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ISSUE 08|13

telit 2market

The Telit m2m Magazine

Meet m2mAIR – with all strings now in place, make your music on the Internet of Things

10 years on, step inside Telit, m2m's top One-Stop-Shop

Experts' views and case studies from vertical segments:

Telit – 10 YEARS
ANNIVERSARY ISSUE

Telit® wireless solutions
Making machines talk.®

m2mair
by Telit m2m experts

CAN YOU ?...

... see if your critical devices have **network coverage and troubleshoot?**

... adjust connectivity usage from one to all your devices instantly to **avoid overage charges?**

... find an m2m rate plan that will **only bill you for devices generating revenue** for you?

... tell where each of your devices is, **anytime, anywhere, without using GPS?**

... ask the module in your device to **report its setup and running status?**

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Dear Reader,

This year, with Europe especially still facing a serious economic crisis, it is a foregone conclusion that other regions might also in the near future feel the effects of it. With crisis comes uncertainty: investments and growth slow broadly, inevitably affecting the m2m market.

Enrico Testa,
Chairman of the Board, Telit

At Telit we have succeeded defeating the brunt of ill-effects from the financial crisis achieving a positive result even in these difficult times. We have sustained growth despite the crisis. Our financial data is good evidence of that. But what is driving our success? For one, we are the only company in the market that is purely focused on m2m with over 10 years' experience now. We know the market very well and understand our customers' needs thoroughly. Telit is a truly global company with sales offices worldwide. This helps us be closer to our customers in every region and always have an ear for them.

Another key success factor is our innovation power. We have proven this many times over with module hardware. Now we are taking the next step by enhancing our modules with value-added services including connectivity. This will allow our customers, for the first time ever, to fully manage all their m2m deployments including SIM and modules via an online portal. In addition, with this expanded model, customers can source all relevant wireless modules, services and connectivity from a single vendor. This helps them reduce not only complexity in their supply chain, but complexity in building m2m applications. This new service-enhanced product offering will change the game radically propelling us to further substantial growth.

Moreover, we truly believe that m2m is the technology that will help solve critical challenges we are facing in today's societies. "Smart" solutions are coming into being in every area of our lives – from smart cars, to smart homes, smart cities and even a smart healthcare system. This will lead to a more homogeneous and sustainable society. At Telit, we are enabling these smart solutions by providing all necessary technologies streamlined for a quick journey to market. Telit is connecting the world.

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. With that, I would now like to welcome you to this new issue of our corporate magazine.

Chicco Testa

08|13 CONTENT

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CEO, Telit Communications PLC

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ENABLING A SMARTER WORLD

FOR THE PAST 10 YEARS AND INTO THE FUTURE

Oozi Cats, *CEO, Telit*

>> When I started Telit several years ago, the m2m market looked a lot different. Since then a great deal has changed. Not only has Telit grown steadily and successfully, it has diversified its portfolio and can now be counted as the biggest among the three largest m2m module enablers in the world. m2m technology has advanced rapidly, and with it our ability to use it more intelligently.

Imagine for a moment that in the morning your bathroom mirror gives you not only the daily news and weather forecast, but also tells you about the current traffic condition estimating your travel time to the office – because before going to bed, you entered the route into your car's navigation system. Now you know how much time you can take for your morning coffee. Your watch picks up your mineral levels by sensing your skin and at lunch suggests what you should select from the menu; and will warn you if you're drinking too much coffee. Then, as soon as you leave the office, your home's heating system is alerted; and just before you pull in, the garage door opens. As you park your car, the alarm system for the house switches off; and while still on the road, you turned on the lights in your home from your smartphone, and as you step inside your home entertainment system is playing just the music to match your mood – as gauged by your heart rate, which was measured and transmitted by your shirt. Or perhaps you find yourself in an unfamiliar city. Looking for a restaurant? Simply tell your navigation system what you would like to eat, and your car drives you independently to the place, drops you off, queries the city system, finds a parking space, and parks in it.

Some of this may sound like a futuristic fantasy, but these technologies already exist and much of what we could not have imagined for m2m just a few years ago has already become reality. For the 2012 Olympic Games in London, for example, all municipal vehicles were fitted with an m2m device – equipped with a Telit GSM module – which transmitted motorist information in real time to the Fleet Management Center (see article on page 91 of Traffilog). If anything unforeseen happened, the device ensured that the command and control center stayed in direct contact with the affected vehicles – a crucial safety factor in such a huge international event.

m2m technology is one of the definitive pacesetters in a world that is becoming "smarter" and more mobile. In this new issue of telit2market you will find plenty of examples of the groundbreaking m2m applications that are making our everyday lives more convenient, easier – and safer too, allowing more efficient use of our energy resources, lowering CO_2 emissions, and so helping provide a better and more sustainable quality of life.

m2m technology has spread rapidly throughout a broad range of application areas in recent years, backed by some tremendous developments. More reliable data can be generated and transmitted faster thus becoming more valuable; energy consumption can be reduced; logistics processes managed more efficiently; and the safety of people and property better ensured. Saving human lives will be easier, becoming possible in some cases where it was not possible before. And we are just starting out. In the years to come m2m technology will be found in nearly everything touching our daily lives and ushering in great and manifold changes, more than any other technology in the past decades.

Today, more machines and devices are communicating over the Internet than humans. The era of the "Internet of Things" has been a reality for some time already, and for most people using the Internet it happens every day. The proliferation of smartphones and tablets is leading to a rising comfort level with the use of mobile applications, not only in professional activities, but increasingly also in our daily private lives. That in turn, is leading to an ever greater acceptance of m2m technology.

At the same time, developments in m2m applications have become highly advanced and sophisticated. The handling of m2m applications is becoming increasingly easier, production cheaper, and the establishment of global technical standards is facilitating the integration of m2m systems appreciably. All these trends will lead to an enormous proliferation of m2m applications with a matching demand for m2m hardware and connectivity.

The core of m2m

At the heart of each m2m application is the m2m module. Telit is still the world's only manufacturer offering a cross-technology combined portfolio of cellular, short range, and GNSS modules covering not only all of the relevant wireless technologies, but also offering the broadest, most complete portfolio among all m2m module manufacturers.

With this unique, comprehensive and technologically advanced product portfo-

lio, Telit provides customers with the three core technologies required for advanced m2m applications – cellular and short range wireless plus location awareness. As the industry's only pure-play m2m company, Telit accompanies and supports customers from design of the application to production and market launch – and this in all verticals, including the new "smart" segments.

Application of Telit modules together with our services can significantly reduce the cost of implementing, operating and updating m2m applications so that more of our customers' m2m ideas can get to market faster, leading to a decisive competitive advantage – at the time of launch and throughout the full product life cycle.

More m2m with m2mAIR

m2m technology is ing innovation in connected devices and yet for many companies, especially small and medium enterprises, which traditionally account for a large fraction of innovation, this technology is still complex. The fundamental disconnect between the solutions needs of small and medium enterprises and market solutions that are tailored to meet these needs, creates opportunity for Telit; one that we have committed to address with the creation of m2mAIR. The m2mAIR value proposition is a Game Changer that positions Telit well to provide a suite of products and services which reduce complexity and speed the time to market for our small and medium enterprise customers.

Starting with the acquisition of GlobalConect in mid-2012, Telit stepped in to fill this market gap with its newly formed service business unit, m2mAIR. We first launched and focused on the European market and with the acquisition of US-based CrossBridge Solutions, we moved forward with our strategy to deploy value added services to m2m customers in North America.

These two acquisitions added additional engineering and sales resources allowing us to offer "intelligent" value added services and connectivity to our European and North America enterprise customers. Telit remains able to work with our value chain and business partners, which include MNOs like Telefónica, AT&T, Verizon and Sprint.

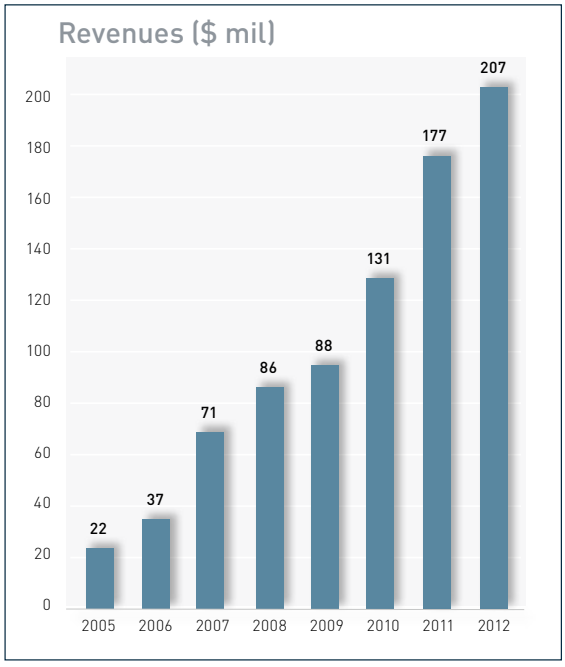
With the acquisition of CrossBridge Solutions, our m2mAIR business unit can offer more competitive North American managed data services adding to our initial m2mAIR offering with Teléfonica as underlying network provider. In North America, we can now offer managed services on partner networks including AT&T, Verizon, Sprint and Iridium.

In addition to the rich features of m2mAIR's value added services such as module management and Intelligent Performance Analyzer or IPA, an innovative service that allows customers to set specific deployment wide performance indicators, the two acquisitions and our strategic partnerships have made it possible for us to provide wireless data, SMS and voice connectivity on UMTS/HSPA, GSM/GPRS and CDMA networks worldwide plus data and voice connectivity on the Iridium satellite system globally.

Telit can now provide seamless and ubiquitous connectivity tailored to the needs of the m2m industry and based on a global Service Delivery Platform. By applying this infrastructure, single SIM cards can be activated or deactivated in less than a second. Through our technically qualified staff in over 80 countries, we can offer on-site service with the shortest reaction times, even to remote locations.

With this unique combination of modules in all relevant m2m technologies, value added services and connectivity, Telit becomes the world's first one-stop shop for managed m2m solutions. For our m2mAIR customers this means aggressively reduced total cost of ownership, enhanced cost control, better security, streamlined troubleshooting, service-enhanced applications (e.g. mobile-based positioning, remote management module), and superior network coverage and performance. (See also pages 16/17 and 55 et seq.). We see an enormous potential in this market and have tasked 350 sales specialists to work this opportunity around the world.

Our aspiration with m2mAIR is for every third to fourth customer in a reasonably near future to not only purchase m2m modules from Telit, but also take advantage of these value-enhancing services. This expanded business model lets us offer our customers significant improvement in managing their m2m applications while at the same time establishing a business with stable and recurring revenue.



Solid results, based on a solid strategy

The success of previous strategic decisions including acquisitions of the Motorola M2M division and Navman shows that Telit's strategy targeting consistent extension of its service range is the right track. Our results from the previous fiscal year confirm this:

We expect that unaudited revenues for the year ended 31 December 2012 will be approximately $207.2 million, which means an increase of 16.8% compared to revenues for 2011 (2011: $177.4m), and 1.9% above market expectations. Thus the annual results for 2012 again show growth.

Smarter products, smarter m2m

With the launch of the Telit module Jupiter SL869, which tracks signals from both GPS and GLONASS satellites, Telit set a new standard for applications in the navigation and tracking segments early last year. Then with the SE880 GPS module introduced in October 2012, Telit once again reset the bar, developing an extremely small and capable module, demonstrating its commitment to an aggressive research and development policy.

