDE since 1991. VDE, Germany's Association for Electrical, Electronic & Information Technologies, is one of the largest technical and scientific associations in Europe with more than 35,000 members. Mr. Börmann is responsible for VDE's press and public relations, political contacts with representatives in Berlin and Brussels, VDE's junior programs as well as member services. He studied agricultural science at Justus Liebig University in Giessen.

EXPERT'S OUTLOOK

WHITE SPACE BOOST
AS M2M HITS A CAPACITY CRUNCH

Nick Flaherty, *Embedded Editor of EETimes Europe*

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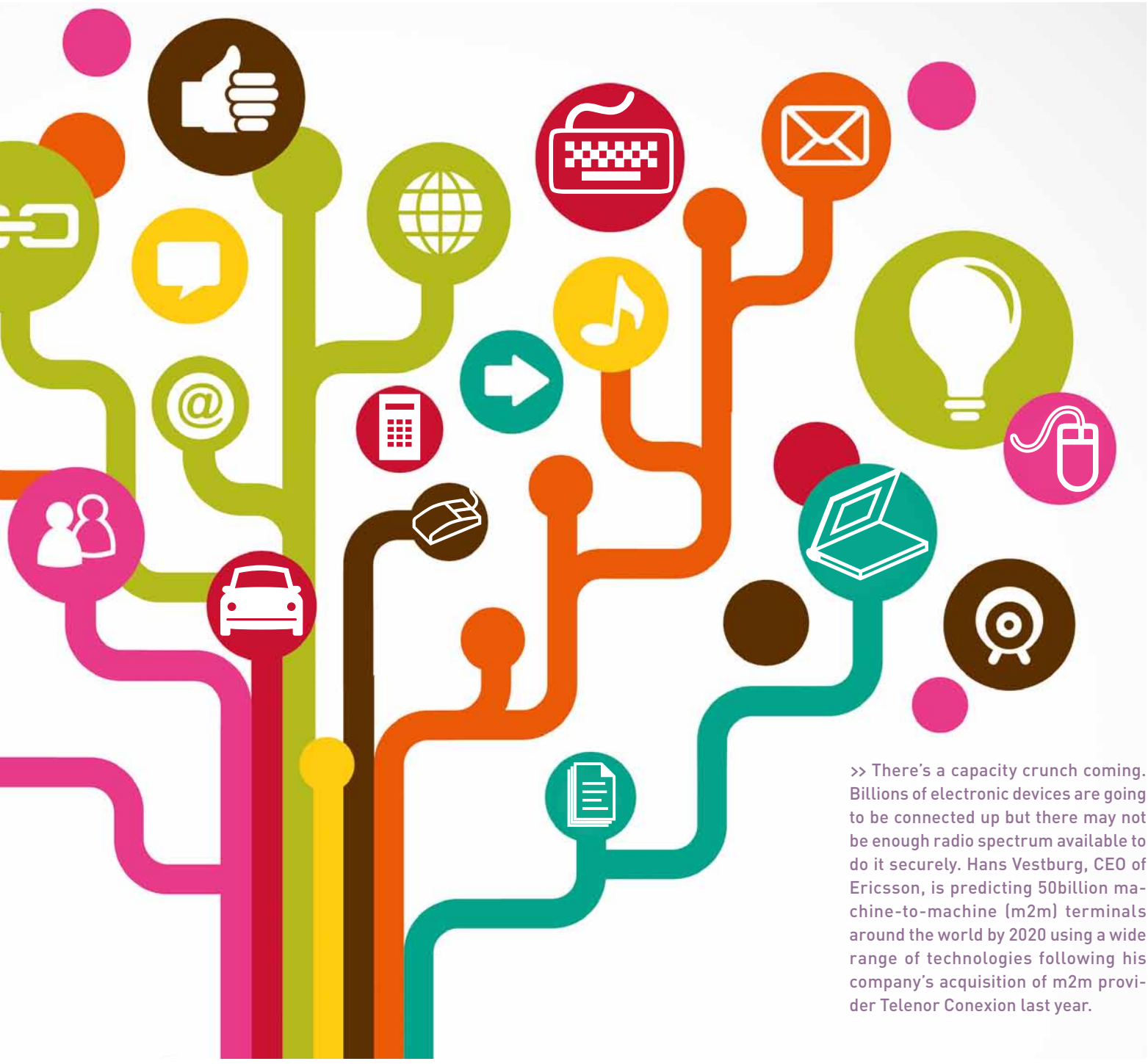
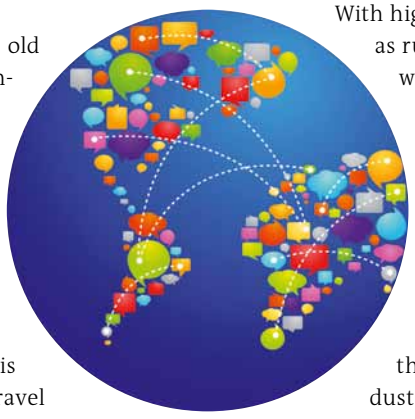


>> There's a capacity crunch coming. Billions of electronic devices are going to be connected up but there may not be enough radio spectrum available to do it securely. Hans Vestburg, CEO of Ericsson, is predicting 50billion machine-to-machine (m2m) terminals around the world by 2020 using a wide range of technologies following his company's acquisition of m2m provider Telenor Conexion last year.

Vita

Nick Flaherty is the Embedded Editor of EETimes Europe and a freelance journalist covering the electronics industry. He is based in Bristol in the UK. **www.flaherty.co.uk**

One way around the problem is some newly available spectrum, often called 'white space' frequencies, that has been released by the move from analogue to digital TV. This 'digital dividend' is opening up new radio frequencies across Europe and the United States to provide more capacity for secure m2m communications. While there are still some open regulatory and security issues, white space systems are starting to emerge quite quickly. "We should expect to see commercial volume product in a timeframe of around five years, but the first enterprise products in less than a year," stated a recent report by Cambridge Consultants.



White space uses the old analogue TV frequencies around 600MHz that are lower than cellular phones (at 900MHz and 1800MHz) or wireless networks (at 2.4GHz), both of which are also used for m2m networks. This means signals can travel further, but carry less information and are split into many different bands. While this could open up opportunities such as delivering rural broadband, it is m2m that is seen as a good match for the technology to link all kinds of electronic equipment for the 'Internet of things'. In the UK all of this is up for discussion as the regulator, Ofcom, is currently putting together plans to be launched in the middle of 2012. Similarly in the US the FCC has approved several frequencies for use with white space technologies.

In the UK several companies came together in the middle of 2011 to promote the use of white space frequencies for a range of applications. Alongside broadcasters such as the BBC, BskyB and BT there were also equipment companies such as Nokia and Samsung as well as system developers such as Cambridge Consultants and TTP. A key player in the consortium is a startup called Neul. It was formed in 2010 by the founders of Cambridge Silicon Radio, one of the most successful technology companies in Europe, to develop and build a network and devices to connect up equipment using the white space frequencies. It has developed a protocol called 'Weightless' that it wants to see as the basis of a standard and has used this to develop the first white space m2m equipment.

SECURITY

Increasingly at the heart of any discussion of the internet of things is security. With high profile scares such as rumours of hacking of water pumps in the US, security has become a major issue for m2m. As more and more devices are connected, access to them becomes vital. Whether this is to a smart meter in the home or to an industrial plant, there are a number of concerns. Hacking into a device can change billing data, determine if a house or office is empty, turn off vital pumps or even run equipment to destruction. "Security is absolutely critical and not something we will compromise on at all," said Professor William Webb, CTO of Neul and CEO of Weightless. "We envisage a level of security better than cellular including robust authentication of the network by the terminal and vice versa. For some applications like smart grid security is paramount."

OTHER TECHNOLOGIES

But white space is not the only technology available for m2m. There are other well established, mature technologies with high volumes in global markets that currently give lower power and lower costs.

The traditional GSM, EDGE and now HSPA+ data modems are used to connect up equipment, sending the same small data packets and the same technology can be easily adapted to run at the lower frequencies. Because the technology is used for mobile phones there is already built-in security with authentication via smart cards.

Xg Technology in Florida has been developing radio technologies that can 'sniff out' unused areas of spectrum. These 'cognitive radios' currently provide an end-to-end IP network in the unlicensed 900MHz band in the US that is used for machine communications, and the company has also been trialing its xMax broadband technology with the US military.

In the US the FCC has approved its rules for White Space operation and the technical requirements have been added to CFR47 part 15. UK startup Neul is working with Carlson in the US to jointly develop and market a new white space radio networking system aimed at Wireless Internet Service Providers (WISPs) that started shipping at the beginning of this year. Carlson was one of the first to implement successful TV white space-based broadband systems by virtue of experimental licenses, most notably on Native American reservations. It uses TV white-space and microwave technology to deliver full voice and data connections no matter how rugged the terrain.

There are other protocols being used for m2m. ZigBee uses the same 2.4GHz band as Wi-Fi to provide a network to link equipment together and has a standardized security protocol. Bluetooth technology is becoming less power hungry with an Ultra-Low Energy (ULE) version that is being used more for m2m links, again in that rather busy 2.4GHz band. These are both global standards with large electronics companies making equipment and driving down costs.

Israeli technology provider Ceva is also looking at this market. It has developed new software defined radio (SDR) cores that will handle 2G and 3G as well as white space protocols and is now looking for partners for the security blocks. This, along with other technology providers, will see a range of devices over the next few years to target this growth market. <<

MACHINE-TO-MACHINE:

REINVENTING EMBEDDED DEVICES FOR SMART SERVICES

Kevin D. Johnson,
Director, Connected Platforms / M2M Technologies Intelligent Systems Group, Intel Corporation

www.intel.com/go/connecteddevices

>> Machine-to-machine (M2M) technology is quietly reshaping the way we live, though most people don't realize it's even happening. And that's the way it should be.

In a modern home, why should average consumers have to know how their new washer and dryer maintain themselves or alert the manufacturer for a service call? All is done automatically. But the question we should be asking is... Are today's connected devices fully enabled for the rise of new embedded smart services? That is, services that can add new value over time, evolve to new uses, or become an integral part of your everyday home life. The answer today is likely not. This is because current devices, like consumer appliance white goods for example, can't be easily upgraded in the field to host future services, like downloading new wash cycle options, sending maintenance information, or even sending promotion information to the active display – all tied into the modern 'smart' home infrastructure.

A change is underway... Embedded design is being challenged to change forever. Although it was never hip to be a fixed function embedded device, it will soon be out of vogue and mediocre. Imagine sending an email to someone every day and never hearing back. Many of today's dumb devices will generate the same frustration in the coming years. Just as the demand for information services catapulted the Internet, the same factors are driving the embedded Internet and requiring smarter devices to play a larger role in delivering intelligent services. This also enables financial gain for innovators and services providers utilizing the 'smart' devices of the future for ever increasingly smart services.

Connecting the "Internet of Things"

One of the great enablers for the Internet is the proven path to market for entrepreneurs creating an application. Language and protocol standards are in place enabling applications to run on any server and eliminating the need to build and certify a hardware platform because of the standardized hardware and software environment (HTTP, APIs, standard PC peripherals, etc). In comparison, the value chain for the "Internet of Things" is highly fragmented and proprietary today. Deploying a new service on a typical set of embedded devices requires the coordination of many hardware, software, supply chain, and service provider players. This is complex, costly and difficult for a services innovator who only desires to write and run the applications creating the tangible value.

The pace of innovation in the machine-to-machine trend hinges on the availability of standards-based platforms that let developers do what they do best, write and deploy new services, instead of designing devices and worrying about the complexity of them working together. As a result of this ideal state, these platforms must have computing and connectivity headroom and flexibility to take on new workloads in support of next generation service models, otherwise they'll be relegated to fixed-function, non-intelligent embedded devices, which is the condition of current deployments. Essentially, machine-to-machine is a service driven concept that requires devices to be extensible and act as an open platform for future services. Knowing this, a new generation of smart devices should have the following characteristics;

1. Be simple to develop on and deploy
2. Have ample and scalable processing power
3. Have adequate application and data storage memory
4. Support on-demand connectivity and adequate bandwidth
5. Be fully and dynamically secure and self-managed
6. Be integrated with network cloud-based intelligence

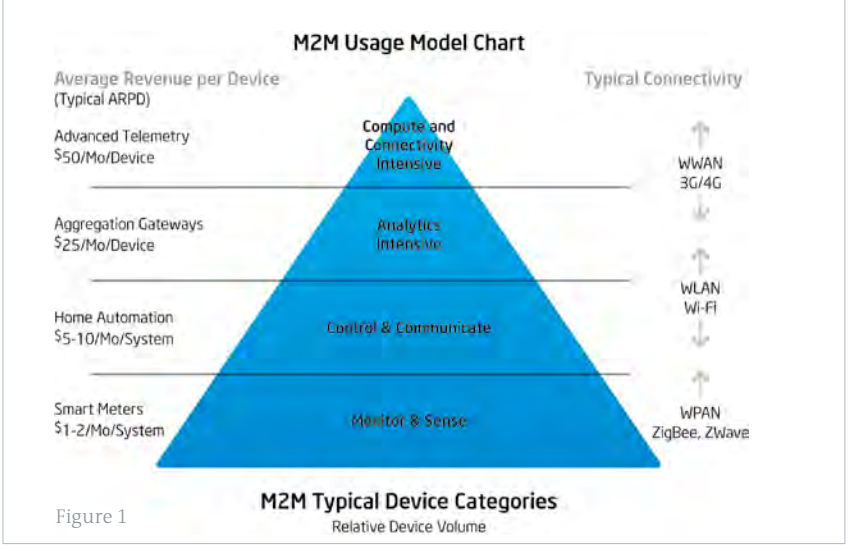


Figure 1

The justification of smarter devices cost is made possible by quicker time to market, readiness and scalability for new services, maintainability, and a longer productive lifecycle.

Revenue streams

The revenue generating potential of a service typically tracks the computing and connectivity capability of the device, as illustrated by the services pyramid in Figure 1. Devices collecting basic information and sending it over low bandwidth radio represent the largest unit volume, but typically the lowest ARPD (average revenue per device). A popular "smart grid" example is a home energy management system that exchanges information with the utilities company via a wireless service, estimated to cost a few dollars per month.

Moving up the pyramid, smarter devices will allow homeowners to automate their premises for convenience and security, to do things such as control doors, lights and appliances; remotely adjust thermostats; and view home surveillance video in the house or remotely on smart phones and laptops. Even more capable devices with cameras and GPS systems will enable car rental and trucking companies to keep close track of vehicles to bill per use, improve safety, assist during breakdowns, and closely monitor schedules.

At the top of the pyramid, devices that aggregate information or control data, perform rich analytics, or support real-time video monitoring will provide higher revenue streams. Each of these smart service classes have new revenue potential for the developers and service providers.

Reinventing embedded devices

Vehicle navigation is an application that has really taken off, and now a machine-to-machine service model using voice recognition is emerging. Imagine being on vacation and speaking into your rental car's GPS, "Navigate to the museum with the Body World exhibit". The question is; what's the most cost effective way to deploy this service? In the embedded smart device or on a data center server? Here is a summary;

Let's first take a look at the Device: Perform voice recognition on the GPS device, which requires a more capable feature set,

- **Consumer impact:** One-time additional cost of $20-50 to buy a voice recognition capable GPS device

Now on the Server: Continuously stream audio over 3G or 4G to a data-center server, which incurs extra wireless data charges,

- **Consumer impact:** Pay for hosted wireless GPS services, up to $10 per month extra, which can easily cost tens or hundreds of dollars annually.

In this example, consumers who pay extra for a more capable device are making a good investment, with a short payback period. On the other hand, consumers using devices which rely on a cloud server to perform voice recognition must pay the high cost of a constantly active radio channel. It's a fine balance.

Equipment manufacturers who build extensible devices with more computing capability incur slightly higher BOM costs, but they will offer greater value to consumers and service providers in the emerging machine-to-machine markets.

Hitting a stride

Sufficient device capability that is cost and power efficient along with easy software deployment in standardized platforms is needed. This includes computing performance, connectivity, IO, and memory. Lack of this capability is what stands in the way of making smart services effectively and efficiently work. A wider assortment of services – media, consumer convenience services, security, energy management, and more – are coming together as emerging M2M offerings provide revenue upside for the industry. Today, connected devices generally lack the computing power and headroom needed for new services that are raising the bar with respect to intelligent decision making, data translation, and network bandwidth. It would also be a challenge to get a large number of independent software vendors (ISVs) and partners to write applications (think App Store) for some of the esoteric processors found in these devices.

With this in mind, we at Intel are working hard to create smarter devices that are services-ready, extensible, and standardized. There are countless scenarios where innovators of 'smart' services will be enabled by smarter and smarter standards-based devices allowing an ever spiraling realm of possibilities. The call-to-action for the industry is to reinvent embedded devices using standards-based technologies that are simple, extensible, flexible, and integrate seamlessly with the existing infrastructure, thereby speeding up deployment and time-to-money. As the M2M trend continues to evolve, embedded design will need to emphasize highly adaptable devices, thus enabling the industry to more easily seize new opportunities. <<

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Joseph Zaloker,
Director of Technical Marketing

>> As the market opportunity for connecting smart devices and machines continues to grow dramatically, the need to test and certify these products has forced certification entities to streamline processes enabling solution development and decreasing time to market.

Overview of EMC/EMI Testing

With the proliferation of new devices equipped with radio modules coming to market, the Original Equipment Manufacturers (OEMs) of these embedded products are confronted with questions on what compliance and regulatory testing are necessary to release their product to domestic and international markets. Radio modules such as GSM/UMTS, WLAN / Wi-Fi®, Bluetooth®, GPS, RFID and many more may come pre-certified, but the need to re-test once integrated into an OEM device often still remains. As multiple radios are added to products, understanding the testing requirements and the system design become even more complex.

What EMI/EMC testing do I need to perform?

Testing for electromagnetic compatibility (EMC) is a mandatory requirement for any globally launched electrical or electronic product. Rules specify that no electrical equipment interferes with other devices and that these must be able to function properly in the presence of most electromagnetic disturbances. Each country or region has its own EMC requirements that must be met in order to receive an approval to be sold in the respective market.

Radiated emissions testing "scans" the Device Under Test (DUT) to ensure radio frequencies emanating from the device are below set FCC limits. Conducted emission testing is performed when a device is plugged into a power outlet. Conducted emissions looks for "noise" being pushed to the power grid from your product. Immunity testing subjects the DUT to RF energy across a wide band of frequencies ensuring the equipment does not malfunction or operate improperly when exposed to external RF energy.

To understand the specific testing required for a product, consult with a certified compliance testing lab early in the design process. Engaging a partner early will help you avoid costly mistakes further down the road, which could delay your product launch.

What is PTCRB Testing?

PCS Type Certification Review Board (PTCRB) testing ensures devices connecting to the cellular networks will not cause damage to the networks. Every company integrating a GMS/WCDMA cellular modem in their product for deployment in North America needs to perform and pass PTCRB testing.

What if I use a pre-certified cellular module?

Original Equipment Manufacturers (OEM), who integrate a pre-certified module into their wireless product, must nonetheless submit their "end-product" in its final production form factor to a PTCRB-authorized test laboratory for testing & certification.

Carrier Testing

In addition to PTCRB requirements, some North American operators require their own certification processes. For example devices designed for operation on AT&T's network need to pass PTCRB testing, and meet specific Total Isotropic Sensitivity (TIS) and Total Radiated Power (TRP) requirements before they are allowed on network. It is important to note that the following testing must be completed successfully before AT&T Carrier testing can commence:

- FCC Certification
- PTCRB Certification
- RF Performance/OTA
- CTIA IEEE 1725
- All relevant regulatory & safety certifications for a device with voice capabilities, such as E911 and hearing aid compatibility.

What is pre-certification testing and why would I choose to do it?

Pre-certification testing is a cost effective way to avoid running into unforeseen issues during official certification. Consult with an accredited lab to see what tests are included in pre-scanning. Tests such as Radiated Spurious Emissions (RSE) and CTIA Over-the-Air (OTA) are some of the tests that may be included in the pre-scan. Pre-scans are not an official report on system performance and compliance; rather they provide a higher degree of confidence that the device will pass before starting the official certification process.

Pre-testing is a cost effective way to catch problems early, while there is time to correct issues without the costly redesigns, delays, and retesting when these failures are encountered during the official certification process.

How long do PTCRB and FCC Testing Typically Take?

The best answer to this question comes from speaking directly with the test lab. PTCRB and FCC testing along with all documentation can be completed in 4-6 weeks. The summer season is typically a busy time for labs as many consumer products that will go on sale during the Holidays are in the lab for approvals around that time. <<

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>> For the majority of machine-to-machine customers, 2G not only fits, but is a critical part of their current application deployment. Even though all of the major carriers are touting their advanced 3G and 4G networks, hardware manufacturers are launching products to support these increased speeds. Is this really what the machine to machine space really needs?

The answer is yes and no. There is no argument that advanced networks with higher bandwidth and speeds are essential to the growth of our industry. These advancements allow more applications than ever before to be wirelessly enabled, but the reality in the machine to machine space is that the majority of the current applications and customers don't need it and even more so, do not want to pay for it.

As you look at the top revenue producing verticals you will see a couple of elements that they usually have in common, low cost hardware, event driven, low bandwidth. Most of these basic applications use less than 500kb per month and only transmit data when an event triggers a need. Applications such as asset tracking, buy here pay here, vending, security, AMI/AMR, and others will need to redefine their cost structure to be able to support the increase in hardware cost that 3G & 4G brings.

The price difference between a 2G module and 3G/4G module can be as much as 50% or more. Keeping this in mind, customers are constantly being pressed to move to the latest and greatest technologies. Many companies are being forced to migrate to the latest technology even though 2G is more than adequate for their applications. Is there going to be a natural migration from 2G to 3G/4G and beyond? Yes, absolutely. But should carriers be pressuring customers to move before they are ready? Why the urgency?

The reason is spectrum. There can be no argument that carriers are suffering from a lack of spectrum. You only need to rewind back to the 2008 U.S. Government spectrum auction that raised over $19 billion dollars, the most lucrative government auction ever according to the New York Times. The big winners in the auction were Verizon Wireless spending $9.4 billion and AT&T spending $6.6 billion. You can also look at the recent, but now withdrawn, offer by AT&T to purchase T-mobile USA for $39 billion. Some say this move was to put AT&T in an even more dominant role as a leading carrier in North America while others say that this was a move of necessity. An effort to grab some much needed spectrum in order to alleviate some of the bandwidth issues that have affected the network over the past few years.

While spectrum is the reason that carriers are pushing their customers from 2G to 3G not all have the same urgency. While GPRS carriers are pushing, CDMA 1XRTT carriers are pulling customers in and promoting their 2G services. So much that companies that have traditionally been GSM/GPRS only technology users are now shifting their plans to include CDMA/1XRTT. With reduced component costs and overall increased volume, manufacturers of CDMA 2G products have been able to close the delta between 1XRTT and GPRS hardware costs. CDMA carriers and MVNO's are also doing their part by establishing aggressive rate plans that also lessen the total overall cost of ownership. The result is that CDMA hardware and services are finally becoming competitive with GPRS.

So while GSM operators are discouraging their customers from deploying 2G, CDMA carriers are embracing them. They see this as a strategic advantage over their GSM counterparts and they fully intend to exploit it. <<

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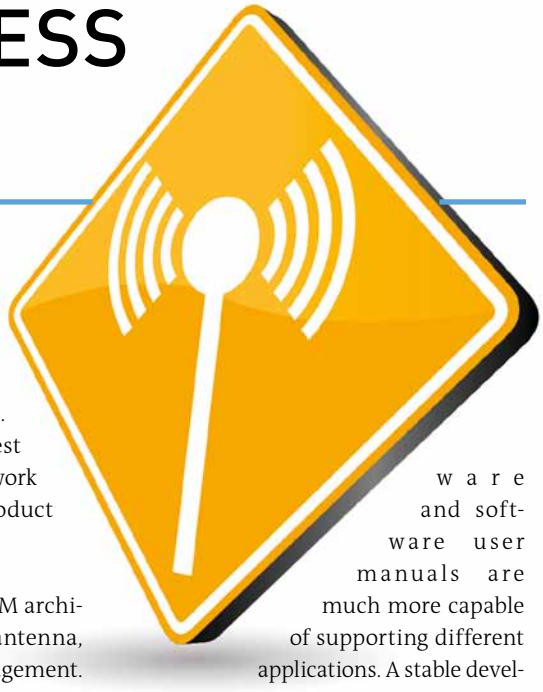

>> As cellular technology continues to be embedded in more products, it's important for engineers and project managers to understand the key trade-offs between a cellular M2M design and an RF design using standards such as Bluetooth or Wi-Fi.

A major difference between a cellular M2M and an RF design, is working with network providers that offer different coverage areas and rate plans. The amount of data throughput required by the application helps determine if 2G, 3G, 4G technology is needed. Identifying the specific cellular protocol (GSM, CDMA, HSPA, etc) narrows down the selection of available networks. A good cellular design will support multiple networks and allow for different protocols depending on deployment location.

Most cellular designs will use a module rather than a chip due to the significant effort and cost required to certify devices on a cellular network. It may make sense to implement chip-level Bluetooth, Wi-Fi or Zigbee designs for annual unit volumes in the hundred thousands, but the economics of a discrete cellular design don't happen until volumes reach close to a million units. In addition to cellular modules, which are typically certified on networks as a just that, there are fully enclosed modem / terminal products certified as end devices. This allows customers to use a modem without any additional certification. A modem solution is recommended for products requiring less than two thousand cellular devices a year.

Certification for cellular designs is more complex than non-cellular RF designs. In addition to FCC, the product must be certified on a specific network. Costs associated with this certification make it important to select a module and antenna partner that are familiar with this process and are willing to assist throughout the design and certification stages. It's key to select a module that is pre-certified by the chosen network. GSM-based networks require that end products using pre-certified modules pass PTCRB certification and then network approval. CDMA requires network certification which can be done at an independent certification facility or at one of the network's facilities. The costs for PTCRB and network approval can become onerous if multiple attempts are required to bring all specs within tolerance. The networks have different test limits, so certifying on one network does not guarantee that the product will be in the limits of another.

The main components in an M2M architecture are the cellular radio, antenna, host controller, and power management. Although some cellular modules have embedded processors with scripting languages to allow limited operation without an external host, most applications are better served by an external host controller. This gives the design more flexibility adding the I/O and peripherals offered by a host controller in addition to all features of the cellular module. The controller interfaces to the cellular module with AT commands over a UART or SPI connection (USB is becoming common on 3G modules). A cellular module may require up to 2 Amps of peak current, so power ICs use by other RF designs may not be adequate for cellular.

During part selection it's important to choose a cellular module partner rather than opting for a module based solely on price and a datasheet. A good module partner will have various network approved modules to support the different cellular technologies and be able to help with design reviews. A module partner who has developed a common software command set for their modules can save significant time with future designs. The module providers who have well documented hardware and software user manuals are much more capable of supporting different applications. A stable development kit that supports multiple modules will help accelerate the design cycle.

While it's feasible to select an ISM or 2.4GHz antenna based on its specs, choosing a cellular antenna should be based on the capabilities of the antenna partner. Antenna partners should not only help select the right antenna, but should also participate in design reviews and be able to run pre-certification tests. Pre-cert testing at an antenna partner's facility can save substantial time and money during a costly certification process.

Take time during part selection to ask questions about certification and design support. Choosing knowledgeable partners can be the difference between a successful project and an expensive headache. <<

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BUILDING TOMORROW'S CONNECTED DEVICES: THE TIME HAS COME FOR 3G M2M

Bruce Thompson, *Senior Product Manager for M2M Solutions*

at&t www.att.com

>> A quick glance at the industry forecasts should eliminate any doubt: machine-to-machine (m2m) communications is exploding. ABI Research projects global cellular m2m shipments to accelerate over the next five years, with 123 million units shipped by 2016. As original equipment manufacturers (OEMs) produce m2m solutions for a growing list of industries, one question remains: Which wireless technology will be preferred in the new generation of connected devices?