At only 4.7 x 4.7 mm, the SE880 is the smallest, most sensitive and most advanced GPS SiP module in the world. This makes it the best GNSS platform for high-volume, ultra-compact mobile/tracking applications and for m2m products such as sports watches, cameras, and tablet computers. Confirmation of the market value of this product came a month after launch last year when it was named by EDN Network as one of its pick products for their annual Hot 100 Products - 2012.

In the cellular module field, Telit undertook a major expansion of its product portfolio with the launch of the xE910 module family early in 2012. The xE910 is a family of compact LGA modules sharing a unified form factor and common AT interface, and supporting GSM/GPRS, UMTS/HSPA+ and CDMA/EV-DO. A newly announced 3.5G HSPA variant – the UE910 – expanded the module family even further.

The new HE910-based Mini-PCIe adapter card based on Intel technology enables secure 3G cellular data, voice, and video communication for embedded PCs in a variety of commercial and industrial applications. Since 2012 Telit has been a member of the Intel Intelligent Systems Alliance, a program to promote development of hardware, software, firmware, tools, and systems integration for embedded systems based on Intel technology.

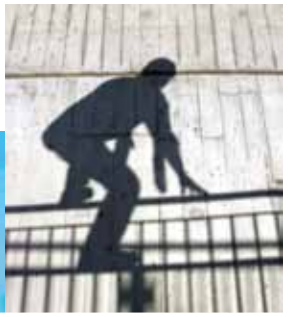
Our recently announced LE920 LTE module meets all the most current specifications for the European eCall and Russian ERA-GLONASS programs, for the European and North American OEM automotive market. Quad-band GSM/GPRS and EDGE fallback also guarantee a connection in environments lacking 3G or 4G coverage, providing for reliable navigation, fast and accurate positioning even in remote areas or urban canyons. This makes it the perfect module for navigation systems and location-based services that are already integrated into vehicle infotainment systems.

Our new cellular GL865-DUAL V3 module minimizes power consumption, which makes it even more ideally suited for battery-powered and wearable devices than its predecessor. With this module, Telit is positioning itself in the fast-growing market of Wearable Technology, especially in the fields of Healthcare & Wellness, Sports & Fitness, Safety & Prevention and Gaming & Lifestyle.

One topic that has become much more significant in recent months is smart energy. The intensified discussions about energy production and energy consumption are leading to a worldwide rethink and accelerated demand for intelligent energy systems.

Here, smart metering stands at the forefront. The largest project to date in this area is the planned installation of 30 million smart meters by Enel in Italy. And in the UK the government wants to have 53 million smart electricity and gas meters in place by 2020. Just these two examples show the enormous potential in this segment, which is why Telit has also expanded its Wireless M-Bus product line with the introduction of the ME70-169 module. In combination with one of the modules from our cellular module portfolio, we are the only manufacturer able to offer an unparalleled completeness of solution with high customization capability to match.

In the area of short-range modules, Telit has been able to offer its customers great value-add since the middle of last year. That is because we became the first m2m module manufacturer to certify its own ZigBee Stack to stringent ZigBee PRO and Smart Energy requirements. This means that our customers can integrate end products like utility meters and home control devices with surgical precision adapt them to their exact market requirements. For us, this achievement helps strengthen our position in the fast growing smart metering and smart home market worldwide – an important foundation onto which we can continue building more success stories.



Global strength

While maintaining unrelenting focus on development and innovation for the global m2m market, we still attach great importance to being as geographically close as possible to our customers. For Telit **EMEA** the past year was marked above all by the preparations for the big Automatic Meter Reading projects, details can be found in the article of Carlos Perez, VP Sales EMEA on page 64. But we were also fully engaged however in numerous projects from widely varied market segments. Telit has continued to expand its resources and assets in key markets in recent years. Thanks to this investment strategy, we have been able to strengthen our leadership position in EMEA and will continue to expand it in the years to come.

In **North America** the market is being perceptibly affected by the transition from 2G to 3G and 4G technologies. Demand has shifted heavily from GPRS to 3G and CDMA modules, which in recent years has significantly boosted sales of our xE910 family, in particular. In response to this shift we have certified a number of additional variants of this module family with the majority of U.S. carriers. Further details can be found in Mike Ueland's article on page 65, who is SVP and General Manager of Telit North America.

Ricardo Buranello, our CEO of Telit **Latin America** proves in his article on page 67 that the m2m market there is still showing strong growth, especially in Brazil. Telit has now firmly established itself there thanks to our extensive product portfolio and our production to ISO TS standard. In order to streamline supply of products to a number of innovative international customers with production facilities in Brazil, as well as Brazilian customers, we began producing 3G modules in Brazil in late 2012 becoming the first manufacturer of modules of this technology in that country.

The m2m market in **APAC** continues to be among the fastest-growing, due mainly to developments in China and India. Telit grew in China and in India tremendously. We are also investing in Australia, where we recently opened a new office in Melbourne. This new region for us is managed by Marcos Kinzkowski, previously Vice President of Sales for Telit in Latin America. More insights into APAC can be found in Derick Tsang's article on page 68, who is APAC president.

Our global strength is only sustainable if we also maintain a strong local presence within these regions and continue to offer our customers not only excellent products and value-added services, but also remain available as local partners. For detailed news from our regions, please see pages 64 to 69.

Well prepared for the next milestones

New challenges and commitments require companies and organizations to become ever more flexible. That's why it's important for us to undertake a regular critical review of our internal structures and, if called for, adapt them to changing circumstances. We would like to announce the following organizational adjustments:

Yosi Fait, Deputy CEO & member of the Telit BoD, is responsible for Finance, IT, and Legal. All these activities are managed and coordinated from our regional headquarters in Tel-Aviv. **Yossi Moscovitz**, President of Telit Wireless Solutions, is responsible for Telit's technology, product management and R&D. **Mathi Gurusami** is COO and responsible for operations. **Dominikus Hierl** is CMO of Global Sales, **Alexander Bufalino**, is SEVP of Global Marketing. **Felix Marchal**, Chief Business Development Officer, is responsible for m2mAir, Telit RF and Telit Location Solutions. **Yariv Dafna**, Corporate BD, is responsible for all Corporate Business Development matters including M&A.

This new organizational structure will maximize our ability to leverage the personal expertise of these valuable Telit members, strengthening support to our leadership position and continued growth.

We wish you all the best,
Oozi Cats
Chief Executive Officer

GOING FROM STRENGTH TO STRENGTH:

BECOMING THE LEADING ONE-STOP SHOP FOR THE M2M SPACE

INTERVIEW *with* **Yosi Fait,**
Deputy CEO and Finance Director, Telit

telit2market: As Deputy CEO, what do Telit's financials say about its general standing?

Fait: Telit had substantial growth in H1, 2012. Revenues rose by 21.6% to $98.6M ($81.1M in H1 2011) with improvements in all financial indicators. We continued our investments in sales and marketing, including the set-up of our m2mAIR business unit; we integrated Navman Wireless OEM Solutions and opened sales offices in Australia and the Czech Republic. R&D investments remained strong, thereby supporting innovation and leadership. Fruits from these investments, both in the short and long term, will further improve growth and financial stability.

t2m: Telit has over 20% market share in module shipments. To what do you attribute this growth?

Fait: Telit has been the fastest growing of the major m2m vendors for several years, going from roughly 6% market share in 2007 to over 20% in 2011. There are many reasons for this; among them the strong focus on m2m, being the only pure-play provider in the market. In addition we have an excellent and motivated management team, the right product strategy and a strong global presence.

t2m: Which business lines and regions have grown the most?

Fait: 3G deployment is growing significantly. We see continued growth in EMEA and strong growth in North America. Looking ahead, we should remain dominant in these markets and I see good opportunities in APAC as they follow trends from western markets. From business line point of view we see strong 3G deployment.

The launch of m2mAIR, a business unit dedicated to enhancing the module business with value added services, including connectivity, was very important. This strategic move will enable the company to add a layer of recurring revenues with initial results already looking very promising.

t2m: How does Telit's financial strategy align with its growth path?

Fait: We will continue investing in sales, marketing, and R&D with further investments in m2mAIR. We also plan to continue our acquisition strategy. The company has booked five successful acquisitions, with three of them in the last two years: Motorola's M2M division, GlobalConnect, and Navman. We will be looking next at trends in the m2m value chain such as cloud computing services and others.

t2m: Looking into the crystal ball, what is your expectation for the future?

Fait: With m2mAIR and the Telefónica agreement we entered the services side of our industry and this will allow us to capture market share in much bigger segment of the industry. In 2012 this was a market with a $5.7B potential versus $0.9B from modules, and the recurring revenue enables a solid, long-term financial model.

t2m: What is your vision for the company in the coming years?

Fait: My vision places Telit in all service segments of our industry, turning the company into the leading one-stop shop company in the m2m space.

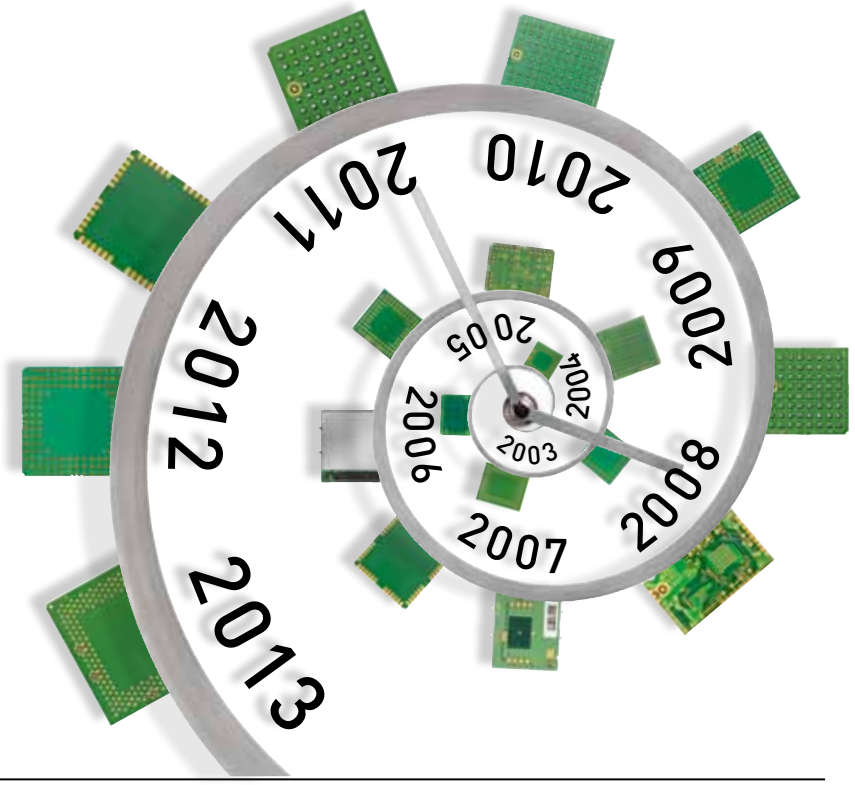
A DECADE OF MAKING MODULES

Yossi Moscovitz, *President, Telit*

>> This year Telit is celebrating its 10th anniversary. In the last ten years we have been busy inventing, designing, producing, selling, shipping, supporting, marketing, acquiring, merging, integrating and performing most of the other daily routine activities that comprise the m2m business puzzle.

So, here's a retrospective view of the last two decades: the company's "making modules" story:

- Telit launched its first m2m module in 2003: it was based on GSM/GPRS technology. Ten years later we are selling 151 product variants. They include products supporting all cellular technologies (GSM/GPRS, EDGE, UMTS, WCDMA, CDMA, LTE), short range (ZigBee, Wireless M-Bus, Star Network, Mesh Low Power Network, BT) and GNSS.
- The connectivity speed supported in 2003 by GPRS technology was 80Kbps, today we can offer up to 100Mbps on LTE networks.
- Our product roadmap followed the fast evolution of cellular technology. During this period silicon process technology evolved from 180nm to 28nm, enabling a higher level of integration, smaller die sizes, and reduced power consumption.
- A decade ago 277 components were needed to build a dual band GPRS module, occupying a double-sided 43x43 mm PCB. With a similar number of components today we are able to design 11 bands products (3xLTE, 4xHSPA, and 4xGPRS), on a single-sided 34x40mm PCB.
- In 2003 the R&D activity was concentrated in Trieste, Italy. Today, our R&D activities have expanded globally and we are now operating in six sites (Trieste and Cagliari, Italy; Seoul, Korea; Tel Aviv, Israel; Los Angeles, USA; and Sofia Antipolis, France).
- Production of m2m modules requires high-quality, stable production processes. The company's manufacturing capacity was built up over the last ten years to reach an annual capacity of 18M. Today we are producing in China, Italy, Brazil, Germany, Israel, France, Indonesia and Taiwan. With such a massive production footprint we managed to increase the number of products shipped between 2003 and 2012 by 11.939%.
- Telit's quality system conforms to latest industry standards: ISO9001, ISO14001 and ISO-TS 16949. This indicates our continuous commitment to quality in design and production.
- In 2003 Telit sales activity was based on one distributor and two sales offices. Today we have 27 sales offices and 59 distributors operating in 80 countries. There is a combined sales force of 350.
- Telit's growth in the last 10 years was mainly organic. Additional growth came as a result of several acquisitions that contributed to the diversification of the technology offering and the global presence:
  2006: Acquisition of Belwave m2m division in Korea, specializing in CDMA technology
  2008: Acquisition of One RF, specializing in Short Range technologies
  2011: Acquisition of Motorola m2m division
  2011: Acquisition of GlobalConnect, specializing in cellular connectivity
  2012: Acquisition of Navman Wireless, specializing in GNSS technologies.
- Today the company has over 500 employees, more than double the number in 2003. These are the people that contribute every day to the story of making modules. **<<**



TELIT'S VIBRANT MIX OF PRODUCTS, PEOPLE AND PROCESSES

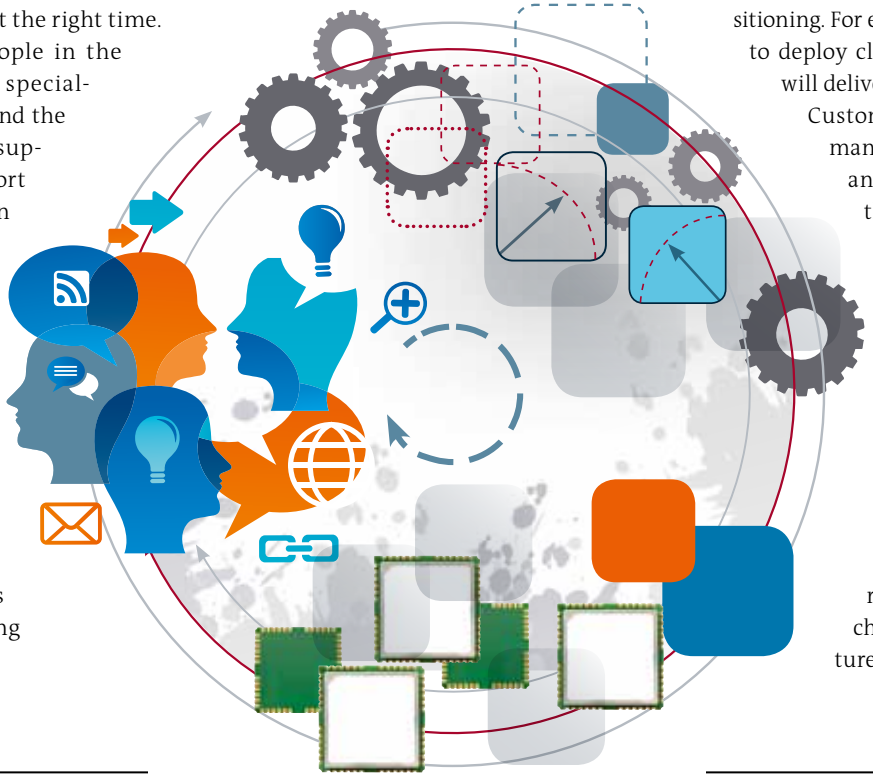
Dominikus Hierl, *CMO, Telit*

>> Wireless modules are the beating heart of most m2m applications. They determine the performance and reliability of our customers' solutions. Telit markets an unmatched product portfolio that includes all mainstream wireless technologies, as well as a comprehensive set of Value Added Services, which includes out-of-the box connectivity. In addition, tight integration with their dedicated m2m core network allows our customers to seamlessly generate and obtain real-time information on network and hardware diagnostics. There is no comparable offer on the market. This move up the value chain, as well as the breadth and depth of our holistic offer, forms the solid foundation that underpins the company's robust growth.

Telit has the right products at the right time. We also have the right people in the right places. Experienced, specialist staff in 27 countries around the world provides unrivalled support to our customers. Support usually starts at the design stage; it includes advice on the application software and continues during the deployment phase and throughout the subscription lifecycle. We call it 360° degree support. Being local means that they understand their marketplace, its culture and regulatory requirements. At any given moment staff members would normally be handling numerous support projects.

Processes are the third key component in this short article on Telit's marketing mix. We employ an exhaustive set of quality control processes that are, as far as I know, unmatched in the industry. For example, the company's global manufacturing facilities are certified to the demanding ISO/TS16949 standard, as are the R&D and support operations. Production and quality experts are on site 24/7 and they do more than monitor the manufacturing process: they audit it continuously. In addition we create the documentation that specifies, step-by-step, the manufacturing process and we also designed the end-of-line test equipment.

In earlier editions of telit2market we made a number of statements about Telit's leading position in the market. On the following pages you will find articles that contain factual evidence of the company's consistent ability to substantiate them and – this is very significant – you will also find use cases written by customers that back them up.



The market is expanding but it is also transitioning. For example, MNOs are looking to deploy cloud-based platforms that will deliver profitable m2m services. Customers are increasingly demanding end-to-end solutions, and the traditional links in the value chain are fusing together. m2m is a dynamic, innovative industry and some changes will be disruptive, but Telit is ideally placed to respond to the challenges and opportunities. As I said at the beginning, wireless modules are the beating heart of most m2m applications: they play a pivotal role and that isn't going to change in the foreseeable future. <<

A UNIQUE ONE-STOP M2M SHOP

Felix Marchal, *CBDO, Telit*

>> The "Things" in the Internet of Things come in a variety of shapes and sizes, but they all have a communications facility. Normally it's wireless: cellular, RF or GNSS, but increasingly it's enabled by a combination of two technologies. Telit has expanded its portfolio and the company now has the most comprehensive, multi-technology offer on the market. The company can therefore provide elegant, cost-effective, combo solutions across the board, ranging from RF (SRD, Short Range Devices) and cellular for networked homes through to cellular and GNSS for location-based products such as smart watches, personally connected healthcare devices and other wearable products.

Our solutions are elegant and very cost-effective because of three unique competitive differentiators:

1) Telit independently developed the relevant software stacks for both RF (ZigBee 2006, 2007 and PRO including Smart Energy and Home Automation profiles, and all applicable Wireless M-Bus modes) plus cellular modules (2G and 2.5G)

2) All our offers include an unrivalled set of value added services

3) "Out of the box" m2m connectivity via partners combined with innovative embedded technologies in the modules.

Ownership of the RF stacks allows us to create embedded customized profiles and solutions: GSM ownership enables the company to react quickly to network changes introduced by MNOs. However, because of the in-depth partnership agreement with Telefónica we are aware of changes in advance and can make adjustments on the fly. Moreover, having our own GSM software stack enabled the development of a unique, cloud-centric Module Management System that delivers new, groundbreaking services, e.g. the ability to detect the difference between a defective module and poor network coverage. Details of other value added services can be found on page 55.

Our out-of-the-box offering allows m2m connectivity to become seamless and pervasive: it streamlines and simplifies complex procurement procedures, logistics, operations and integration into m2m solutions and applications. This breakthrough embedded technology and product offering allows, customers, for the first time, to treat connectivity as a BOM (Bill of Material) component.

In tomorrow's connected world we are going to have a plethora of devices. Inevitably there will be failures but those that succeed will impact on our personal and business lives. And the majority will come from innovative small- and medium-sized companies that have recognized a gap in the market. It may be a small gap but if they move quickly they can fill it. Time to market is therefore a critical issue and this is another area where Telit has an unrivalled offer.

The company's extensive set of support services, see page 24, were originally developed for the professional sector, but they can be employed by those companies. They are used to minimize development times and boost reliability and our global indirect sales channel facilitates access to these services.

In addition, Telit continues to design innovative modules. For example, the new Jupiter SE880, which measures 4.7x4.7 mm and weighs a mere 0.08 g. Currently (Q4 2012) it's the smallest and most advanced 48-channel GPS module in the world. It enables the design of ultra-compact applications and is a proof-point of our technology leadership and enhanced R&D capability. Another example is the ME70-169, the most advanced high power Wireless M-Bus module.<<

151
Different module types

6
Acquisitions

27
Different Nationalities among our Employees

4
Company owned Protocol Stacks

more than **31**
Operator Approvals Worldwide

165
Product Certifications Worldwide

21
Languages spoken among our Employees

more than **5000**
Customers Worldwide

5
Telit Head Quarters

8
Manufacturing sites

6
Telit R&D Centers

ISO/TS16949
Achieved automotive industry certification for manufacturing, R&D and support functions worldwide

10 YEAR

2003 | **2004** | 2005 | 2006 | 2007 | 2008 | **2009** | **2010**

Innovation Mounting Technology
BGA Technology

First BGA
TRIZIUM

GE865-QUAD
Smallest quad-band GSM | GPRS m2m module worldwide

Technical Support Forum

50% Engineers
20% Sales
15% Support
15% Admin

519
Employees Worldwide

49
Countries with Telit modules sold directly over the past years

1296
Total Man-Years of Research and Development

7
telit 2market
The Telit m2m Magazine
Issues of the Magazin

1,000,000
Readership

345,000
Copies printed

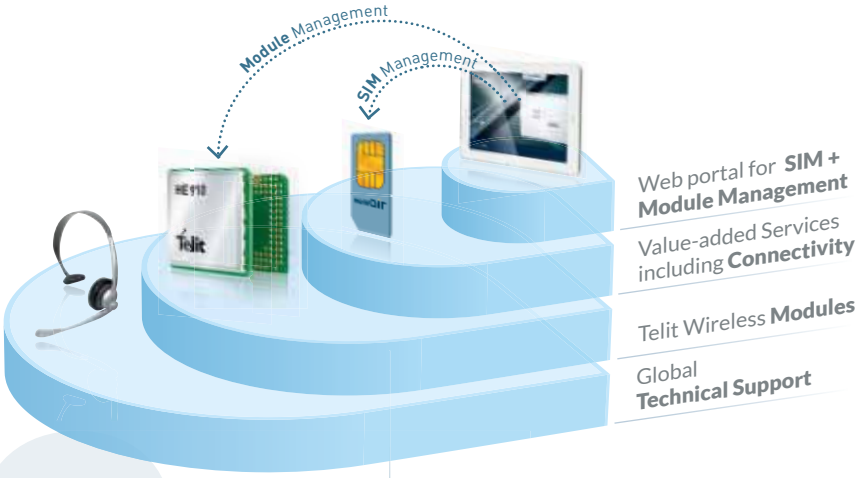
40,000
Downloads

185
m2m Customer Stories

700
Pages of m2m content

16
Wireless Technologies

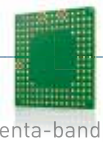
22%
Market Share



2011

GE864-GPS
Smallest quad-band GSM | GPRS m2m module worldwide with integrated A-GPS receiver

HE910
Smallest penta-band HSPA+ class m2m module worldwide



The Family Concept

2005	xE864
2006	xE863, xC864
2010	xL865
2011	x24/30, xE910, xE50, xE51/61

Unified Form Factor

2012

m2m air
by Telit m2m experts

JUPITER SE880
Smallest 48-channel GPS module worldwide

A GAME CHANGING DEVELOPMENT

GAME CHANGING FOR THE MARKET AND FOR TELIT

Dan Amir, *Manager m2mAIR Business Unit*

>> m2mAIR is a new Telit business unit whose high-end product contains an innovative value added services portfolio that includes connectivity based on Telefonica's premium M2M offering. A unique suite of embedded module firmware clients and compatible cloud and backend services are enabling an elegant, game-changing business model.