Until recently, the answer was 2G GPRS/EDGE technology. This made sense; for the majority of m2m applications, 2G services have provided ample bandwidth, latency, and data speeds. Globally, GPRS networks have also achieved the most extensive coverage and offer the lowest module cost.

But today, there are compelling reasons to add 3G UMTS/HSPA technologies to connected devices. A major reason is that market trends and AT&T's unique Mobile Broadband Accelerator (MBA) program are extending all the benefits of 3G connectivity to m2m applications.

Considering Total User Experience

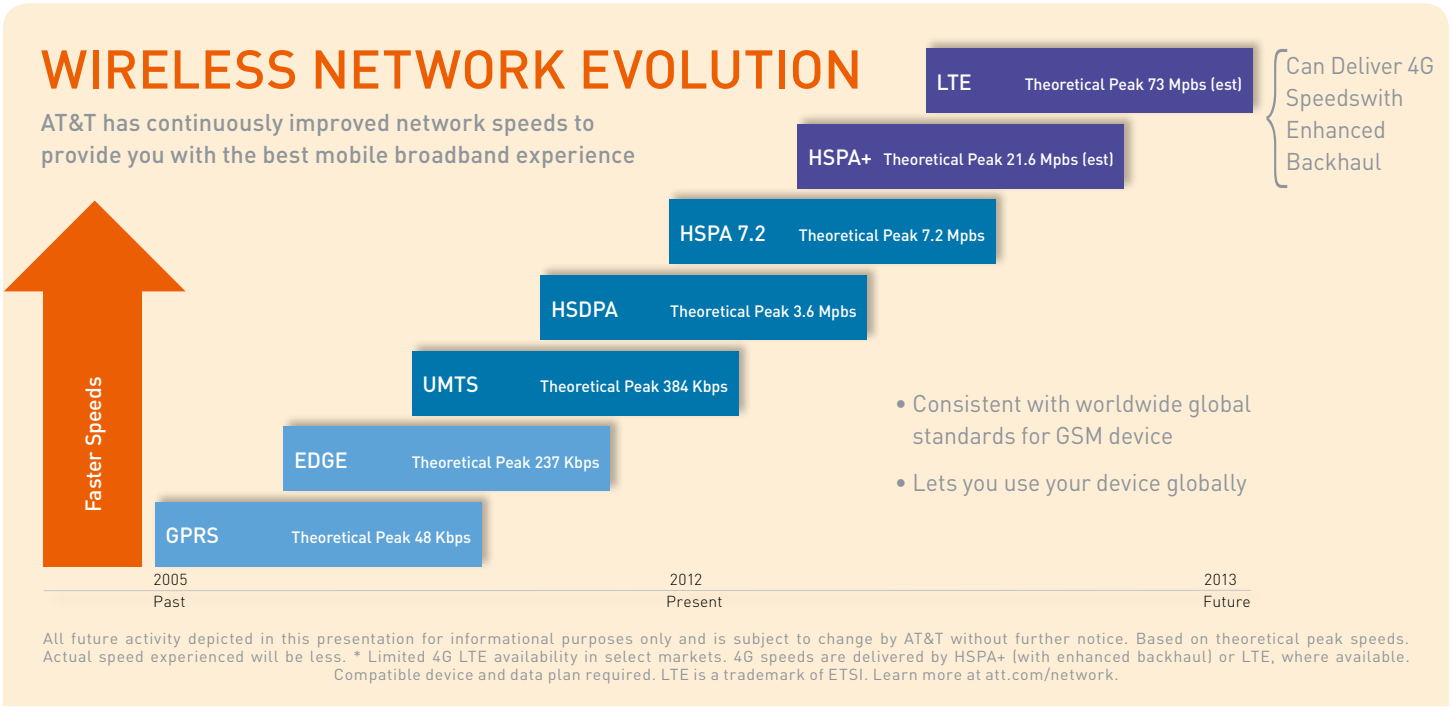
OEMs developing connected devices naturally prioritize cost and coverage when evaluating wireless modules. To calculate the true cost (and benefits) of an m2m technology, however, it's important to look beyond the bill of materials and consider the full lifecycle cost of the device, as well as the user experience it provides.

For example, there remains a broad perception that 2G coverage is superior to 3G. In practice, however, this is not accurate from a device perspective. Since 3G modules include 2G fall-back compatibility, OEMs are not choosing between 2G and 3G technologies. By building connected devices with 3G modules, they get both – and get better coverage and access in many areas than with modules that support only 2G. Over time, the coverage advantage of 3G-capable devices will increase as carriers upgrade networks.

Performance and Efficiency

Modern 3G UMTS/HSPA technologies are also five to over ten times as spectrum-efficient as GPRS, while providing far superior speed. This is vital not just for carriers managing capacity and growing demand, but also for companies deploying many devices. 2G technology was not designed to support the large-scale, high density m2m applications now being deployed. If too many radio devices attempt to connect with a tower at the same time, especially if they hold channels open as some m2m applications do, some devices may not be able to connect. This issue applies to all cellular radio technologies, but 3G UMTS/HSPA is much less vulnerable to this problem than GPRS/EDGE.

Comparatively less efficient 2G technology is a growing problem for network operators. As large-scale m2m deployments



progress, along with other applications driving exponential data growth, it is critical to use spectrum efficiently to provide good service. Indeed, this is a major reason why many operators are now positioning 3G and even 4G radio technologies for m2m connected devices, which can support many more devices per tower and deliver much better overall performance.

As smartphones upgrade from 2G to 3G to 4G, carriers are shifting spectrum and other network resources to support the tremendous traffic moving to the new networks, while bringing new spectrum into service for 3G and 4G. Too often, discussion of m2m device technology "performance" focuses on speed, making performance seem less important for most m2m applications. But viewing performance in this manner fails to account for performance issues that can affect 2G-only devices on fast-evolving networks, which can degrade the customer experience and increase device support costs.

Building for the Long Run

Perhaps even more important for large-scale m2m deployments is longevity. If a customer deploys tens or hundreds of thousands of connected devices only to find a few years later that the wireless modules must be updated, that initial technology decision can prove costly. For devices expected to operate in the field for the long term, 3G or even 4G is the clear choice today.

OEMs that wish to deploy globally – hoping to build a device once for deployment on multiple GSM networks – will find it much better to build a 3G/2G-capable device than one that supports only 2G. By doing so, OEMs can continue to benefit from economies of scale, as 3G/2G 3GPP/GSM devices will be operable on over 90 percent of the world's cellular networks for the foreseeable future. The same cannot be said for 2G-only connected devices, or for CDMA.

Bringing Down Costs

If adding 3G makes good sense from a coverage standpoint and even better sense from a performance, longevity, and global addressability standpoint, what reasons remain to use 2G-only modules? The answer, of course, is cost. However, even if one puts aside total lifecycle costs, and looks strictly at the bill of materials, cost is becoming much less of an issue.

AT&T is working with providers like Telit to bring down the price of 3G wireless modules. Under the AT&T MBA Program, Telit can now offer participating OEMs preferred pricing on 3G modules, making them more cost-competitive with 2G solutions. The program includes a wide range of 3G modules, from consumer-grade to ruggedized modules designed for automotive and industrial applications. Regardless of the industry or requirements of the m2m application, OEMs can now find a cost-effective 3G solution.

In addition, given the improved efficiencies and economies of scale for carriers to support devices on modern 3G and 4G networks, prices for 2G services will likely not remain competitive over time with prices for equivalent service on 3G and 4G networks.

A Proven m2m Provider

Whether moving to 3G solutions today or in the future, it is vital that OEMs choose the right m2m provider. As the first network operator to support m2m applications in North America, AT&T has a rich history of m2m leadership. To date, AT&T has over 1,200 approved devices operating on its network – twice as many as its nearest competitor. AT&T continues to work closely with OEMs and wireless technology vendors to enable more functional and cost-effective m2m solutions. As OEMs build the next generation of innovative connected devices and applications, AT&T can help them capitalize on the m2m revolution. <<

OPEN ECOSYSTEM,
FLEXIBLE NETWORKS AND PROVEN EXECUTION

Sprint ESG

www.sprint.com/m2m

>> According to ABI Research, over 100 million m2m devices are expected to be connected in North America by 2016*. That same year, the North American cellular m2m connection revenue is forecast to reach $8.2 billion**. To help innovators capitalize on this explosive market and move the m2m industry forward, Sprint has continued its development of several very impressive initiatives.

Of greatest significance is Sprint's unique, OPEN-ecosystem approach to helping companies rapidly develop and launch new m2m devices and applications. Sprint firmly believes that the key to m2m success hinges upon open standards, open applications and devices and a focus on creative problem solving.

In fact, Sprint is so passionate about this open philosophy; they maintain a cutting edge m2m Collaboration Center in Burlingame, California, to give innovators an optimal development environment. This facility brings together all of the players necessary to design, test, and launch innovative m2m solutions: application developers, device manufacturers, distributors, designers and integrators.

The goal of the Sprint's m2m Collaboration Center is simple: to bring the right community of partners with the right expertise to bear in a roll-up-our-sleeves workshop that's designed to get m2m ideas into the market as quickly as possible.

The company has also continued evolving the Sprint Command Center, an online portal that allows businesses to control m2m provisioning, billing, and device service management – all from one centralized and secure location. With Sprint Command Center, businesses can implement many automated or on-the-fly management features for a single device or thousands of devices. The Command Center also offers companies advanced m2m billing solutions and a range of policy enforcement tools designed to greatly enhance m2m management control.

When it comes to the NETWORK, Sprint's 4G technology delivers a fast, dependable experience even on a network with millions of subscribers. The Sprint 4G network is an asset when it comes to tackling massive data usage and streaming video. Sprint also offers customers a dependable CDMA network, which enables companies to meet their individual data needs***.

Sprint has also continued to move forward with broad-based plans to enhance its wireless networks over the next several years. The company has already begun the implementation and deployment of its Network Vision initiative – a new standard for wireless networking including upgraded wireless coverage, improved call quality, and accelerated data speeds. At the heart of these network enhancements is a straightforward objective: to improve the customer's experience. New technol-

ogy means better performance and better performance translates into new ways of doing business that will increase profits, cut costs, and improve efficiency.

Lastly, Sprint provides unrivaled EXECUTION with over 10 of years of experience bringing m2m initiatives to market quickly and successfully. Sprint has a wide portfolio of solutions for a host of devices across a broad range of industry verticals including healthcare and wellness, public safety, sustainability and connected transportation.

M2M SOLUTIONS SPOTLIGHT

Sprint has helped launch a number of innovative devices and m2m solutions, many of which feature Telit modules. One such example is Triton Systems, a global provider of off-premise ATM's and ATM management software. Triton uses the Telit CC864 Dual CDMA module in their machines as a POTS line replacement. Telit was attractive to Triton for their willingness to collaborate on the development and integration of their module into Triton's solution. Likewise, Sprint worked side-by-side with Triton to provide expert advice and support during the module selection process and throughout design, production and network compatibility testing stages.

Another successful Sprint partner is Mobile Inno-vations, developer of the messageQube™, an ultra-simple 3G wireless printer. Mobile Innovations chose Telit for their ability to design a printed circuit board using the same module footprint for GSM that is used for CDMA, which means development time and expense will be significantly reduced when expanding the design from CDMA to also include support for GSM. When it came to a network partner, Sprint was the obvious choice for both their responsiveness and network coverage – especially in rural areas. Also, the use of CDMA and OMA DM provides great flexibility and maximizes Mobile Innovations' ability to support the messageQube in the field.

Yet another example is Petari Inc., a developer of end-to-end asset tracking solutions that can make the next generation supply chain smarter, greener and leaner. Petari is in trial with a key player in supply chain management to provide visibility that was frequently lost in transit and in storage across multiple environments. Telit's robust and industry tested solution portfolio with uniform APIs within the family gave Petari several options for choosing the best m2m module to meet all of the customer's stringent performance requirements and Sprint's reliable network coverage across the U.S., especially in RF-unfriendly environments, gave the customer high confidence in the final solution.

In large part because of successful partnerships such as these, the Analysys Mason 2011 m2m scorecard for communication service providers ranked Sprint #1 among North American-based providers. Sprint also recently received the Frost & Sullivan 2011 North American Customer Value Enhancement of the Year Award for m2m.

Sprint's commitment to an open development philosophy, a wide portfolio of networks, an ecosystem of partners and a proven track record of bringing m2m products and solutions to market are just a portion of what makes the company such an attractive m2m partner. To learn more about how Sprint is helping companies develop and deploy tomorrow's technology today, visit sprint.com/m2m. <<

* ABI Research, Dec/2011, ** ABI Research, Dec/2011, *** Sprint 4G is available in over 70 markets and counting. See sprint.com/4G for details.

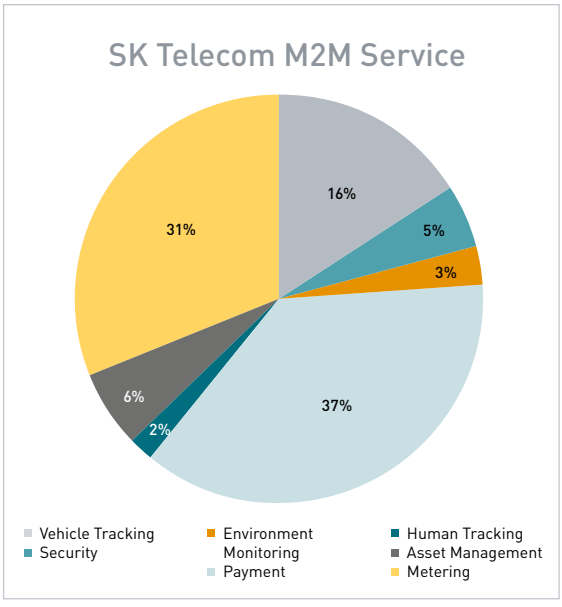
EVOLUTION OF CONNECTIVITY:
NETWORK OF ALL THINGS

Woo-Yong Kim, *Team Leader of Enterprise Business Office*, *IoT Business Team* www.sktelecom.com

>> The Korean m2m market is to experience dramatic growth after a long 10-year introduction period thanks to recent advances in IT infrastructure and network evolution from 2G to 3G to 4G-LTE. In Korea, it is especially considered a growth engine for a new generation of the telecommunication industry with the rise of the connectivity-of-things since the cellular phone market is almost saturated.