The traditional m2m value chain is based on verticals and the future might lie in horizontal, large-scale IoT applications rollouts. However, when scaling up both m2m application models encounter a set of inherent challenges that are not directly related to the application's core functionality. m2mAIR, which is uniquely positioned in the value chain, addresses this intrinsic issue: it effectively fuses the first two links, the wireless modules and the connectivity service. This enables bi-directional seamless access, a reduced TCO and BOM, enhanced cost control, plus streamlined troubleshooting and operations. Enabling this through an innovative services portfolio that includes connectivity, allows solution/application providers to focus on their core business and scale up with greater ease and efficiency.

THE MAIN BUILDING BLOCKS

The solution has five symbiotic building blocks, each of which is a leading state-of-the-art component in its own right: (1) Telefónica's Tier 1 global network; (2) the carrier's dedicated m2m core network and SIM subscription management Service Delivery Platform (SDP); (3) Telit's unique value added services (e.g. Remote Module Management); (4) an enhanced business support system; and (5), unsurpassed technical support.

Telefónica is a global tier-1 carrier and its connectivity solution supports at least two local MNOs in most countries using a single SIM card. This results in enhanced coverage, performance and redundancy. Due to its size the company has a huge purchasing power and this results in attractive tariffs, which are reflected in m2mAIR's offer.

Telefónica, as opposed to most MNOs, has implemented a separate core network

dedicated to m2m. This results in a service having higher quality and performance. In addition, the carrier has integrated the world's leading M2M Service Delivery Platform. Integration includes key core network components and this allows both the connectivity provider and users to access and manage a subscription deployment down to the single subscription level in real-time.

OUR VALUE-ADDED COMPONENTS

Telit's value added services such as Remote Module Management (the third building block), are based on embedded module firmware clients and the backend services provided by the SDP. This unique combination enables various innovative Over-The-Air (OTA) features and capabilities, such as hardware and network diagnostics as well as enhanced cost control and inventory management.

The tight link between the SDP and the modules allows Telit's customers to seamlessly generate and obtain in real-time information on network and hardware diagnostics. MNOs and MVNOs can't do that because they don't have access to that kind of information. We do. Often degraded local network coverage could be interpreted as an application failure and that might result in a field engineer being dispatched when the real problem was merely poor cellular coverage.

An embedded usage policy management client enables real time consumption monitoring. This enables the detection of unpredicted or non-designed use of data SIMs in near real-time and usage is then blocked at the module level. MNOs' network based technologies lag by 20 minutes up to hours before being notified by their roaming partners.

Our Business Support System, the fourth block, was specifically designed to handle complex m2m billing and subscription management issues. It allows Telit to move up the value chain and bill customers directly while allowing them to predict, hedge their total connectivity costs and remove M2M's industry common cost risks.

Automated, rule based subscription life cycle management enables the optimization of connectivity pricing. It allows seamless billing only when the end-customer's subscription is actually generating revenues for our customers.

Having an agile billing system is key. An inappropriate billing plan can be detrimental to a solution's business case and introduce operational expenses that could cripple deployment. Agility includes supporting customers of different size deployments, from different verticals, with different footprints.

The fusion of wireless modules and value-added services.

m2mAIR emphasizes effective proactive and reactive customer technical support, the fifth building block. Proactive technical support is focused on application validation and certification to minimize occurrences of unpredicted unit behavior in fielded commercial deployments. Reactive technical support is focused on the analysis and resolution of connectivity issues when they unfold. <<

SUMMARY OF THE KEY BENEFITS

- The partnership with Telefónica provides scale, presence and a wide geographical footprint.
- Customers can now buy the communication equipment and the connectivity from the same supplier, thereby reducing supply chain complexity.
- Telit is the owner of the module software stack, so we are well positioned to introduce through m2mAIR new unique services covering both technical and business aspects.
- The service delivery platform, combined with m2mAIR's billing and business support system, enables effective scalable subscription lifecycle management and billing flexibility.
- Real-time cost control solutions enable verification that the cost of connectivity on some units is not running rampant.
- Advanced preventive and defensive security solutions as a service.

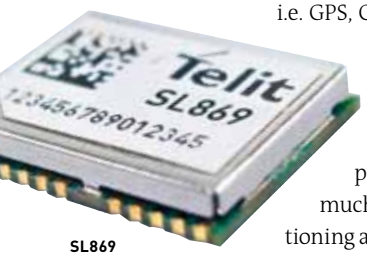
GNSS: WHAT A DIFFERENCE A YEAR MAKES

SALES OF LOCATION SERVICES ARE BOOMING

George Arnott, *Senior VP for GNSS, Telit*

>> Just over six months ago Telit acquired Navman and formed Telit Location Services. It was a synergistic fit, as evidenced by the fact that GNSS sales doubled in the first half of 2012. Moreover turnover continues to grow in line with the introduction of new, innovative products.

New products have expanded our portfolio and the company is competing in every market segment: from low end, low price JF2 through to a state-of-the-art SL869 module that employs the entire GNSS spectrum at the same time, i.e. GPS, GLONASS, Galileo, Compass and QZSS. This is a unique capability.



SL869
16 x 12.2 x 2.4 mm

The advanced functionality these and other GPS modules provide includes high sensitivity, much more accurate and stable positioning along with the ability to track and remove up to eight in-band jammers.

Sales success can be attributed to the earlier R&D activities as well as the more recent ability to market and support navigation products globally through Telit's sales force. In addition, every GNSS module can be easily combined with a cellular module. Telit can extract the highest sensitivity and optimum performance from a GPS as well as from a cellular module. The combination gives customers competitive, turnkey solutions that are ready to be dropped into their applications.

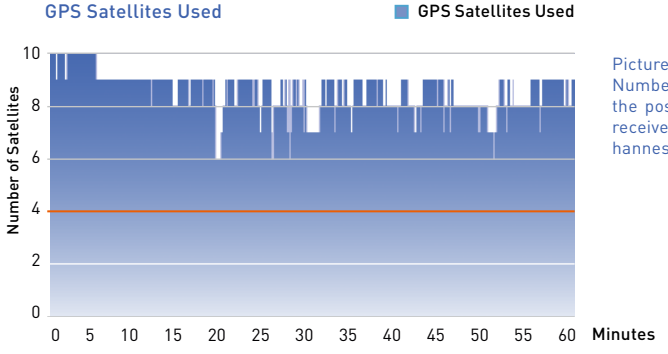
Our goal is to have products that are backwards compatible. A customer might want to start with basic navigation and require additional functionality at a later date. For example, add a CAN interface. This is a standard designed to allow microcontrollers and devices to communicate with each other within a vehicle. We can do a drop and replacement and in most cases it's on the same platform.

TTFF and dead reckoning

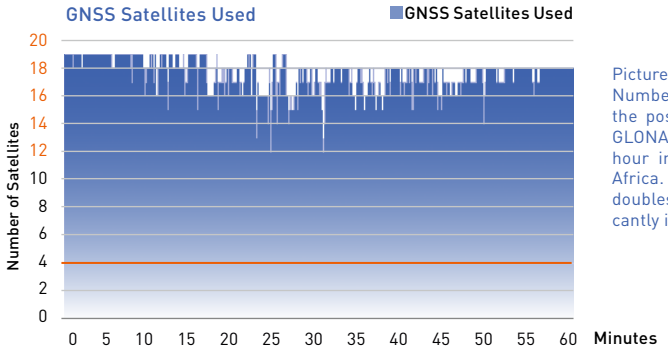
The expression TTFF (time-to-first-fix) refers to the time needed to obtain the first position fix. We talk about cold, warm, or hot starts: the time taken varies with the availability and validity of the data needed to compute the position.

For cold starts no data is stored in the receiver. For warm starts valid ephemeris and clock corrections are stored. For hot starts the warm start conditions apply, but the accurate position and clock error are known. These start parameters are well known in the industry. In addition to the availability of navigation data, TTFF performance depends on the number of visible satellites and the strength of the received signals.

This indicates that the SL869, with its ability to use signals from different constellations, will give the shortest possible times. In addition the modules are capable of predicting



Picture 5:
Number of satellites used for the position fix with GPS-only receiver during one hour in Johannesburg, South Africa.



Picture 6:
Number of satellites used for the position fix with GPS and GLONASS during the same hour in Johannesburg, South Africa. The visible satellites doubles, positioning is significantly improved.

satellite information between three and fourteen days in advance. This allows the receiver to acquire a signal in a few seconds versus several minutes. (Three days is onboard, no connection to external server, and fourteen days is realized by connecting to a server via a modem).

Dead reckoning is employed in order to continue to provide location data when there is no GPS signal. It works by taking the current position and then calculating positions based on known or estimated speeds along with heading. This may happen in tunnels or parking garages or when lorries jam the signal. We can enable this function by adding a gyro and vehicle speed (speed via CAN or accelerometer), which are affordable because they are employed in devices such as iPhones. They allow speeds and directions to be derived.

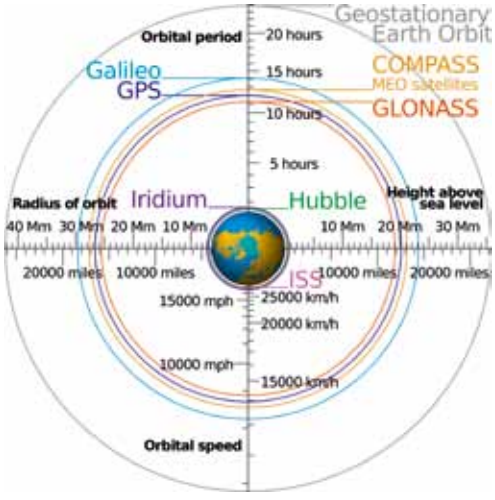
Porting customers' firmware

Regular terminals will typically employ additional microprocessor and associated components in order to run their firmware (application).This represents an addition to the bill of material and manufacturing cost. However, we can port firmware directly onto the SL869, thereby saving the additional cost. And as indicated earlier functionality such as the CAN Bus can be added retroactively. This feature is the result of employing an ARM 9 processor, which allows between 40 to 70% of the MIPS to be used to run the apps. The exact figure depends on the clock speed.

In a nutshell, the SL869 delivers the ultimate GNSS performance. All constellations; simultaneous use of GPS and GLONASS; backwards compatible to JN3.

It represents not only the top end of our portfolio, but its also sits at the top of the market. And like all Telit products, it is backed by outstanding technical support services.

Orbit: Source Geo Swan, Cmglee, Comparison of GPS, GLONASS, Galileo and COMPASS (medium earth orbit satellites) orbits with International Space Station, Hubble Space Telescope and geostationary orbits, and the nominal size of the earth.



GPS AND GLONASS TECHNOLOGY

Radio-based Global Navigation Satellite Systems (GNSS) are part of our daily life for navigation, surveying and mapping. Although there are several systems like the European Galileo or the Chinese Beidou, the US GPS is used the most. It provides global coverage and is widely employed in navigation systems. Today 31 GPS satellites are operational.

Since October 2011 the Russian GLONASS system has been fully operational with 24 satellites in orbit, plus four in reserve and one currently undergoing trials. This is not only an alternative to GPS, it's also complementary. In a combined GPS/GLONASS system there are 55 fully operational satellites in outer space in different orbits.

THE NEW FRONTIER FOR WATER MANAGEMENT:

A NEW SOLUTION FOR MODERN UTILITIES

Tony Spizzichino, *CEO Telit RF Technologies*
Armando Quazzo, *Business Development & Marketing Manager – SMAT, Società Metropolitana Acque Torino S.p.A.*

>> Water is a precious resource that we continue to waste. It is a key driver of economic and social development and it maintains the integrity of the natural environment. Water has many different uses, so a coordinated action that includes the interests of diverse stakeholders is needed. That will take time, but in the meantime smart water meters are being deployed and the need for smart water grids is being recognized.

The world is running out of water and the problem is not restricted to desert regions. In Europe around 17% of the landmass containing approximately 11% of the population suffers from a lack of water and transporting the requisite amount costs a staggering €100B. Utility companies and governments around the world have to make tough decisions about balancing diminishing resources with an ever-increasing demand. For example, urban populations are rising rapidly, particularly in the developing countries; in Asia Pacific and elsewhere water consumption is rising in line with rising standards of living; and then there is the impact of global warming.

The problem is compounded by inefficient usage, particularly in the agricultural sector, which uses around 70% of the available water. Inefficiency comes from evaporation as well as the fact that growing vegetation for animals that are slaughtered for us to eat is a spectacularly wasteful process. It takes up to 16 pounds of grain to produce just 1 pound of meat. Raising animals for food consumes precious energy.

SMAT Castiglione, Turin: Greatest waste water treatment plant in Italy.

Agricultural issues like humidity and temperature are easy to address using m2m technology. Sensors measure these parameters and the application turns sprinkler systems on only when necessary. Sector solutions are important, but there is a clear need for integrated water resource management systems that will enable water resources to be managed in ways that balance social and economic needs. And until the intrinsic value of water is reflected in realistic household and business tariffs, such as those of electricity and gas, then water will continue to be wasted.

SMART GRIDS FOR WATER

Another key issue is the fact that some distribution systems were built 50 to 100 years ago and badly need upgrading. Revenues of around $14 billion are being lost according to the World Bank, which makes a compelling economic case for better water metering. When those upgrades happen we'll start to see the emergence of smart water grids that leverage the value of smart water meters in homes and other buildings.

These meters are being deployed, albeit slowly. According to a report from Pike Research the global installed base of smart meters with two-way communication capabilities will only reach 29.9 million by 2017, up from 10.3 million in 2011. However the UK's biggest water company, Thames Water, plans to install meters in most homes by 2015.

TELIT'S INVOLVEMENT

From an m2m perspective there is little difference between electricity, gas and water meters. The company has the requisite products and experience. For example, the ME70-169 wireless M-Bus module, which was designed for the European utility meter industry, has a powerful embedded processor that allows customers' applications to run inside the module. And our experience comes from close cooperation with leading-edge vendors such as Schlumberger Water Services (SWS). SWS is utilizing advanced modules from Telit combined with the company's Diver-NETX solution to monitor groundwater levels for cities, water boards and mining applications worldwide.

ME70-169
26 x 15 x 3 mm

Telit is also working with SMAT (Società Metropolitana Acque Torino). This is a group of companies that manages some of the largest, most advanced drinking water supply and waste water networks and treatment systems in Europe. At the time of writing (Q4 2012) Telit and SMAT were conducting a unique field trial involving a significant population of smart water meters that employ the ME70-169 module for RF communications over a metro area network to a concentrator/gateway using a concentrator/gateway that aggregates the traffic and then transmits the data over GSM.

The gateway functionality is provided by Telit's GG863-SR, which is an all-in-one solution. It combines a programmable ARM9 processor, a GSM/GPRS communication module and any of the short-range modules from Telit's extensive portfolio, thereby enabling a cost saving, fully customized solution. This particular combination of local and wide area technologies, which is the first of its type in the world, represents a leading edge solution having unmatched performance.

GG863-SR
83 x 64 x 33 mm

LOOKING AHEAD

Smart metering is coming to electricity, gas and water meters in that order. They measure the consumption of separate resources, but there is no reason – no technical reason – why they should not share the same communications network. Data from all three sources can go over the same local area network and be aggregated in the same concentrator and be sent over the same cellular network. There is a massive amount of computing power inside Telit's modules and it can be employed to identify the relevant resource and send the data packets to the relevant utility. This is not rocket science but of course it would require close cooperation between the utility companies. Then we could start to talk about super smart grids.

SUMMARY

Water is a precious resource: arguably more important than electricity and gas. Without an adequate and reliable supply we wouldn't be able to grow the food we need. Without an adequate and reliable supply of drinking water life, as we know it in the West, would deteriorate. Yet we continue to waste this life-sustaining commodity. We have the technology to address the complex set of interrelated issues. All that's needed is the political will. <<

WINDS OF CHANGE IN MOBILE COMPUTING

Daniel Quant, *VP Global Product Management, Telit*

>> The big change at the high-end of the Mobile Computing sector was the launch of the Ultrabook™, which introduced a new mobile device category, i.e. a combined laptop and tablet. Intel defines the performance and functionality of these devices. A more recent change was the introduction by Intel of a next generation form factor for plug-in data cards. The consumer electronics market is also witnessing explosive growth in always-connected devices. New products are appearing almost every day, many of which leverage the broadband connectivity performance of the cards used in high-end Mobile Computing products.

Let's start with the Ultrabook™, a relatively recent development that revitalized the PC market and which has been taken up by numerous PC OEMs. Intel's reference motherboard design and strict specifications on what constitutes an Ultrabook™ are key to maintaining consumer expectations. The standardization of new interfaces has also been an important factor in the improvement of performance and interoperability while reducing size. The new Next Generation Form Factor (NGFF) interface cards include WLAN, solid-state hard drives and wireless cellular connectivity, standardized by PCI-SIG as M.2. The new M.2 data cards are set to replace the chunkier Mini PCIe format.

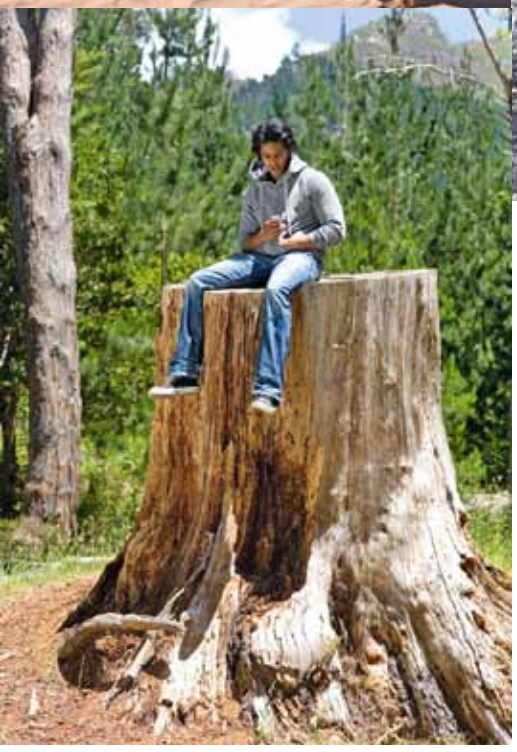
Until recently, a large network equipment and chip set provider had over 50% market share of the data cards used in Mobile Computing products, primarily using the Mini PCIe data card format. However, this supplier has exited the market and that represents a potentially disruptive development in the supply chain, which requires confidence in long-term, high-volume supply as well as a strong global and local support structure.

Telit m2m module supplier, has licensed the new Intel M.2 LTE and HSPA+ reference designs, a development that indicates recognition of Telit's ability to meet the demands of Notebook, Ultrabook™, Tablet, Router, Camera and other consumer electronic OEMs. The 30 x 42 mm M.2 data cards support GNSS, certified Windows™7 & 8 and include firmware update switching. To accelerate time to market for the PC OEMS Intel has validated M.2 cards for use with both Intel-based Tablet and Ultrabook™ reference designs.

The sidebar indicates the relevant type numbers. It is worth noting that these M.2 cards complement our existing HSPA+ and EV-Do Mini PCIe data cards.

M.2 COMPLIANT LTE AND HSPA+ MODULES

LN 930	LTE M.2 Data Card Global:	Intel XMM™7160
LN 930-AP	LTE M.2 Data Card for Asia:	Intel XMM™7160
HN 930-DC	DC HSPA+ M.2 Data Card for Europe:	Intel XMM™7160D
HN 930	HSPA+ M.2 Data Card Global:	Intel XMM™6260



Always-on connectivity for CE Devices

Always-on connectivity to the Internet has become a mandatory requirement for many if not most consumer electronic devices: the "things" in the Internet of Things. Despite the economic climate, the IoT market is booming: unfortunately it is also overhyped in the media. But there is no doubt that it's a vibrant, ultra-competitive, wireless environment. Technology is constantly evolving; new consumer products appear almost every day, many of which come from new entrants. And the users they target are well informed and demanding.

Embedded chip sets or data cards that employ the popular Mini PCIe interface currently enable always-on connectivity. For example, the Telit HE910 module with a Mini PCIe Adaptor is a best-selling data card that enables secure 3G cellular data, voice and video communications for a wide variety of commercial and industrial installations.

One technology development, 3D-SIP (see page 48), enabled the development of the Jupiter SE880. This is a GPS solution whose form factor is a mere 4.7 x 4.7 mm. These incredibly small dimensions allow this module to be deployed in GPS-enabled consumer devices such as smart watches. This is one example of the way that m2m product boundaries are becoming increasingly blurred. Step back a few years and who would have imagined watches that could compute locations and communicate the results.

Competitive market: Technology savvy users

Time to market has always been a critical parameter, but in today's constantly evolving mobile environment it can make or break the launch of a new product. Telit's comprehensive product portfolio and unmatched support services combine to ensure that innovative new ideas are quickly turned into cost-effective designs, followed by solutions manufactured to the stringent ISO/TS16949 quality management standard. This is a clearly defined process that minimizes time to market.