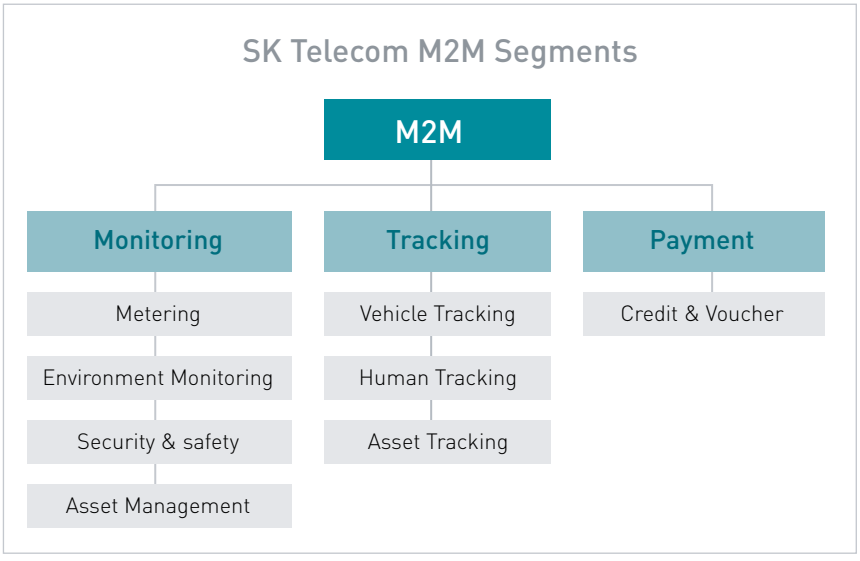
The domestic m2m market has largely grown based on electricity metering, security monitoring, and wireless credit payment but has recently seen the introduction and increase of location control and environmental/weather monitoring. The potential number of m2m modules which are currently distributed regionally is estimated at over 25 million. Judging from the number of mobile-line subscriptions, as of the end of 2011, there were about 1.6 to 1.8 million lines in Korea. A number that accounts for only 7% of the expected latent market, showing that more aggressive cultivation is required with industry players in the various parts of the value-chain.

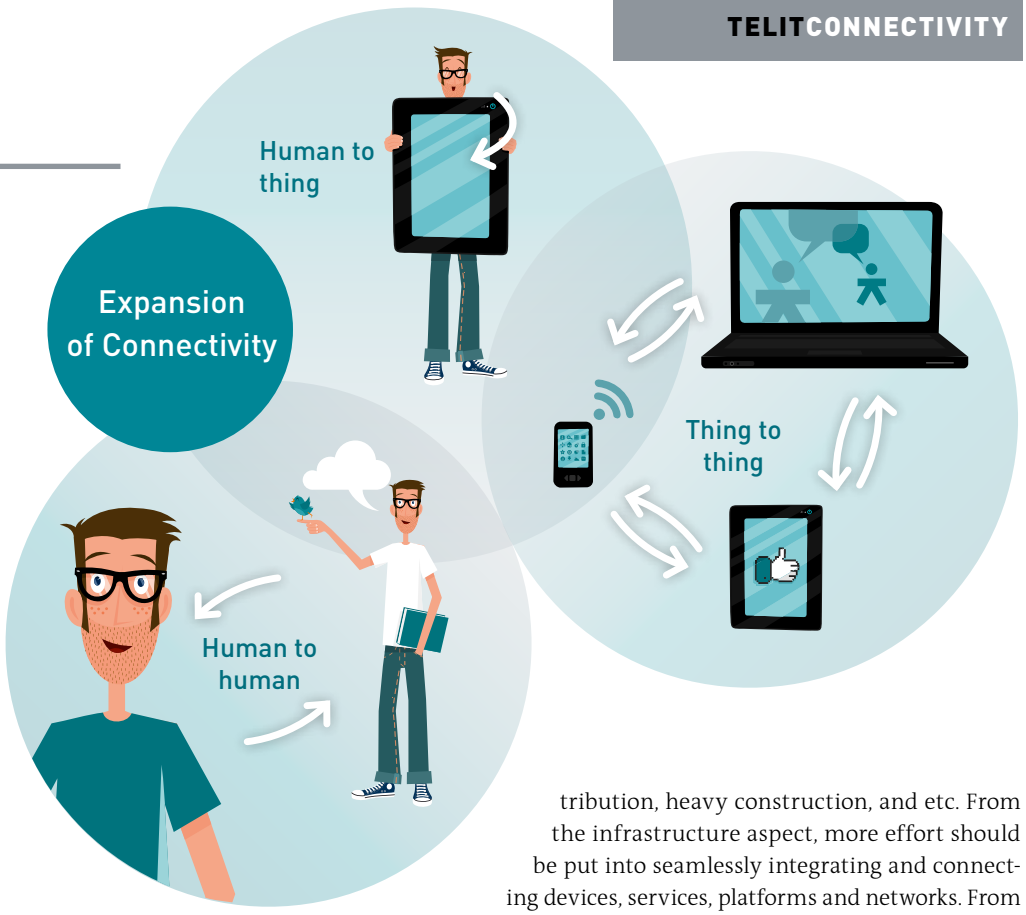
SK Telecom, which has the highest market share in the Korean telecommunication market, is preparing for a market explosion with the general growth of the m2m industry and associated development of diversified service and business models. We have divided the m2m business into 3 parts: monitoring, tracking, and payment, and into 8 segments; and we carry these forward into broader connectivity objectives. Aside from the role of data network provider, SKT is also researching advanced business models as a system and service provider through an m2m platform.



SK Telecom's m2m Business Cases

The Korean government has been actively propelling a wide range of m2m solution projects with advanced IT infrastructure expansion and by enacting related regulations and laws. Representative projects include: the electronic anklet project implemented by the Ministry of Justice to control and track sex offenders; forest personnel location control service implemented by the Korean Forest Service; security monitoring for senior citizens living alone; automatic meteorological observation implemented by the Meteorological Agency; and the cat-

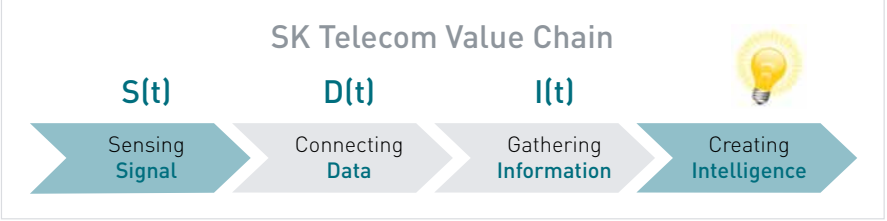




tle car tracking by the Ministry for Food, Agriculture, Forestry and Fisheries.
SK Telecom and Telit have been closely co-operating on these government projects. Thanks to a GPS equipped m2m locator the Korean Forest Service has been able to fight fires most efficiently and carry out rescue activities more safely. Similarly, the Ministry of Justice has been able to track sex offenders in real time with an electronic anklet which has dramatically reduced the rate of second convictions.
As Korea rushes into a more elderly society, the Ministry of Health and Welfare has started a program to monitor seniors living alone so that related organizations can take appropriate measures immediately in case of an emergency. The Meteorological Agency can now conduct nationwide distribution of data from Automatic Weather Stations more effectively by collecting data directly via a centralized control system so that gauged data can be checked in real-time and hopefully provide more accurate weather information.

Direction of the m2m Business Growth

With respect to future prospects, efforts in energy conservation and recycling of waste materials are likely to increase due to continuously increasing population and urbanization making efficient environment monitoring and management noteworthy areas to improve quality of life. Efforts geared toward ecological protection are likely to evolve greatly. With fast changing urbanization, ITS may foster the appearance of eco-friendly transportation which is safe and efficient. Enhanced security related solutions such as disease protection, disaster recovery, and crime prevention will also be widely distributed. These kinds of solutions are expected to be built based on a combination of wireless networks and smart devices.
With these future trends and social changes, "connectivity" is becoming the topic of industry which enables linking humans to humans, humans to things, and things to things. Expansion of connectivity, of course, will represent the biggest opportunity area for players in this market with the creation of whole new services which have been considered impossible in the past. These changes will be key drivers of a new social paradigm.
The revolutionary spreading and growth of connectivity should not be regarded merely as a solution for connecting, sensing, and monitoring on a wireless network. It will become possible due to the convergence and integration of diverse industries, to connect their infrastructures and their technologies.
From the industrial perspective, there is a need for convergence in order to increase efficiency and productivity of the basic operational areas within an industry in sectors such as manufacturing, distribution, heavy construction, and etc. From the infrastructure aspect, more effort should be put into seamlessly integrating and connecting devices, services, platforms and networks. From the technology aspect, and using the rapid growth momentum of the technology environment, technologies in the m2m/IoT field, such as Sensor Networks, Smart Devices, Cloud Computing and etc.; used for information collection, communication, and processing should be converged and integrated with more interest.
There is also the need to focus on the issue of "Big Data". Currently, m2m is able to sense information through individual sensors, communicate using a network, and use the information as collected in a database. However, in order to derive high value from the diverse information, the m2m market and industry will need to consider intelligence creation as an important step to continued growth.
The m2m business is a field that depends on the cooperation among solution providers within the system: devices, networks, and other players in order to be viable. SK Telecom is building win-win partnerships with government, academic, and industrial worlds leveraging its role as chair-company of the 'm2m/IoT Forum'. It is preparing for the "Connectivity era" which approaches us in the near future, by pursuing both market cultivation as well as high-value intelligence creation. <<



THE INTERNET OF THINGS – MOMENTUM REQUIRES GOVERNMENTAL ENGAGEMENT

INTERVIEW WITH MA YAN, DIRECTOR OF IOT OFFICE, CHINA UNICOM

www.chinaunicom.com.hk

>> 2010 witnessed the introduction of the concept of the Internet of Things (IoT). Since early 2010, when the State Council's Government Work Report identified it as a strategic emerging industry, IoT has penetrated into the IT field and has caught the attention of several government entities, IT manufactures, system integrators and telecom operators. Meanwhile, local governments have taken the development of IoT into consideration within their respective 12th Five-Year Plans. China has currently already met many of the conditions required for the fast development of IoT in terms of state policies, operators' and users' behavior and environment.

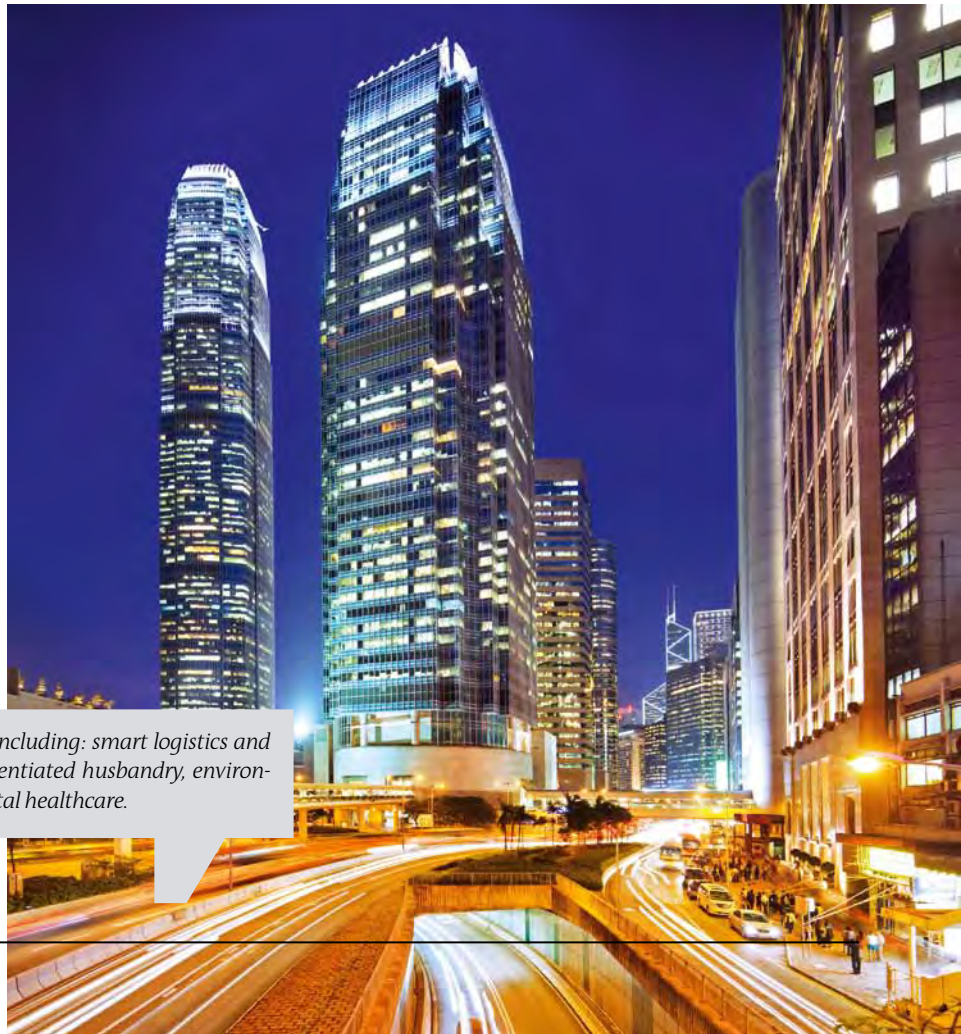
telit 2 market: *What do you think about the development of the IoT market in China?*

Ma Yan: Overall, since 2010 the IoT industry has seen momentum pickup in China, with an increasing installed base in a variety of fields. For example, in other countries the IoT business is primarily involved in security monitoring, mobile payment, logistics and navigation information, while in China IoT incorporates more fields including smart logistics and transportation, urban planning, differentiated agriculture, environmental protection, smart grid and digital healthcare.

t2m: *Does this extensive application in IoT indicate strong momentum in China?*

Ma Yan: Every coin has two sides. On the positive side, widespread application implies fast development of information technology in China, which is bound to generate more opportunities to boost economic growth. However, the disorganized development of IoT in many incipient industries and markets has posed new challenges in administration and service.

t2m: *Currently can we say that China's IoT industry has entered a moderately mature stage?*



In China IoT incorporates more fields including: smart logistics and transportation, urban planning, differentiated husbandry, environmental protection, smart grid and digital healthcare.