That said, obtaining product certification and operator acceptance is a time consuming, expensive process, which is why we offer a comprehensive set of pre-certification tests that are compliant with European and US norms. Telit has achieved over 165 regulatory approvals and our products are also approved by more than 30 network operators. In addition, selected partner companies can provide go-to-market advice and assistance, i.e. create efficient and effective strategies.

The IoT: An unprecedented market

Nobody really knows how many Internet devices will be employed in future, but it will be measured in billions. Opportunities are opening up for entrants who have specialized knowhow and experience in particular market sectors. These new players will drive most of the growth; they are already expanding the market in numerous directions, as demonstrated by many of the other articles in this publication. But few have the time and the resources to get up to speed with m2m technology. Moreover, what they bring to the market is their established core competence and therefore they welcome the set of support services that Telit provides. It's a 360-degree offer.

Summary

Telit will provide integration and production readiness support to the Notebook, Tablet, Ultrabook™ and Consumer Electronic OEMs through our network of 6 R&D centers, 27 sales and support offices and 59 distributors covering 80 countries. With approved devices at over 30 of the global MNOs, the company will continue to open up new geographical markets for products that embed both its Mini PCIe and the new M.2 Data Cards. And as the market continues to embrace always on, broadband connectivity, the smaller, lighter M.2 data cards will be increasingly employed since they are a better match for the form factor of the consumer electronics sector. <<

360-DEGREE GLOBAL TECHNICAL SUPPORT

SUPPORT THAT'S TIGHTLY INTEGRATED WITH R&D

Paolomaria Schiratti, *EMEA Applications Engineering Manager, Telit*

>> m2m applications are numerous, varied and technically demanding. Telit Wireless Solutions provides 360° degree support. At the design phase we work closely with customers on selecting the optimum module, configuring and helping design the hardware. Support continues with advice on the application software. In addition we can and usually do perform RF/EMC pre-certification tests at the application level. And of course support continues during the deployment phase and throughout the subscription lifecycle.

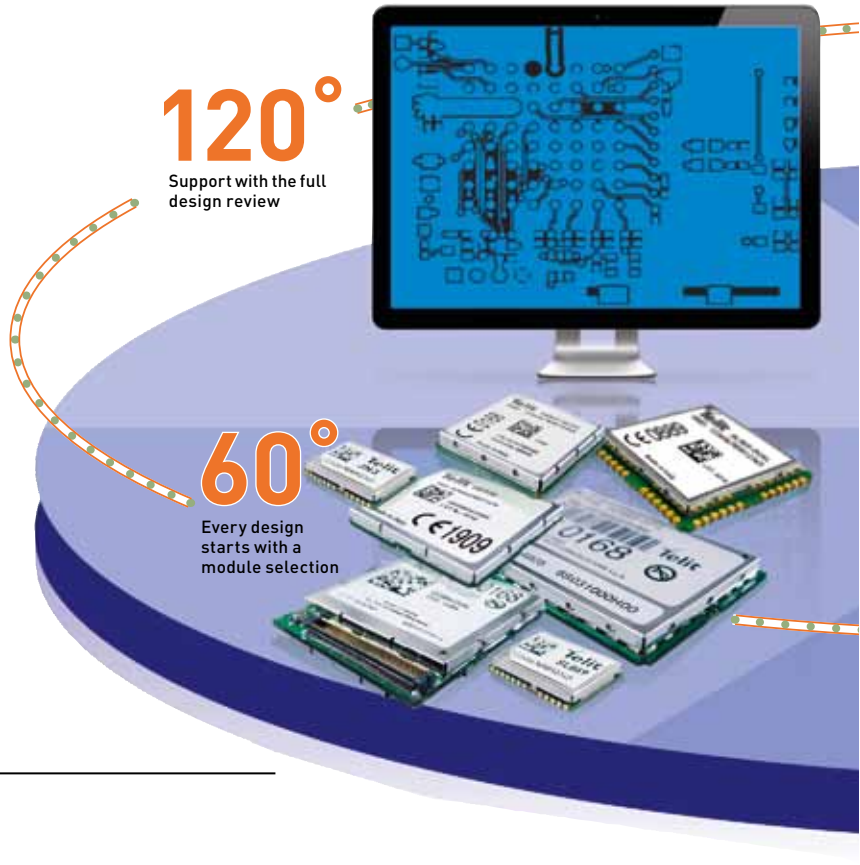
Telit has focused 100% on the development and marketing of m2m communication modules for more than 10 years. That is our core competence and during that time we have accumulated a massive knowledge base. The core competence of our customers is the creation of software solutions for selected market segments. They come together when their design is still on paper and our knowledge can be employed to conduct a review. It is hard to overstate the importance of this phase. It involves application engineering experts and R&D: together we make a complete review of the application. The result is optimal stability and performance of the customer's solution and a reduction in overall time-to-market.

It's a complete, rigorous review that's carried out at the application level in order to detect possible errors before prototyping starts. For example, we can verify the performances of the RF portion when the antenna is integrated on the board. This is normally followed by a route-tracking test of the multi-layer PCB in order to avoid interference issues before manufacturing starts.

Telit also offers a Physical Validation Laboratory to assist customers with the pre-manufacturing process. We can perform several tests to check the solder joint reliability between BGA/LGA modules and the application PCB. Additionally, a complete analysis of the reflow process results can be conducted in Telit's laboratories and an X-ray can be taken at the application level to check the reflow process results.

Certification

Obtaining certification is a time consuming, expensive process and of course it delays the introduction of new solutions, so anything that can be done to speed up the process is important. That is why we offer a comprehensive set of RF/EMC pre-certification tests that are a compliant with European and US normative. Telit Global support can assist customers with CE, FCC, PTCRB, and GCF certification and provide assistance with approvals related to CDMA and UMTS based products in North America (AT&T), Brazil, Korea, etc.



In the Trieste facility we can perform RF/EMC pre-certification tests at the application level. This service provides a complete overview of the application's radio performance and speeds up the entire certification process. 2G and 3G tests conducted in the anechoic chamber and laboratories include: radiated spurious emissions; conducted spurious emissions; 2D antenna performance (radiated power and sensitivity); and an extensive set of EMC tests.

New entrants

The m2m market is expanding rapidly and many opportunities are opening up for entrants who have specialized knowhow and experience in a particular market sector but who do not have the time and the resources to get up to speed. Telit does not distinguish between the level of support it gives to its customers: new entrants are welcomed and they can benefit not only from our comprehensive support portfolio, but also from an offer that contains innovative value-added services that include out-of-the-box connectivity to a Tier 1 MNO: Telefónica. This allows us to offer the kind of premium, managed global services previously reserved for larger firms.

This combination sets a new support standard for the industry. In a nutshell, the value-added services remove the need to look under the hood and find out how m2m technology works. They get solutions onto the market in the shortest possible timeframe and also ensure optimum performance throughout the subscription life cycle. For example, a cloud-centric Module Management System allows our customers to modify an incorrect configuration of modules when they have been deployed. This is done via a Web portal. This feature is also used to update configurations and to remotely and proactively diagnose and troubleshoot network performance.

Summary

We provide 360-degree global technical support. The first 120-degree segment includes a design review, which includes advice on components, placement, schematic and PCB review as well as software integration support. This phase is particularly important for large projects. The second segment involves numerous RF/EMC pre-certification tests at the application level. Also important because it speeds up the certification process and helps get solutions to market in shorter time frames. The third 120-degree segment embraces fast, easy deployment via out-of-the-box connectivity and a unique service portfolio. That takes us full circle.<<

360 DEGREE TECHNICAL SUPPORT – FROM MODULES TO APP MANAGEMENT

TELIT'S PYTHON
AN ALL-IN-ONE SOLUTION

INTERVIEW *with* **Cosmin Buhu,** *Telit Technical Support Forum Manager*

>> Telit's reputation in the m2m world is based on an outstanding range of robust communication modules whose performance is sustained by solid software support enabled by built-in firmware. These versatile, powerful capabilities allow integrators to fulfill their projects' objectives, thereby leading to success in the market. However, this isn't all: Telit also provides developers with ways to program their applications directly in the module: this eliminates the need for additional third-party processing hardware, e.g. a small microcontroller.

In order to provide a bigger picture of these programmable capabilities we invited Cosmin Buhu, Telit's Technical Support Forum Administrator, to answer a few questions and share some insights on Python script.

telit2market: Having an all-in-one hardware and software package sounds great; what are the main benefits and are there any drawbacks?

Buhu: This concept allows innovative solutions to be marketed at lower prices. Having the hardware and all the software, including the user application in the same package, results in smaller PCBs, fewer external components, wires and interfaces, as well as less licenses to pay. Then there's the performance boost: less spurious radiation, better power consumption figures, better software inter-operability, plus the size and weight reduction, which is significant.

Drawbacks? Real-time, low-latency systems cannot be realized using on-board Python, but that is not a typical m2m requirement.

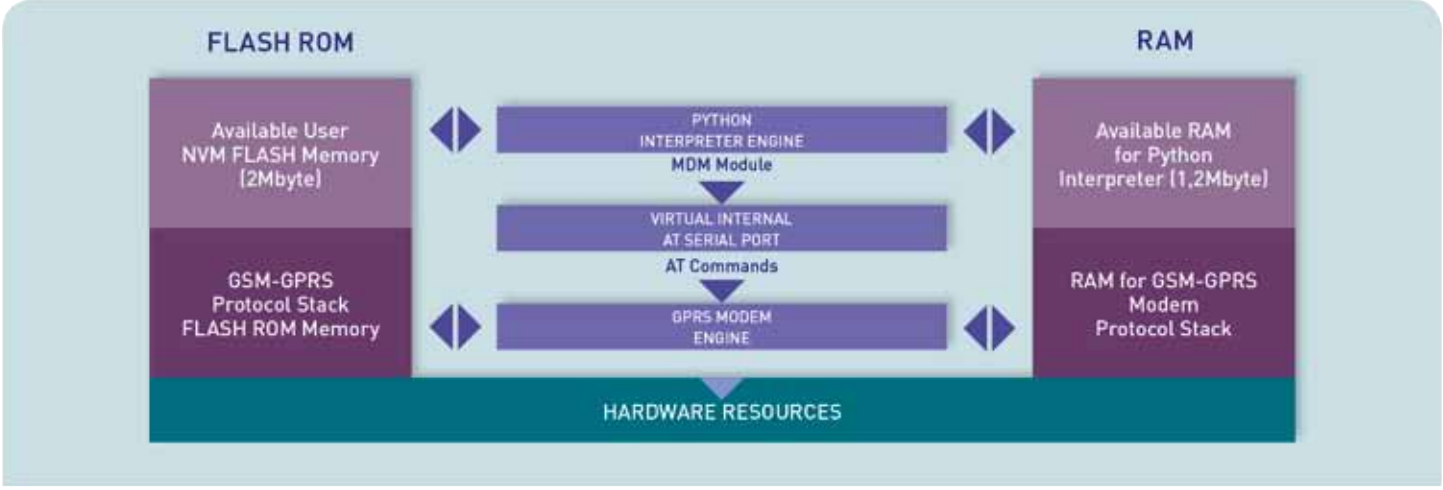
t2m: Can you give a short and easy explanation on how things work on this all-in-one package?

Buhu: Of course. Used only as a communication platform, Telit modules are driven by an external host using AT commands sent through a RS232 or USB channel. Networking tasks are performed either by the Telit TCP/IP (IP Easy) internal stack or by the host. However, when used as an integrated platform, the user's application is moved from the external host (completely excluded from the design now) into the module's internal Python script engine. The requisite memory and processing resources are provided. Moreover, there is direct access to the module's hardware: GPIO, ADC, GPS, radio modem, and serial ports. And there are specialized software libraries for easy access to all the module's software functionality.

t2m: Why Python?