Ma Yan: China needs more business innovation in IoT. Currently in China, the level of development of information technology is disproportionate between different industries, and IoT lacks a successful business case for effective promotion. Information silos and inter-sector barriers as well as difficulty in replication, lack of significant scale, and minimal cross-industry application hinder IoT's development in China. To effectively promote IoT, we need to find a successful business case to create a win-win environment. To maintain IoT's long-term development in the context of high initial cost and low technical level, we need multilateral cooperation to achieve the sharing of commercial benefits.

t2m: *We noted that central and local governments have developed measures and policies to stimulate IoT. Is such governmental engagement favorable to the development of the IoT industry?*

Ma Yan: The government is playing an increasingly significant role in directing the development of the IoT industry. It has been noted that projects with governmental support show more rapid progress, such as China Unicom's vehicle monitoring project which has already been rolled out to 160,000-plus vehicles and smart buses in over a dozen cities including Jinan and Zhengzhou. Meanwhile, campus IoT has penetrated more than 3,000 colleges and universities across the country. At this stage, China's promotion of IoT cannot just rely on organic growth, but also requires governmental engagement. The government can improve efficiency and transparency by using IoT to ensure balance, for example in utility and mass transit management, food, safety and environmental supervision, mobile law enforcement and facility & equipment asset management. Currently, the government is faced with the problem of how to leverage resources to develop a standardized IoT application. For the government, IoT investment and promotion is far more effective than its application in industries and policies. For the short term, adoption is essential for large-scale development of an industry.

We see a great need for an industry organization – one that truly represents the interests of all parts of the M2M ecosystem – to tackle security and privacy concerns.

t2m: *What do you think is the focus of sustainable development in China's IoT industry?*

Ma Yan: We believe that the development of IoT will be driven by two application categories. The first is traditional IT applications, including customized and personalized ICT services. The second is m2m-based standardized applications. In this case, IoT is standardized and developed in a large scale to provide general services, particularly public-oriented ones.

t2m: *What is China Unicom's business strategy in the IoT business development?*

Ma Yan: China Unicom has explored IoT for quite a while. We are continuing to depend on our currently existing network, platforms, terminals, client resources and server capabilities to foster the business development of IoT. With respect to the network, we are more focused on our current WCDMA network's business, and will depend on it to develop our IoT business, especially in m2m. Other than promoting the digital pipeline, we can use IoT and its special properties to dedicate it to web-feed coordination.

Regarding platform usage, we can foster the broadening of IoT through the establishment of public platforms. For our business strategy, through platform incorporation, we can support business innovation, especially with respect to virtual operators. In this way, we can support the growth of virtual operators.

Furthermore, towards clients, we are still working on promoting ICT and informatization. In our 12 focus segments, which include smart logistics and transportation, we already have standard service models. In new fields, such as digital healthcare, we have already initiated pilot projects.

t2m: *What are China Unicom's initiatives in the IoT business?*

Ma Yan: During the past two years, we have embarked on the following pilots with a focus on transportation and logistics, urban management and new applications: public transportation, remote meter reading, environmental monitoring, services for locating children and seniors, vehicle IT applications, card-based mobile payment, insurance loss adjustment, digitized urban technologies, elevator monitoring, parking management, logistics management and forest fire prevention.

For China Unicom's future portfolio, IoT will be one of the core businesses, closely linked with many business areas. But for the present, the technology is still in its infancy. We at China Unicom's IoT Office are devoted to initiating and promoting IoT business applications, studying the composition of all layers of IoT applications, networks and terminals as well as relevant standards, to identify China Unicom's role and plans for future development and to undertake business innovation efforts. <<

M2M SOLUTIONS
FOR TODAY AND TOMORROW

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VERIZON HAS THE EXPERTISE, TECHNOLOGY AND ALLIANCES TO EMPOWER BUSINESSES IN A NEW WAY.

>> As more companies begin to see how machine-to-machine (M2M) capabilities can transform the way they – and their competitors – do business, they realize that M2M development and integration could be the key to their success.

The continued advancement of M2M technologies means you have more provider options than ever. A strong M2M strategy requires a provider with the insight and technical capabilities that allow you to more effectively manage risk and to power sustainability. That's where Verizon's leadership and experience in M2M can open a whole new world of smart, connected devices and give your business the competitive edge it needs.

Transform your business today with Verizon M2M solutions. For more information about our products, services and pricing, please contact your Verizon Wireless business specialist, or visit us at verizonwireless.com/m2m.

VERIZON SETS THE PACE FOR M2M

Verizon has the network that sets the global standard, as well as the intelligent infrastructure that allows you to connect devices, systems, machines and people. Your M2M connections can provide quick access to data that helps streamline operations, monitor inventory or optimize delivery routes – all of which can help you lower the cost of doing business, improve customer care and increase revenues.

Strong, secure global network

As projected numbers of worldwide M2M connections skyrocket, each connection is still only as good as the network behind it. With its exceptional reliability and security over public and private wireless networks, Verizon makes each connection powerful.

Verizon has the largest 4G LTE network in North America. Long Term Evolution (LTE) is the gold standard for 4G around the world and enables the latest technology for even the most media-rich M2M applications. Our growing 4G LTE network provides enhanced wireless security and lower latency (delay times). We also maintain our long-term commitment to 2G and 3G technologies to meet your legacy wireless needs.

With the Verizon Private Network service, you can securely extend your organization's IP network to your wireless devices. You can also block unsolicited traffic and control Internet and application access for better network performance. Together, Verizon Private Network and M2M communications provide a secure, scalable and resilient connection that helps you control costs.

Robust provider ecosystem

With our business strategic alliance, we are able to offer an extensive range of business solutions and services, including best-in-breed systems integration, application services and devices. With our Verizon M2M Management Center platform and our partnership with Vodafone, we help customers gain unified access to global M2M capabilities.

✓ Open Development – The Verizon Open Development device certification program provides the opportunity for developers to bring innovative products to the marketplace on the Verizon network. And our streamlined certification process is quick – typically about four weeks.

✓ Modules and devices – We are continually expanding our range of wireless data modules that allow businesses to deploy M2M solutions certified to run on our network with a wide range of devices. Our collaboration with Telit has resulted in several successful modules, including one for our 3G network. We're also working with Vodafone more closely than ever to deliver reliable M2M capabilities to businesses around the world.

✓ M2M Management Center – The Verizon M2M Management Center simplifies the management of Verizon-certified devices, network connections and other aspects of M2M connectivity. The center

empowers organizations to manage devices in near real time from a single portal. You can now manage, troubleshoot and control devices through the Verizon My Business or Verizon Enterprise Center Web portals. In addition, you can monitor M2M devices through the M2M Management Center via application programming interfaces (APIs) using your company's own applications.

✓ M2M cloud services – Verizon's Terremark is a leader in cloud computing, and enables businesses to power M2M applications. Offering an enterprise-class platform and public and private clouds, Terremark helps you maintain secure, global access to your M2M solutions in the cloud.

Innovation is a team sport

The Verizon Innovation Program inspires and enables the development of breakthrough nontraditional products and services that take full advantage of our 3G and 4G LTE networks. It provides a fertile collaborative lab environment where Verizon engineers, technology allies and participant companies work together to develop market-driving solutions. Together with a range of forward-thinking companies, we're bringing amazing new products to the marketplace – changing the way we live, work and play.

Businesses working within the Innovation Program also benefit from the Verizon Innovation Centers, which serve as showcases for new collaborations and ideas that help expand the potential and impact of our innovations. Our LTE Innovation Center (Waltham, MA) features a 20,000 square-foot facility that includes wide-ranging innovations at every stage – from concepts to commercial products. Plus, you'll find a state-of-the-art theater space, live demonstrations and our ever-popular DNA (devices, network & applications) interactive wall display. And our Application Innovation Center (San Francisco, CA) highlights cutting-edge, mobile and web applications.

LOOKING TO THE FUTURE

As M2M technologies continue to mature, Verizon remains committed to establishing alliances that benefit businesses across a wide range of industries. We'll also continue to build and deploy solutions and expand 4G LTE and global services. Most importantly, we'll continue exploring how our network and innovations can help transform the businesses of tomorrow. <<

Network details & coverage maps at **vzw.com.** © 2012 Verizon Wireless.

M2MIZE THE ENTERPRISE

Bill Zujewski, *EVP of Product Strategy & Marketing, Axeda Corporation* www.axeda.com

>> A solution maturity curve is emerging in M2M (see picture) that is taking the value of connected product data beyond the remote service, support, or tracking of assets. Companies that were early in bringing their products online are now realizing that the real "gold" in M2M is taking that data and integrating with enterprise systems such as CRM, ERP, or data warehouses – optimizing critical business processes and essentially M2M-izing their organizations.

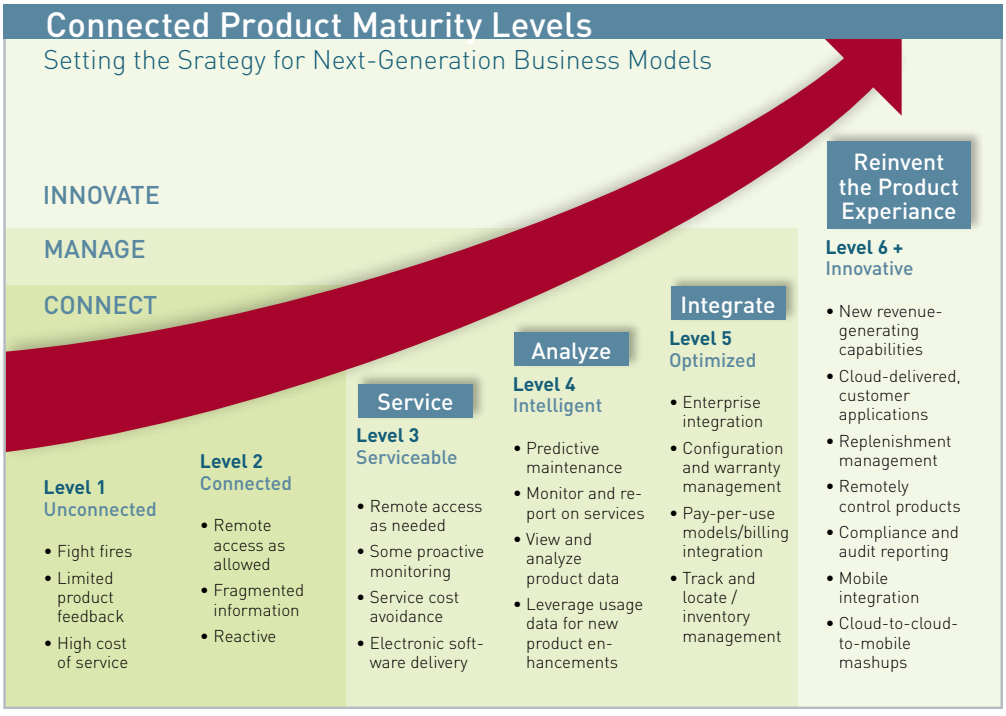
M2M data from connected assets, in collaboration with other enterprise systems, can provide visibility and automation across organizations not previously possible. For example, product data flowing through a CRM system can also be sent to billing or into a supply chain management system – helping eliminate error-prone manual steps and providing new sales opportunities for things such as consumables replenishment or warranty renewals. Additionally, integration with quality assurance or product management can help enhance product features based on real-world data that shows usage patterns or equipment issues – helping improve customer satisfaction and streamlining Beta programs.

While many companies understand these types of "connected" benefits, the majority are still in the early stages of their M2M evolution. Whether just getting connected, or recently enjoying the value of remote service and support models, most companies have not yet matured to this level of enterprise integration.

How to Integrate M2M Data

In the past, there may have been technology or even internal organizational challenges that kept companies from moving up the M2M / connected product maturity curve. However, the capabilities of advanced M2M/ connect product management platforms, as well as the advent of cloud computing, are making it easier.

There are M2M/ connected product management platforms available today developed specifically to handle the complex requirements unique to M2M solutions – requirements such as managing multiple types of connections and assets, and processing large amounts of unstructured data and turning it into business intelligence. Built-in Web Services can allow for seamless two-way communications with other enterprise systems and make it easy to pass asset data, alarms, files, and locations to applications like SAP, Oracle or Salesforce.com. These M2M platforms may also provide an integration



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Companies are implementing their connected product strategies at different rates. Axeda has identified 6 levels in the Connected Product Maturity Model. The first step is to connect. Once connected, customers can more effectively and efficiently manage the product, provide remote service and analyze usage. More advanced companies begin to innovate and use the data to optimize business processes by feeding data into business systems like CRM/ERP/PLM to enhance service, billing, sales, inventory management & product development. The most advanced companies create new innovative customer-facing applications that re-invent the product experience and differentiate their product and service offerings

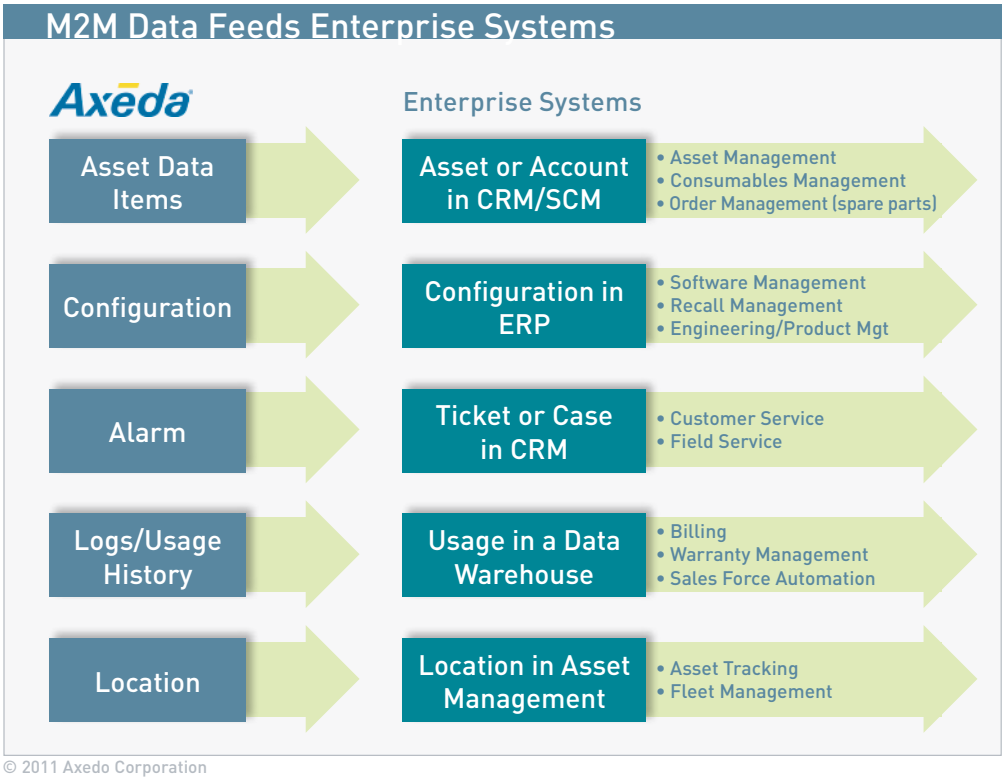
framework and message queue for handling asynchronous communication. This type of available infrastructure takes away the heavy lifting from companies, allowing them to focus on how to drive business value from the data.

How Companies are Using Integrated M2M Data

There are seemingly endless numbers of enterprise integration use cases that can benefit companies and their customers alike. Here are a couple that companies further up the connected product maturity curve are implementing today:

Usage-based billing: A large medical device company has implemented a billing model that enables them to charge customers based on usage rather than paying for the equipment up-front – all based on real-time M2M data coming off of the machines. Previously a manual process, the usage reports would be sent from customers by way of fax or mail, leaving room for error and sometimes fraud. By integrating the product data with the billing system, this company was able to improve the reporting accuracy and expedite the billing cycle since they no longer had to wait for the reports to come from the customer.

Compliance Process Support: An industrial equipment manufacturer uses its real-time machine data to help with warranty management. By placing sensors on their machines, which are deployed in factories all over the world, they can monitor the temperatures of the environments where they are operating. By monitoring these temperatures, they can determine if the machines have been used in environments that are in conflict with the warranty. This provides the manufacturer with information that helps detect illegitimate claims that their machines not working properly.



© 2011 Axedo Corporation

Automatic consumables resupply: This use case is relevant for any company that delivers products that require consumables replenishment (e.g., toner in copy machines, chemical reagents in medical devices). With M2M data, companies are not only monitoring the usage of the consumables, but they are integrating with their ERP systems to initiate supply chain transactions that will resupply devices with just-in-time delivery. This not only keeps the customer up and running, but it also enables the manufacturer to sell more consumables.

M2M data brings additional value by combining information from connected products, devices, or equipment with information from other complementary sources and systems to provide a great way for people and processes to collaborate and extract more value.

With the right M2M application and data integration platform, companies should not only have the ability to connect and remotely login, but they should also have a secure, scalable cloud to process and store data, out-of-box applications to manage and service their products, an integration framework to feed the data into other systems and an application development platform to build innovative applications.

With this type of solution, companies will lower costs and improve service, and will also be able to optimize back-office processes and develop new customer-facing applications that differentiate their connected product offerings – M2M-izing their enterprises. <<

SELECTING AN M2M PLATFORM

Robin Duke-Woolley, *CEO*, *Beecham Research Ltd*.

www.beechamresearch.com

>> M2M platforms are currently in the news. Sometimes referred to as Service Delivery Platforms, their purpose is to help bring new applications and services to market speedily and cost effectively – particularly important in such a broad and fragmented market as m2m.

Beecham Research uses the alternative term of m2m Service Enablement Services or SES, as we believe the term "service delivery" is only one aspect of what these platforms must increasingly offer. We then define SES as occupying a layer above network connectivity – such as mobile airtime – and below end user services – such as fleet/freight management and security alarm services. They are horizontal services that help bring to market and provide ongoing support for virtually all end user applications in all sectors, whether they use a form of fixed line or wireless connectivity, or both. One example of these is simply the ability to remotely enable and disable a connected device. Another is the ability to update a remote device with the latest application software. These may seem like trivial activities for a few devices. Not so trivial when the population is in the tens of thousands, or even millions as projections show will be the case within a few years.

To get a flavor of the wide scope of SES, in a recent study – now completed – Beecham Research identified 112 different services that can or will shortly be offered by SES platform providers. This is up from just over 50 that we identified in a previous study only 18 months earlier. In addition to this, we have now looked at over 60 such platforms currently available in the market and we are confident this number will grow to more than 100 this year. No one platform offers all of these services, nor do we expect that any will in the foreseeable future.

So how does an adopter of these services choose which one to go with?

In-house versus Outsource

Perhaps a more appropriate place to start with this question is why should a potential adopter of these services go with them anyway? What sort of adopter are they aimed at?

In principle anyone who is creating a new service to bring to market. That means primarily product manufacturers and service providers. However, many of these have already created in-house resources for these activities, largely because they had to, since there was no alternative at the time. Having done so and sometimes invested heavily in their own platforms, some resistance can now be expected in moving to an outsourced, cloud-based model. For some, the opportunity is to focus on the new value created by end user applications and services that really differentiates them in their own market. A platform specialist can then worry about how this is implemented in current network infrastructure and make sure the new offering is brought to market quickly and cost effectively. For others, such platform services are seen as important to keep in-house – that they are part of their core offering. Some will therefore see their way forward as further developing their own SES platforms. One difficulty this approach has is catering to the constant and rapidly developing ongoing needs of an SES platform that is not their core business, without being able to spread that cost over a wider core business. For a variety of reasons, our research indicates that there will in fact be a strong trend away from in-house towards an outsourced model over the coming years.

Making the Choice

A partial list of currently available SES platforms is available at this link: http://blog.m2mapps.com/wp-content/uploads/Beecham-Research-SES-Players.pdf

This shows 46 providers – probably about half of those available. Beecham Research is now constantly adding to this list in an ongoing assessment exercise, so if you are an SES provider and think you should be on our list – contact us at SES@beecham-research.com. The list includes 16 that we have further highlighted as being what we consider to be "movers and shakers" in the current market – those that are more visible in the international m2m market in defining what SES is all about. It does not mean that these are the most appropriate to choose from for any particular requirement though; and who is in this set-of-16 is likely to change.

What is immediately apparent from this list is that they come from all points in the m2m value chain. In the list we have:

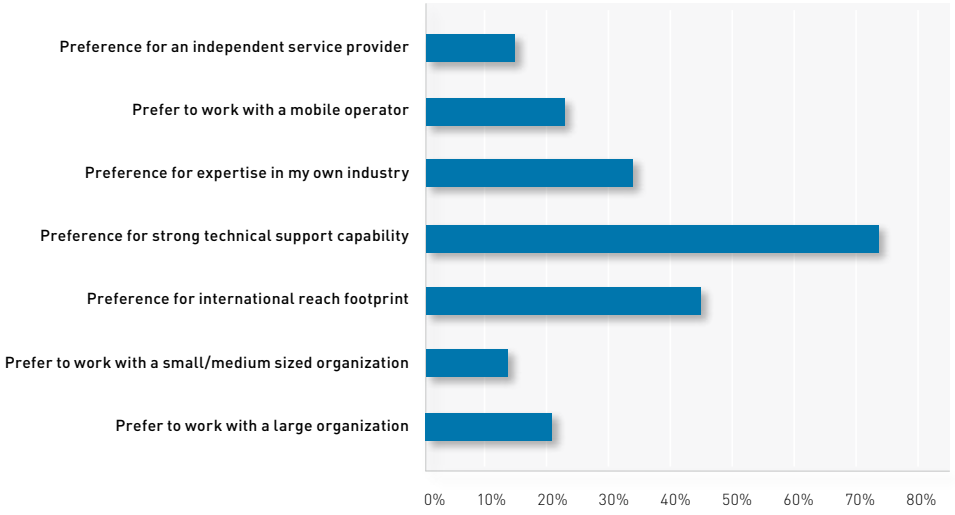
- Mobile Operators
- Airtime Resellers/MVNOs
- Application Providers
- Enterprise Solution Providers
- Communications Hardware Suppliers
- Dedicated SES Providers
- System Integrators
- Infrastructure Providers

As a result, we have a lot of market players coming from different directions. They have different experiences and, as a result, they see potentially different solutions. That helps to create a wider choice of services available and is one of the main reasons why we have seen the number of SES elements being offered more than double to 112 in the last couple of years.

How to choose among them? It depends on what is needed. Some focus more on connectivity management, for example, while others focus more on application development tools or on billing management. Although these platforms are horizontally aligned, some have particular expertise in certain sectors, like transport, manufacturing, building management or healthcare. That can also be important, depending on the level of support required.

In fact, the question of support is probably the most crucial. <<

Ranking characteristics for selecting an external service enablement partner



As part of our recent study on SES, Beecham Research conducted a survey of 210 users of SE services – in other words, mainly product manufacturers and service providers based in North America or Europe. One of the questions we asked was – how important are the following characteristics in selecting an external Service Enablement partner? The chart shows the response to this, with highest score for strong technical support capability, followed by preference for international footprint and expertise in own industry sector. Food for thought?

Source: Beecham Research

adaptive modules

your wireless partner

The RS232/TTL + USB interface are data and control interfaces for transmitting data, using AT commands and providing multiplexed channels making use of a wide range of Telit modules, including the H24, G24 and G30, providing mobile network M2M connectivity. The new version has the new HE910 and GE910 module options.

Introducing Adaptive Modules' **AQ card version 2** carrier board for the entire 'MOT' by Telit (formerly Motorola M2M) range of **GPRS/3G modules** and the version 3 for the Telit range.

Saving customers from having to design their own carrier **PCB**, hence reducing cost, complexity and time to market for new products, the AQ Card is compatible with **H24**, **3G**, **G30**, **G24**, **G24 JAVA**, **C24** modules giving you full **Quad band** (GSM 850/900/1800/1900/2100MHz) broadband access.

These modems are already successfully deployed in **ANPR**, **vending machine telemetry**, **diesel engine monitoring**, **gas analysis applications** and many more, with a wide variety of potential deployments possible!

Features

- Voltage input 5V to 16Vdc
- Operating temperature -20°C to +70°C ambient temperature
- Physical Dimensions: 58mm x 43mm x 16mm
- Four digital I/O ports for control
- USB and RS232/TTL connections for data
- Use AT commands to tailor the module's function to your application
- SIM carrier onboard
- Use with H24 module for HSUPA and GPS
- Use with G30 for a 'C' programmable autonomous cellular sub-system

Adaptive Modules understand how important it is to get the right wireless solution for your product, which is why they also offer a wide range of wireless and cellular solutions through GSM/GPRS, Bluetooth, Wi-Fi and Zigbee communications mediums, finding the best remote access and machine communication solutions for your applications.

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www.adaptivemodules.com
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EXTENDED NETWORK
OF COMPETENCE CENTERS

Felix Marchal, *Senior VP Global Sales*

>> Telit strives to continuously extend its range of services and level of customer support by establishing Competence Centers around the globe. These partner companies, selected based on stringent criteria, offer special skills and engineering services in the technical design of cellular m2m applications applying Telit technology. We currently have over thirty Competence Centers worldwide that have joined this Telit program to provide customers extended support services.

Telit Competence Centers provide design, development, integration assistance and other value added services to customers looking to design a Telit-enabled application. By developing individualized concepts, the centers help integrate the innovative suite of Telit modules and services in cellular, short range, and GNSS m2m solutions, thereby achieving the best technical results. Customers also benefit from outsourcing parts of their development to experienced partners with an extensive range of competences particularly in the field of wireless technologies. Moreover, with help from Competence Centers, OEMs can focus efforts more specifically on their core competences throughout the product development process increasing R&D efficiency and shortening time-to-market.

Broadening Possibilities for our Customers

Telit Competence Centers provide extended support services and can additionally help customers broaden their application landscape. In this context Telit customers can experience the Competence Center as a professional and reliable partner able to solve communication integration challenges in a short time. In addition to extending customer support, our Competence Center partners complement Telit's distribution network. Even though they are not sales channels, Competence Centers indirectly contribute to new business generation for all partners.

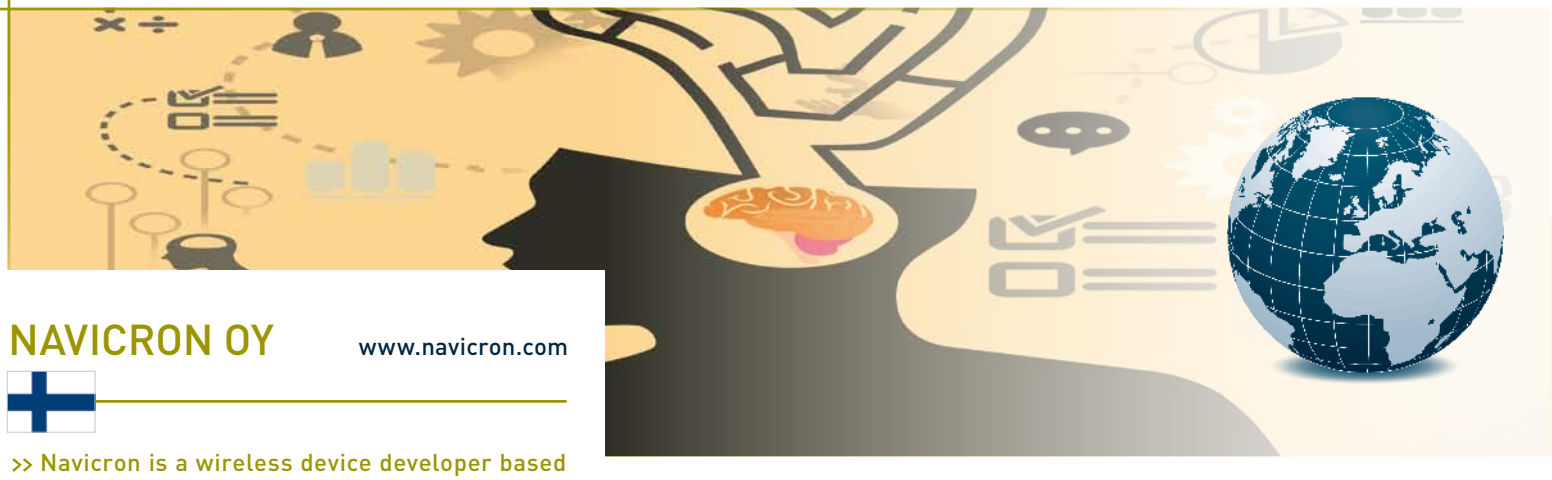
Tough Selection Procedure

Competence Center partners are selected based on a strict set of criteria. First, they must demonstrate a wealth of experience in cellular design and have proven skills in the development of hardware, software, and mechanical components. Candidate companies should also have far-reaching knowledge of international certification procedures and be experts in design, prototyping and manufacturing of electronic concepts. Having a large number of contacts in the international m2m market also plays an important role in the selection process for Telit Competence Centers, as does having operational relationships with local manufacturing partners.