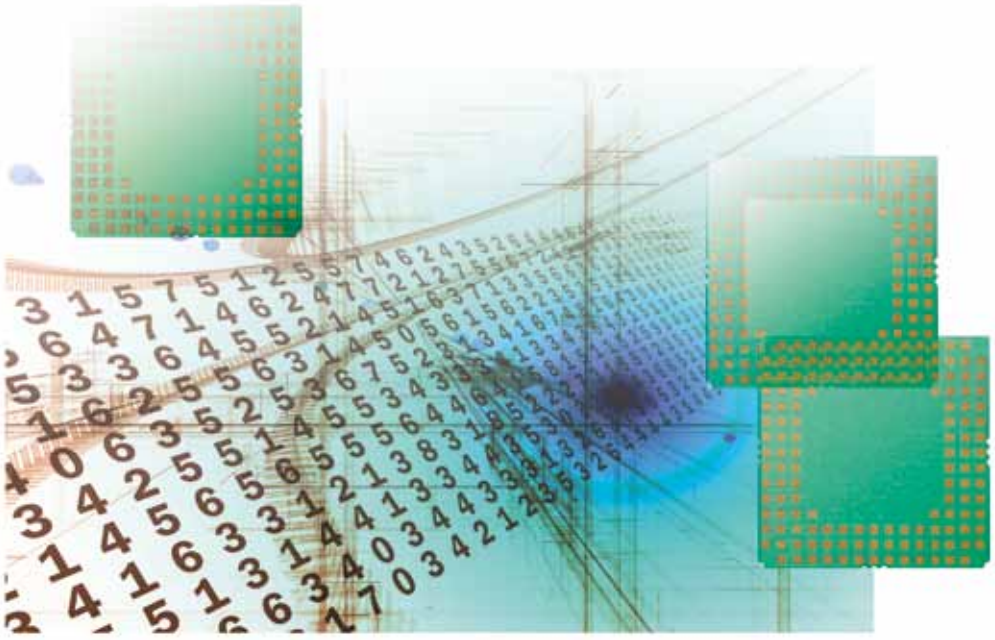
Buhu: Python because it's a high-level, easy-to-learn programming language. Some say it is minimalist; others characterize it as pure power. It is a dynamic, object-oriented language: the code is clear, easy to read and understand, has full modularity capabilities and uses high-level dynamic data types. With the addition of the right libraries, it has the proven ability to power virtually any meaningful project.

Telit's website has a special showcase section for customer applications. Free to browse, inspire, innovate, build and succeed! http://www.telit.com/en/discover/customer-applications.php <<



TELIT'S APP-ZONE
EMBEDDED PROGRAMMING

Tomer Lavie, *Regional Sales Director Israel, Telit*



>> The m2m market is going through constant changes; its huge growth encourages both new and established applications providers to differentiate their applications and reduce the timing of their availability.

The regular approach is to employ a microcontroller to manage the module using AT commands. An alternative is to embed the application software in the module, which is done using the module vendor's development platform. To date take up of this approach has been relatively low, but there are clear signs that many application developers are looking at it again, for the following reasons:

Reducing Application Costs – Competition drives prices down and in order to outperform, integrators are looking for ways to drive costs down even further. Having the hardware and all the software, including the user's application into the same place means less external components, less licenses to pay and track. In other words, it enables low prices.

Reducing HW Application size – In today's technological world, where most applications need to be as small as possible (miniaturized), the ability to reduce the number components is key. For example, many of our new modules embed GNSS functionality, which facilitates size reduction.

Faster TTM (Time To Market) – The ability to employ Telit's wireless services routines in code samples or libraries, in addition to the simple high level languages and special m2m API's, allows developers to profit from the company's know how, our comprehensive support and the support forums.

There are also other aspects related to performance: simplified board (digital and RF) design; lower power consumption of the whole application and better interoperability due to internal software tasks.

As a market leader Telit is constantly updating its offering. The company puts significant resources and R&D experience into the m2m space in order to be able to offer the best possible development environment. The key objective is to enable those three objectives in the simplest possible way and thereby assist developers when they are writing software applications.

The new xE910 family is near perfect for most market requirements: it uses two programming languages in its embedded platform:

❶. Python (already available) – a high level interpreter; easy to learn, intuitive object orientation and license free.

❷. Telit App Zone (Coming soon on the GE910, to be followed on the HE910) is a C-code based platform. Advantages are:

- Standardization – allows developers to use open source code in their application in a simple way.
- Simplicity – m2m API's leverage all the module's functionality in an intuitive and simple to develop way.
- Common Language - the C-code language is by far the most common language employed by m2m microcontroller developers. Java is the common language of mobile phone developers.

For both languages, the company provides standard m2m libraries and sample code helps application developers make less mistakes and it eliminates the need for long, complex software procedures. In addition, Telit offers a comprehensive development package and Telit's technical support force is available in all regions. <<

Telit AppZone

TELIT TECHNICAL FORUM: THIS YEAR'S BEST

Cosmin Buhu, *Telit Technical Support Forum Manager* www.telit.com/techforum

>> From the beginning until now, the Telit technical support forum has been running with full force; growth has been impressive since our last report in November 2012.

The forum was developed as a "mass tool" to provide technical support for Telit products in a widely available, casual yet professional manner. Immediately after its release, the forum saw a constant flow of new users, new questions, new answers and solutions that provide free support for people all over the world. Moreover, it has been facilitating the exchange of ideas, design proposals and reviews, and even across-the-globe validation of communication methods, servers and services.

The absolute numbers are impressive: the forum now has 2,500 users, almost double the number in the last report. Some 3,050 articles were posted in 830 threads – a growth of about 50% in both categories.

The focus

Let's look at the top categories in the forum, listed together with the number of threads developed since the start of the year:

- GE/GC864/865-QUAD/PY, 57 threads
- Python – internal script engine, 24 threads
- UART & AT Commands interface, 16 threads
- UC864, 14 threads
- Networking with EASY GPRS, 9 threads

The best of the rest

We will briefly highlight some representative subjects, interesting for those who are more technically-minded:

- OTA Update of Python Scripts: Telit provides a sample to implement OTA updates, the thread clarifies some details and explanations on its usage;
- FTP overhead: some calculations of the amount of data required by several network protocols, UDP proving the most cost effective;
- GC864 UDP help: discussions about the UDP network protocol, with a working example to obtain current time from daytime servers;
- ATA and ATD have an ECAM idle in answer: shows why one should stick with the manuals: only the terminating character is accepted after an AT command!
- Closing the Socket: again the manual, respect the guarding silence time when closing a socket;
- Talks about IP protection when using Python applications: there are built-in protection methods, but designers can increase the level by linking the application with servers via use of remote services and authentication procedures;
- How a hidden hardware problem can mislead and be disguised: problem causes were searched in the software, finally solved by unifying the ground plane;
- Python again, how to get stack trace in "except" block: example readily available in the Telit package with further explanations on the code;
- The HE910 family of modules brings a new Python version (2.7) with big improvements such as floating point arithmetic, threading and time modules. The thread underlines the differences and the code must be slightly modified from the old 1.5.2+ version. Fortunately, not much to do!
- A code sample: how to simulate a user prompt and input on the serial interface; good for placing break or check points in applications, or get data from users;
- A design might require continuous FTP connection with a server. The thread analyzes the pros and cons and search methods to do this as securely as possible;
- Finally IPv6 is here! The thread tries to explain why Telit modules users should not worry: all changes will be under the hood, their interface will be the same, as clean as before, be it for direct PPP connections or using the internal TCP/IP stack.

Curious to read the different threads? Then register for free to the Technical Support Forum today: www.telit.com/techforum

AN EXTENDED NETWORK

OF COMPETENCE CENTERS

>> Telit provides unmatched customer support in 60 countries and a premier design-in expertise that is available through 26 sales and support offices. In addition, there is a global distributor network of wireless experts, an online Telit Technical Support Forum, and more than 30 Competence Centers.

These centers represent an innovative program that provides additional, extended support service to our customers. This is an established program that comprises selected partner companies who have considerable experience in designing cellular and RF solutions as well as proven skills in the development of hardware, software and mechanical components. This allows customers to benefit from outsourcing part of their design and development activity to an experienced, specialist third party. They can therefore focus more specifically on their core competence throughout the product development process and in this way bring robust solutions to the market in shorter time frames.

A second set of value-added partners provides an additional extension to the program. In this case selection is based on specific and dedicated expertise within one of the vertical segments in the value chain. The key support this network of commercial Competence Centers provides is expertise in the dynamics of one of those segments, e.g. telematics, health care, metering, etc.. This knowledge is used to help customers navigate complex market scenarios and again this speeds up time-to-market.

This is a new kind of support service and it is has been welcomed by many customers, particularly new entrants to the dynamic m2m space. The expertise of these partners can be used to reduce the risk of delays as well as direct and indirect cost overruns. These issues will typically occur when there is insufficient knowledge about best practice and procedures in specific segments. In addition they can provide go-to-market advice and assistance, i.e. create efficient and effective strategies.

To find a Telit certified Competence Center in your country please visit:
http://www.telit.com/en/services/competence-centers/list-of-competence-centers.php <<

You have no time, no capacity or no expertise to develop the design for your m2m application? The Telit Competence Centers can help you.

COMPETENCE CENTERS

COMPETENCE CENTERS EMEA

SKYTECHNOLOGY SRL

www.skytechnology.it

>> Skytechnology is an engineering company that provides embedded systems design services to hi-tech sectors such as telecommunications, automotive, aerospace, railway, medical and industrial. The company supports customers from the initial requirements definition, through all the steps of a design flow and on to generations of tested and certified prototypes that are ready to go to production. The key competences are the boards, FPGA design, firmware and software implementation, plus test and validation systems design. <<

GOOBIE

www.goobie.fr

>>GOOBIE is an industrial design house that provides global services for design and realization of complete electronic systems (hardware, software and mechanical packaging) that target industry and mass production applications. The company is closely involved in various high-tech areas and innovative products. GOOBIE supports its customers during the different stages of their projects, from analyzing the needs, specifications, realization, and on to industrialization, which includes technical support for manufacturing. GOOBIE is working in areas that employ electronics technologies and embedded software. These include: wired or wireless telecommunications; multimedia (audio and video); telematics and positioning; plus m2m, security and industrial applications. <<

COMPETENCE CENTERS NORTH AMERICA

DEVICE SOLUTIONS

www.device-solutions.com

>> Device Solutions provides design, development, integration, and certification services for a broad spectrum of market applications including asset tracking, medical devices, utility monitoring and consumer products. With core expertise in embedded system design, certifications, carrier approvals, and factory ramp, the company's team has the breadth of knowledge to efficiently bring products to market. Device Solutions specializes in feasibility investigations, requirements definition, embedded hardware and software design, design reviews, certification pre-testing, plus certifications and approvals processing. <<

SPECTRUM DESIGN SOLUTIONS

www.spectrumdsi.com

>> Spectrum's proven experience and focus in wireless design and integration services enables companies to enter into the m2m market quickly. Spectrum engages clients at the idea stage, through design and certifications, into manufacturing and anywhere in between. The company's success is due to process, experience gained via hundreds of successful m2m designs, a state-of-the-art RF lab, plus a library of proven hardware and software. Every Spectrum based design is guaranteed to pass regulatory and carrier certifications... the first time. <<