Accelerate your time-to-market

Our next challenge now is to involve value added partners possessing specific and dedicated expertise within the value chain of vertical segments like Telematics, Metering, Asset Management, Medical and Healthcare, etc., which are valuable for ecosystems which are becoming increasingly more complex with many players involved in the selling process, from demand creation to demand fulfillment. Telit is currently defining a network of commercial Competence Centers, not necessarily skilled in technical and design activities, but with expertise in the dynamics of vertical segments and able to help customers navigate the complex market scenarios, speeding-up their time-to-market. This new kind of Competence centers will reduce risks of delays, direct and indirect cost overruns, inefficiencies, and etc. which are typical when there is a lack of knowledge in best practices for specific segments. Commercial Competence Centers will act as expert consultants with qualifications stemming from long term knowledge in commercial and selling strategies applied to specific m2m vertical segments and able to drive customers in the most efficient and effective ways. <<

COMPETENCE CENTERS EMEA



NAVICRON OY

www.navicron.com

>> Navicron is a wireless device developer based in Oulu, Northern Finland, known for the creation of devices such as the Aesir AE+Y Luxury mobile phone and multiple other m2m devices. Navicron has also developed its own platform for smart wireless devices. The platform is capable of using various wireless standards including 2G, 3G, Bluetooth and WiFi.

With competences ranging from hardware and mechanical engineering right through to software design and complete production ramp up, Navicron is able to develop devices for many industries and uses. This broad spectrum of abilities means that whether you need a complete off-the-shelf product or just part of a process, Navicron is an excellent choice for you.

Boasting a broad reach, Navicron and its partners bring to bear a unique and creative set of competences and experiences. Creative solutions to hard-to-solve problems come naturally and Navicron's small size does not count against it, rather making for a smart and nimble approach which ensures solutions are high quality, on budget and on time. Navicron utilizes its long history with wireless device development to bring products to a wide breadth of industries.

Navicron's key employees have time-tried experience in the industry and its management team has both knowledge and history to deliver great solutions every time.

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navicron
INNOVATIVE MOBILE TECHNOLOGY

DRACO SYSTEMS, TELIT'S SPANISH COMPETENCE CENTER

www.dracosystems.net

>> DRACO is an innovative electronic engineering company, constantly striving to move forward in terms of technology, reliability and performance; searching for technology enhancements to help differentiate in-house development; providing our customers with leading-edge solutions on time and at a competitive cost. In that respect, our partnership with TELIT is a good example of how to add value for potential customers requiring GSM/GPRS/UMTS communications in their new devices. Our experience and close collaboration building solutions with TELIT since 2007 is a guarantee of success for our customers in development of customized products.

Our PLANET BOX product is a good example of this successful partnership. It provides real-time position data also including tracking, alarms, and telemetry capabilities. Since its launch the product has been used by a number of customers from different verticals such as field solar energy producers, private owners of cars and motorbikes, truck fleets, and medical devices with global remote monitoring; all in an easy and efficient way.

As a technology partner, DRACO strives to meet each new challenge as the first; with the same vitality and spirit, providing our customers with:

- ➜ Creativity in innovation
- ➜ Rugged and reliable designs
- ➜ Reduction of customer's level of effort
- ➜ Ease of adaptation to customer's environment
- ➜ Risk mitigation
- ➜ Shortening of time-to-market

At DRACO, we are always waiting for our next challenge, please contact us at **info@dracosystems.net** or call us at **+34 93 560 70 10**. <<

DRACO systems
Partners in technology

COMPETENCE CENTERS NORTH AMERICA

SPECTRUM DESIGN SOLUTIONS – WHERE WIRELESS HAPPENS. www.spectrumdsi.com

>> Spectrum Design Solutions is an engineering design services company with extensive expertise in M2M applications. Spectrum has over 75 RF product development engineers. Their business approach allows customers to focus on their core competency and to control their own manufacturing. Spectrum supports their customers from requirements definition through all the steps of a design and the certification process to pre-production, they then hand the design back to the customer to manage manufacturing. Spectrum will even help customers develop functional test systems for their wireless products in manufacturing.

Spectrum combines a wealth of professional experience with a complete set of testing tools to pre-scan the customer's products before bringing them to the certification labs, maximizing the potential of certification on the first pass and allowing efficient trouble-shooting of design issues. Spectrum's testing services, facilities and tools include cellular certification pre-scan (PTCRB and carrier level certifications), TIS/TRP pre-scan, multi-radio co-existence testing, spectral analysis, insertion loss, and impedance measurement. Their cellular equipment includes anechoic chambers, RF screen room and isolation chambers, cellular call boxes as well as the usual general RF test equipment. For more information, visit **www.spectrumdsi.com.** <<

SPECTRUM DESIGN SOLUTIONS
WHERE WIRELESS HAPPENS

CONNECTED DEVELOPMENT – BECAUSE TECHNOLOGY IS JUST THE BEGINNING.

www.connecteddev.com

>> Connected Development provides a comprehensive set of services to bring your product from concept to reality quickly and painlessly. In addition, their network of partners, spanning every area of the wireless community, lets Connected Development position their customers' solutions for success from the start. The team at Connected Development has an extensive and fundamental understanding of wireless technology both in breadth and depth. The majority of the staff has over 10 years of experience in cellular design.

Whether you're in the concept phase or already have a design in mind, Connected Development has the right offerings to help make your project a success. Services include: requirements definition; project management; design review and consulting; full hardware design; software development and prototyping, as well as mechanical design and implementation. They can handle any part, or the entire development cycle.

In addition, Connected Development offers proven expertise in certification and validation processes. The team's collective experience with these processes can help you through antenna performance evaluation, custom automated test campaigns, pre-certification troubleshooting, RF performance testing, design reliability testing, carrier-specific field testing, and use case development and execution. For more information, visit **www.connecteddev.com.** <<

CONNECTED DEVELOPMENT

CONNECTED DEVELOPMENT

WHAT'S YOUR IDEA?

Bring it to life with Connected Development.

Ground-breaking ideas can come from anywhere. Like from you. But only those that pass through the intersection of idea and know-how survive to change the way we live and work.

Connected Development is committed to turning those ideas into reality. We provide comprehensive wireless design, validation and consulting services to bring innovative new products to market fast, minimize risk and help you position yourself for success.

So, don't keep your great ideas to yourself another minute. Visit www.connecteddev.com today and see how we can put our experience to work for you.

Connected Development
Because technology is just the beginning.

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COMPETENCE CENTERS LATIN AMERICA

ITECH

www.grupoitech.com.br

>> iTech has been deeply involved in the technology sector for over 20 years. Being an electronics components distributor and working with several important brands, iTech has acquired a vast experience in many different segments of electronics, telecommunication and automation. Today in the wireless solutions sector we are capable of offering customers a wide variety of services, performed in a very flexible way, managing the entire project or supporting just those areas where the customer requires help.

Even in very specific services involving unique equipment or manpower, iTech has the right partners with specialized skills, so that no customer need will ever go unmet. Hardware design engineered for cost and production capability; firmware and software design on different platforms and levels; testing, validation and certifications; production set up and other details; are but a few services we support Based on that, the customer can find in iTech the best option as a supplier. And irrespective of the level of supported needed, we are always able to provide it with the result being a feasible solution, very cost effective and in the right time to market. <<

ELECTROCOMPONENTES

www.electrocomponentes.com

>> The partnership between Electrocomponentes and Telit for developing m2m business in Argentina has been very successful due to great local support, leading technology and broad product protfolio. For over 5 years Electrocomponentes has been an important provider of m2m solutions in Argentina, a status earned from the company's solid technical support.

Electrocomponentes has developed entry level modems based on Telit's G24, G24L, G20, and H24 products allowing customers access to m2m technology for data transmission. The objective of these tools is to give the customers a way to try the technology without devloping hardware.

Our modems started with simple serial interface, and from there Electrocomponentes developed several versions with USB, integrated MCUs, etc., allowing protocol translations for those customers wanting ready-to-use hardware.

The design for these modems takes advantage of Telit's G series electrical and mechanical compatibility, allowing the same design to use different m2m modules for GPRS, EDGE and UMTS. This compatibility is also sustained through different m2m module generations.

We found it mandatory, when we started the business, to build our own experience with hardware and software and to transfer our knowledge to our customers making it easier for them to take on m2m projects. The knowledge these development projects have provided our engineering department has been very useful in the support of our customers in Argentina with their own projects. Our modems allow us to develop application notes implementing different features of the Telit modules which can then be used a base for new customers starting out without skills in the m2m area. <<

Electrocomponentes S.A.
www.electrocomponentes.com

COMPETENCE CENTERS APAC

CALIXTO

www.calixto.co.in

>> Remote monitoring and control of Instruments & assets is one of the key requirements of the industry for India, cellular networks are emerging as the platform of choice for data transfer. Calixto has built affordable, scalable yet customizable reference solutions for Remote Monitoring and Control using Telit GPRS/CDMA modems.

Calixto Systems was established with the primary objective of excelling in design, prototyping, and pilot production of energy efficient embedded systems. We have been developing microprocessor modules and building partnership with wireless module vendors to provide customers the right price points and time to market for the products we develop. Calixto Systems focuses its efforts on Energy, Industrial and Healthcare segments.

Because in these markets individual product volumes are not as high as in consumer products, customers are unwilling or unable to spend much on NRE (Non-recurring Engineering) per product. Because most of our competition is more focused on NRE (service charge) from customers as the only revenue source their cost and designs are much higher as compared to ours. To avoid that Calixto focuses on identifying the right customer and product segment and supporting these into becoming successful.

We operate on a module-based design. With our processor modules and partnerships with other wireless module vendors such as Telit and Jorjin, we are able to offer complete solutions for our focus areas. Coupled with our module based business model, we are able to support our customers' R&D teams in product enablement.

In the starting phase of our customer engagements, we used to consider every customer and every application differently. We never looked at leveraging common components between applications or customers beyond processors or microcontrollers. This posed a challenge in terms of cost, scalability and time-to-market for our customers; and resource availability for Calixto.

To resolve this issue, we started looking at common components such as modules (hardware and software) and in some cases reference solutions. This approach has allowed us to provide differential value-add to each customer. This has also allowed customers to spend less NRE for their development. In the last six months we have developed products and solutions including a substation data concentrator unit (DCU), a unique GPRS tower-based tracking product, and entry-level intelligent remote monitoring/control solutions by using Telit's GL865 GSM/GPRS module. As most of our customers are in the industrial, energy and healthcare industries, they look for internationally proven modules. Additionally, we are able to get support locally from Telit and its distributors.

Calixto
INNOVATION BREAKTHROUGHS

Calixto's development process

Our typical development process flows thus:

- ➜ System design for customer products generated from requirements/block diagram
- ➜ Schematics design prepared
- ➜ PCB design and routing. We also start firmware planning here using Telit development boards
- ➜ PCB Fabrication (3P)
- ➜ Prototype Assembly and Electrical Testing
- ➜ Software porting and Application development as needed
- ➜ Once customer is ready for pilot and mass production, we support them or their EMS.

Because the modules are well documented, we have not had any serious issues. We have consulted with Telit or distributor FAEs (first project only) on aspects such as:

- ➜ GPRS connection establishment
- ➜ Python script usage
- ➜ AT commands
- ➜ UART usage in Telit modules

Key benefits for our customers

Calixto provides ready-to-manufacture references for GPRS gateway solutions. Our reference designs are directly usable for a wide range of remote monitoring/control applications and enable customization of the solution without significant impact on time to market. <<

TELIT SALES – SUCCESS FROM THE ART OF LISTENING

Felix Marchal,
Senior VP Global Sales

>> From a very straightforward analysis we concluded that Telit needs to deliver what our customers want, in an easy to implement, simple and seamless way.

From this basic assumption and considering our goal of becoming the global leader in the field of Machine-to-Machine (m2m) communications, it became obvious that we couldn't rely only on our own GPRS protocol stack developed in the 90's but we had to invest in other Cellular technologies such as CDMA and WCDMA. We were consequently one of the first module makers to launch a ruggedized HSDPA module that Audi selected as core technology for its connected vehicles.

With the same realization that requirements for m2m modules are steadily increasing with substantial added versatility in use, the integration of complementary technologies such as GPS and ZigBee at module level is gaining increasing importance. With that, Telit made a strategic move from "cellular m2m" solutions provider to "wireless m2m" solutions provider, including both satellite and short range RF technologies in its product offering. Being the only m2m supplier worldwide to offer all relevant wireless technologies in its product portfolio, Telit provides its customers with tailored single source solutions.

Despite being through a number of different mergers and acquisition, the company guarantees now, more than ever, the same level of technical excellence, and customer satisfaction and orientation in sales to new customers as it did before. For us providing the best buying experience has been and remains all about customer satisfaction. Providing quality customer experience is however no easy task due to the high degree of fragmentation in the m2m market compounded by Telit's desire to listen equally to all its customers.

Due to market fragmentation and diversified vertical markets, Telit's sales channels, both direct and indirect, are extremely valuable. Today, our indirect sales network plays a major role in Telit's success with its members truly regarded as partners. Telit's value-added distributors as well as Telit's Competence Centers provide for national geographic coverage, possess detailed local knowledge and expertise, provide technical expertise on Telit products and allow maximum customer reach at reasonable cost.

With Telit's network of distributors focused on satisfying the needs of our small and medium sized customers, our global sales strategy would not be complete without a clear focus on serving our existing and high-potential large direct accounts within targeted vertical markets. Customers count on Telit to provide key value through quality, continuity of supply, flexibility, extended support, total cost of ownership, customization, and scalability of m2m architecture. Additionally, Telit is able and endeavors to solve customers' needs beyond just the module. Still, our ultimate goal is to be viewed as a partner and trusted advisor.

Telit Wireless Solutions is famous for its four core values that play a key role in ensuring the customer's success: business scalability, ease of integration, investment protection, and world class quality. These key competencies are represented by a wide range of advantages and services that Telit offers to its customers.

? Nevertheless, besides Cellular, Satellite and Short Range RF solutions, what could be the ultimate value-add offering to differentiate Telit from a fair number of vendors presently offering m2m modules?

? Apart from Telit Infinita Services offering the simplification of m2m solution deployment and maintenance of the device software, what additional service could ultimately accelerate Telit's value chain expansion in m2m?

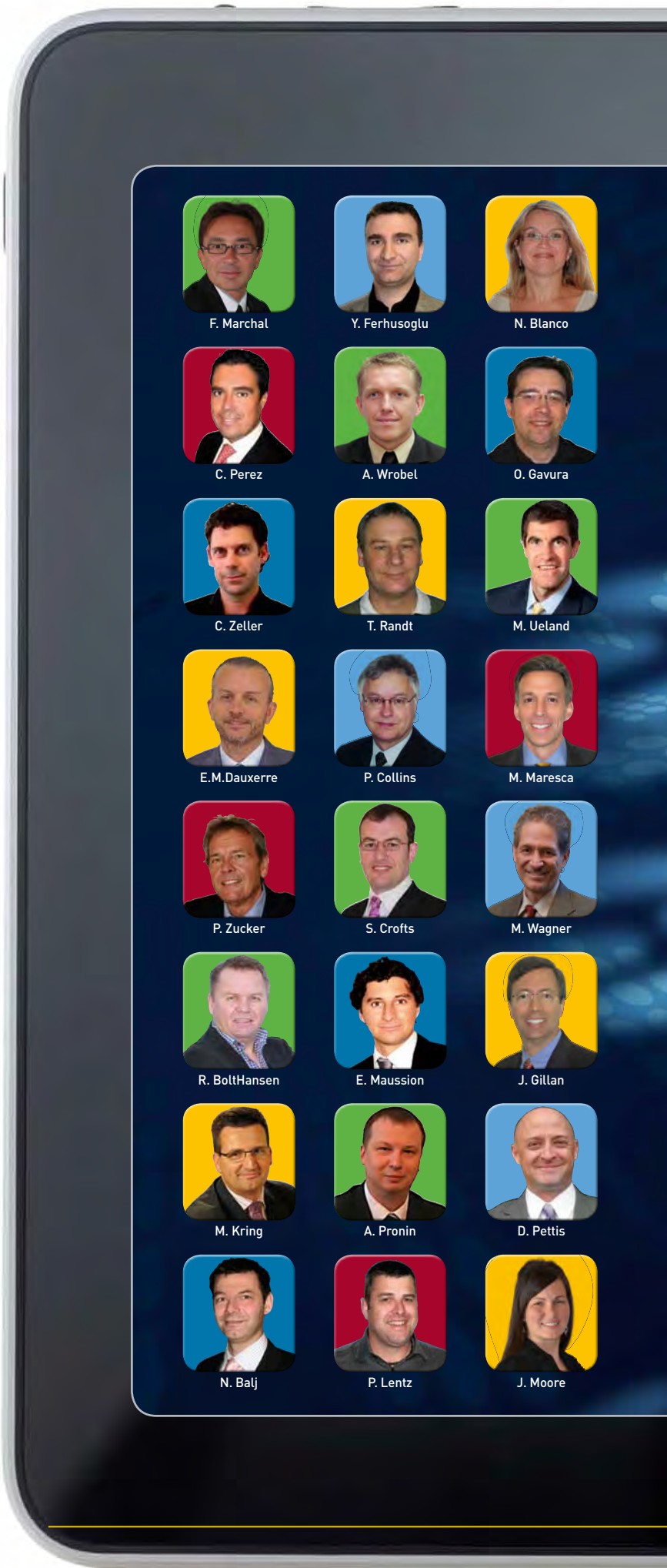
? Don't you think that a global connectivity offering with premium value-added services, customer support, bundled together with module innovation would provide the ultimate level of customer satisfaction?

? Don't you believe that cross-border connectivity coverage, dedicated m2m core network elements and best-in-class wireless platform would help Telit to become 'the' preferred supplier in a long term partnership?

We did listen carefully to our customer base and partners and this unprecedented bundle from Telit signals a paradigm shift in the industry because finally, any m2m service or solution provider, whatever its size, can have the same quality of service, performance, pricing and support as do the largest players in the industry. This competitive advantage from this brand new service will enable m2m service providers and application developers to bring solutions to market more quickly with technical support over the entire product lifecycle, streamlining logistics, operations, and deployment.

By being close to our clients and directly engaged at each stage of the design-in cycle, we are able to understand what they care about. Our day-to-day activities focus on being flexible, solving problems, delivering on-time and affordable products and technologies, meeting customer demands, offering dedicated support packages designed to speed time-to-market through complimentary pre-certification and design reviews, and providing state-of-the-art service models through comprehensive solutions ranging from hardware to airtime and back-end services. These customer focused offerings have enabled Telit to increase market penetration quicker than our competitors.

Innovation leadership is achieved by maintaining high industrial standards and high R&D investments. Telit is the only solution provider in the space to offer products covering all m2m-relevant wireless technologies with services and connectivity. As a result of being the most focused m2m player, understanding our customers' business models; being able to successfully support our customers' business cases; having our core values in investment protection, business scalability, ease of integration, and quality, which are all key to our customers; having best-in class marketing communications to support and raise our customers' profiles in the market; and placing customer satisfaction as our number 1 priority; Telit can provide you, our customer, with the competitive edge you need to succeed in your market segment and business. <<



TELIT'S SALES FORCE


C. Link


A. Hauk

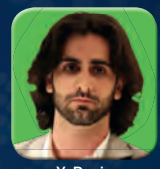

M. Kinzkowski


R. Simon


A. Couto


S. Yulzari


A. Fan


Y. Raviv


C. Ming


Z. Nov


D. Koh


H. Kim


Y. Shin


A. Gulati


J. Noh


A. Wang


J. Kim

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TELIT CONNECTS M2M COMMUNITY WITH THE PREMIERE OF DEVCON

Leslie Hart, *Director of Marketing - North America*

Telit® wireless solutions | DevCon 2012

>> On October 10, 2011 nearly 200 m2m business leaders, technology integrators, analysts, and experts gathered at the Hard Rock Hotel in San Diego for Telit's DevCon 2011, to share their knowledge, insights and ideas regarding Telit solutions and the ever-expanding m2m market. Telit chose this ideal time to host its inaugural developers' conference just ahead of CTIA to bring together industry leaders and technical experts from up and down the m2m value chain.

Telit's CEO, Oozi Cats welcomed delegates, updating them on the strides Telit has made as the fastest-growing m2m company in the world. Keynote speaker Robin Duke-Woolley of Beecham Research, who discussed the overall market growth and the rapid uptake of vertical applications, also highlighted the event.

Perhaps the best-attended session of the day was the one featuring top executives from Sprint, Verizon and AT&T discussing m2m's gradual technology evolution from 2G to 3G and the eventual move to 4G. A common theme among all the day's panelists and participants was the need for strong partnerships to develop enabling the deployment of viable m2m solutions and driving the market forward.

Attendees had access to valuable insights from innovators in the m2m space, including representatives from RACO Wireless, Axeda, Wyless Group, and many more. In the technical track, Telit employees guided application engineers in designing connected devices and integrating Telit products, ushering in a new generation of m2m deployments. Telit DevCon 2011 created the perfect opportunity to strengthen bonds with our customers, provide networking opportunities with our partners in the m2m ecosystem, and create a knowledge-sharing platform to foster growth in the market.

We anticipate Telit DevCon 2012 will grow along with the m2m market, welcoming new companies and application developers to our community and the industry. Telit DevCon is returning to San Diego on Monday, October 8, 2012, preceding the opening of 'CTIA Enterprise & Applications'. It will build on the success from last year and further the benefits of m2m communications and the expanding market for applications and development. We look forward to a second successful DevCon and hope to see you in California.

Mark Your Calendar:
Telit DevCon 2012
Hard Rock Hotel
San Diego, California
October 8, 2012

For more information, email us at marcom-northamerica@telit.com, and follow Telit on Facebook and Twitter for DevCon updates. <<

Telit® wireless solutions | DevCon 2011

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MAKING A DIFFERENCE THROUGH M2M

Benedetta Piantella visiting a village near Kawai, in the Maasai Mara where Maasai women are involved in sustainability projects.

>> Disaster struck Sri Lanka on December 26, 2004 as a tsunami crashed onto the beaches of the island nation. Trapped underwater in a building after the initial impact, Benedetta Piantella clung to survival and found refuge in the hills for three days without food, water or clothing before a generous family took her in. Piantella immediately became actively involved in clean-up and relief efforts. She traveled to nearby villages and hospitals to reunite families and dedicated herself to coordinating displaced tourists and her fellow Italian nationals.

Changed by this first-hand experience with a catastrophic natural disaster, Piantella recognized the impact of corruption on relief efforts as well as her own potential to address humanitarian, environmental and social issues on a larger scale. She soon turned inspiration into action and co-founded GROUND Lab, an R&D prototyping firm that marries open source development with humanitarian issues worldwide, redefining the business model for technological advancement and creating new economic opportunities for individuals across the globe.

Piantella and GROUND Lab co-founder Justin Downs joined forces while classmates in the Interactive Telecommunications Program (ITP) at New York University's Tisch School of the Arts. Both draw upon the creative thinking and experimental nature of their artistic backgrounds when approaching each of their technological designs. For Downs, GROUND Lab's projects provide an outlet for him to merge his ideas with physical objects, taking them beyond the limitations of an art piece and making a significant impact on people around the world. Piantella similarly revels in the company's ability to break down boundaries.

© Leslie Stem

"During my early years I thought I was born as an artist, but I have come to realize that I was actually born as a very out-of-the-box thinker and extremely resourceful problem solver," said Piantella. "At the heart of it all lies a personal and deeply-rooted need to overcome restraints and limitations, whatever those may be. The arts offered a fantastic playground to experiment with many different techniques, processes and methodologies without any kind of pre-set expectation or prejudice. This flexibility has certainly influenced my practice, as it still gives me the courage to explore very different avenues and approaches to designing solutions for the social challenges that GROUND Lab focuses on."

Piantella encourages this same curiosity and ingenuity in her students at NYU, where she serves as an adjunct professor, and constantly investigates new communications technologies herself. Through both scholarly and professional endeavors, she has come to recognize the boundless potential and growing value of m2m. Her first implementation came in 2008 when GROUND Lab partnered with UNICEF to develop medical data-logging device. The Telit-based prototype allowed for the diagnosis, real-time data transmission and monitoring of children's Severe Acute Malnutrition, a project that opened Piantella's eyes to the opportunities cellular m2m presented.

"Networking and machine-to-machine communication revealed itself right away as one of the most interesting technologies of our time. I could finally not only control environments and appliances remotely, as well as transmit valuable information on demand, but I was also empowered to create true custom user experiences."

The wide distribution of cellular networks provides Piantella with the flexibility to develop creative m2m solutions that are also scalable and affordable. Furthermore, the availability of these connections in both developed and developing countries

Vita

Benedetta Piantella is the co-founder and CFO of GROUND Lab LLC, an engineering, research and development firm dedicated to addressing sustainability issues worldwide. She also serves as an adjunct professor in the Interactive Telecommunications Program at New York University, where she received a master's degree in 2008.

Piantella has lectured at such esteemed institutions as Princeton and premier conferences like Maker Faire in New York City, where she recently received the Editor's Choice Award for her work with GROUND Lab, among her many honors.

In addition to her master's degree from NYU, Piantella holds a master's degree in journalism and online community management from City University of New York and La Sapienza University of Rome. She earned a B.F.A. from Tufts University, in affiliation with the School of the Museum of Fine Arts Boston in 2004.

Watch a portrait of Benedetta Piantella on YouTube

allows GROUND Lab to quickly deploy applications and address issues that demand immediate attention. According to Downs, at the core of all these issues is energy.

"The most prevalent issue in the 21st century will be how to maintain social, technological and trade structures for 7-9 billion people while using two-thirds less energy than we do today. Making energy gains, whether by substituting communications for travel or labor hours in data collection, is what m2m contributes."

GROUND Lab's m2m solutions inherently offer labor and energy efficiencies, and many also directly address issues of energy production and management, including a cellular logic board for the remote monitoring and metering of solar power. Developed in partnership with the Modi Research Group and the Earth Institute at Columbia University, this energy system allows for control of individual power consumption via SMS and offers entrepreneurial opportunities for individuals in developing countries to become energy providers. The resulting energy conservation and economic stimulus combine to support the long-term sustainability of these communities.

Piantella sees remote energy production as one of the most pressing issues that GROUND Lab has focused on, and looks forward to continuing their research and development efforts to address the many aspects of this challenge. This research will move forward with an open source approach, another of the core values that Piantella and Downs hold for their company, allowing other developers to build upon GROUND Lab's advancements and make a larger impact through a community of contributors.

Justin Downs with Lazzaro, one of the local „fundis" who helped installing the remote solar system in Kenya.

"I am, for the most part, a self-taught developer. I would have never achieved the personal and professional results that I was able to achieve in such a short amount of time without the open source community, their open documentation, tutorials and designs," said Piantella, also recognizing the value of this approach in emerging economies. "Open source, through documentation, local education, leaner scalability, as well as local repair and manufacturing, can contribute to helping countries develop new economic revenue streams and create new skills and jobs."

In fact, Piantella and Downs consider their open source approach to be a clear differentiator and core characteristic of their own unconventional business model, combining open source development with the needs and resources of their clients and partners, with which they have had much success.

As for what the future holds, GROUND Lab will expand its network of like-minded partners, broadening its reach to new geographic areas and solving pressing global issues, including the unique challenges of emergency relief that continue to influence Piantella's life and work. <<

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