AROUND THE GLOBE

FIND ALL TELIT COMPETENCE CENTERS HERE:

COMPETENCE CENTERS LATIN AMERICA

ELECTROCOMPONENTES S.A.

www.electrocomponentes.com

>> Electrocomponentes was founded in 1978 and is today a leader in the electronic component distribution in Argentina. Focused on providing solutions that shorten time-to-market for customers, the company has an engineering department of eight senior professionals with the requisite capacity to develop software and hardware. The company's engineering team has wide-ranging skills and 15 years experience in designing different parts of an electronic solution, from product definition to testing, including hardware and software design, mechanical definitions, prototypes building and production management. In addition Electrocomponentes has established strategic alliances with PCB manufacturers and component assemblers throughout our region.. <<

ITECH

www.grupoitech.com.br

>> iTech provides a comprehensive portfolio of electronic components and customized solutions for m2m telecommunication. The company is working not only as a modules distributor, but also as a development center. The company is experienced in all areas of the m2m market, e.g. AVL, telemetry, commercial and bank automation, security and access control, wireless phone interfaces, etc. The company markets its own products and also supports its less experienced customers, taking care of the whole value chain, which includes component selection, design, prototypes assembling and testing, and on to mass production. <<

COMPETENCE CENTERS APAC

LEXIWAVE

www.lexiwave.com

>> As a design house, Lexiwave Technology (Hong Kong) Ltd specializes in Radio Frequency (RF) system and Radio Frequency Integrated Circuit (RFIC) design for communication and consumer products. Members of the management teams have been designing, producing and marketing RFIC, RF modules and RF solutions worldwide for more than 25 years. This experience enables the company to provide services that range from design and manufacturing through to product EMI/EMC compliance that involves joint efforts with our alliance companies. Successful products include RFICs & RF modules from 27MHz to 2.4GHz and communication products & systems i.e. interactive talking doll, wireless weather station, wireless parking meter, wireless handrail sanitizer and GPS tracking devices. <<

MELPER

www.melper.co.kr

>> Melper is a m2m application design and solution service provider. The company's core competence comprises GSM/GPRS, CDMA, Bluetooth, ZigBee and various embedded OS related technologies. The majority of the staff has experience in mobile phone development; the team also has comprehensive understanding of m2m application development. MPT-800, MPT-2100ES and MSM-2100K are the defining products used in weather center, tracking, and fleet management. By building platforms based on collective experience and technology, Melper developed its own terminal brand in order to diversify the product family for our customers. <<

TELIT'S LEADERSHIP ROLE IN A DYNAMIC MARKET

Daniel Quant, *VP Global Product Management, Telit*

>> We foresee a very positive future for the m2m industry. The market is maturing but at the same time innovation abounds, particularly in the IoT space. However, new challenges are also emerging, e.g. uncertainty about MNOs turning off earlier generation networks. Telit has expanded its product portfolio in response to both developments and the company will continue to play a leading role in this dynamic market.

Telit is an unrivalled one-stop shop. We have the industry's broadest portfolio. It addresses all major cellular standards, short-range RF and ZigBee as well as GNSS. This means that the company is facing the future from an ideal position. We also market combo modules such as GSM and GPS/GLONASS that reduce costs further, while continuing to provide faster and more accurate location measurements.

CELLULAR CONFUSION

In many ways the cellular communications industry has become a victim of its success. In a nutshell, there are too many air interfaces: 2G, 2.5G, 3G, HSPA and now LTE in 40+ different band combinations. And then there's CDMA2000, which continues to evolve. The early generation GSM networks combined circuit-switched voice and later packet-switched data, however were not spectrally efficient or able to provide true broadband connectivity. HSPA+ and LTE are much more efficient, with additional baseband innovation employing OFDMA, wider bandwidths and an all-IP connection, which provides the low latency and high data rates required for both consumer devices and m2m connectivity.

MNOs will migrate to LTE, albeit in different timeframes, and those earlier generation networks will be discontinued, also in different timeframes. The Tier 1 operators in N. America have announced their intensions; those in Europe and the rest of the world have been less than clear, which compounds the confusion and adds to the anxiety. We also don't know when each of these legacy networks are retired and the spectrum re-farmed to 4G, but whatever happens and whatever functionality our customers need, we will continue to have the requisite products in our portfolio. That's true now and it will be in future.

LEADING EDGE DEVELOPMENTS

Right now we are ready for the time when the m2m market needs LTE. The LE920 is our first module. It measures 34 x 40 x 2.8 mm and delivers 100Mbps-down and 50Mbps-up with dual-carrier HSPA+ as the fallback technology. Quad-band GSM/GPRS and EDGE performance ensure connectivity when 3G or 4G coverage is not available. The LE920 is also equipped with a high-performance, multi-constellation GPS and a GLONASS receiver for improved location accuracy when solutions are mobile and in challenging environments.

At the time of writing (Q4 2012) Telit is developing a single module, the GE910-SR, that supports GPRS + ZigBee + AppZone, thereby enabling Telit to meet the low price point of gateways that connect local area, short range networks to wide area cellular networks and to leverage the unique ability of having designed both cellular and short range modules.

The combination of GPRS and ZigBee is ideal for m2m applications that monitor utility meters in the home as well as other short range applications requiring connectivity through cellular networks and the Internet such as automated street lighting systems able to report when a bulb is blown and needs replacing.

In addition our out-of-the-box connectivity service – m2mAIR – speeds up and simplifies deployment. This breakthrough embedded technology enables a unique set of value-added services and connectivity and allows customers to treat connectivity as a BOM (Bill of Material) component.

ON-GOING INNOVATION

Telit continues to design the industry's most innovative modules. For example, the new Jupiter SE880, which measures 4.7x4.7 mm and weighs a mere 0.08 g. Currently (Q4 2012) it's the smallest and most advanced 48-channel GPS module in the world. It enables the design of ultra-compact, location-based products such as smart watches for children that display positions on parental devices and enable geo-fencing.

LE920
34 x 40 x 2.8 mm

SE880
4.7 x 4.7 x 1.4 mm

We also recognize emerging opportunities and develop products in time for our customers. For example, companies want competitively priced solutions that deliver "city-block" location accuracy in crowded urban environments where GNSS doesn't function well or at all (e.g. car parks), or they may simply want to know when goods arrive at a port or a regional distribution center. This requirement can be met using Telit's m2mLOCATE service, which is based on Rx Networks cloud-based Cell-ID location service. When a Telit module is in range or uses the cellular network, it notes the "IDs" of the cellular transmitters within range and sends them to servers, which look up the IDs in a global database and return the latitude/longitude direct to the device.

LOOKING AHEAD

Modules continue to play a pivotal role in m2m applications, but they are also moving center stage. They are increasingly becoming a programmable, operational environment that performs local processing, allows decisions to be made at the local level, and enables two-way communications over both local short range and cellular networks. Telit has pioneered the AppZone, an embedded programming system – an integrated, all-in-one solution that embeds applications, saving time and money as our modules can perform all the key tasks normally associated with an external memory and microprocessors.

Another development that Telit pioneered has been to invest in developing the key software technologies in our products, the glue that binds all the functional areas. This capability assures timely product launches and superior product functionality. Having our own protocol stacks enabled the development of a unique, cloud-centric Module Management System that delivers new, groundbreaking value-added services, e.g. the ability to remotely troubleshoot modules in the field that may be situated where network coverage is poor, or that have been incorrectly configured, i.e. it eliminates the need for costly visits. This is another example of the way the role of wireless modules continues to improve efficiency and lower operational costs. <<

R&D PLAYS A PIVOTAL ROLE

Sandro Spanghero, *Global Senior VP R&D, Telit*

>> R&D plays a pivotal role in the company's operations. We continue to expand our portfolio of GSM and CDMA platforms while making significant investments in the development of new platforms, e.g. for HSDPA+ and LTE. In addition we provide extensive support to our customers: from the early design phase and certification to deployment and maintenance. That is not a traditional R&D activity, but Telit is not a traditional company.

Customers interface with our global support operation, which is staffed by technical experts (see article on page 24). In addition we provide additional expertise as and when needed. The support operation reports to R&D: both are headquartered in the same location, Trieste, Italy, but with access to development people within every Telit R&D group. This enables special customer requirements to be handled in short time frames by the team that developed the relevant product.

As well as Trieste, the company has five additional R&D centers that have dedicated tasks: Cagliari (Italy) & Sophia Antipolis (France) focus on short-range wireless, satellite, and other emerging technologies. Seoul (Korea) is the main development site for CDMA, WCDMA, and UMTS as well as automotive specific products. Tel Aviv (Israel) supports the cellular sector, with an emphasis on former Motorola products. The sixth R&D center in California (USA) focuses on the company's GPS/Glonass location projects.

Roadmap to a prosper future

Although 3G will be the dominant technology in future we continue to invest in our 2G and GPRS platforms, where we own the software stack. Telit is also the first and only module provider in the market with its own ZigBee stack certified by the ZigBee Alliance.

The company is making a significant investment in 3G and 3.5G technologies. More variants will be added to the xE910 platform: there will be a wider choice of transmission speeds, including that provided by HSPA+, which supports down-link speeds up to 42 Mbps. The new variants, as well as new modules that support LTE, will all have the same compact form factor. Retaining this feature across the extended product portfolio is a key R&D objective and a dedicated team is working hard to realize it.

In addition we are working closely with our chipset partners, Intel and Qualcomm, in order to employ similar control and maintenance of the underlying software technologies that are currently provided for GSM and GPRS. This is a long-term objective and when realized we will be able to customize all relevant products in the portfolio.

R&D has played and will continue to play a pivotal role in the company's operations. We have an A to Z involvement with our customers. We continue to be focused on software development: the all-important glue. And there will be a unified form factor right across the spectrum. It all adds up to a very significant set of marketing and technology differentiators. <<

NEW TRENDS IN COMPUTING

CREATE NEW GROWTH OPPORTUNITIES FOR M2M

Horst Pratsch, *Head Product Line Modules & m2m at Intel Corporation*

www.intel.com

HE910
51 x 30 x 3.2 mm
High-speed m2m
for Embedded PCs

>> In recent years consumers have gained access to a large variety of smart phones and tablets having incredible features. Within a mere five years the capabilities of these devices has increased dramatically. Not only are there numerous possibilities, but also they have totally changed the way we work and handle our day-to-day communication needs.

In parallel the PC continues to evolve and it will provide a user experience similar to or exceeding that of today's smart phone. It will combine the intuitive use of a touch screen to access content with the practicality of a keyboard and the horsepower of an Intel® Core processor to create content. Intel's Ultrabook™ initiative not only leads to new, attractive slim form factors, the always-on-always-connected unit now becomes a true mobile computing device. Full mobility enabled by a cellular modem unleashes the potential of this new device. The content is always fresh and updated through the cellular connectivity. Intel has prepared for this emerging trend by creating a next-generation form factor now standardized in the PCI-SIG as M.2. The module, a single-sided 30x42 mm² board, will quickly replace miniPCIe in Ultrabooks™. Intel expects that within less than a year all major PC-OEMs will employ this module in their new designs. In 2013 Telit will launch its first M.2 module based on Intel's XMM™ 7160HSPA+/LTE platform. Licensed by Intel it will meet the demands of notebook, Ultrabook™, tablet, router and other consumer electronic OEMs. Telit will bring added-value to the end customers by providing full compatibility to all operators, direct customer support through design-in and the possibility to customize designs for particular segments.

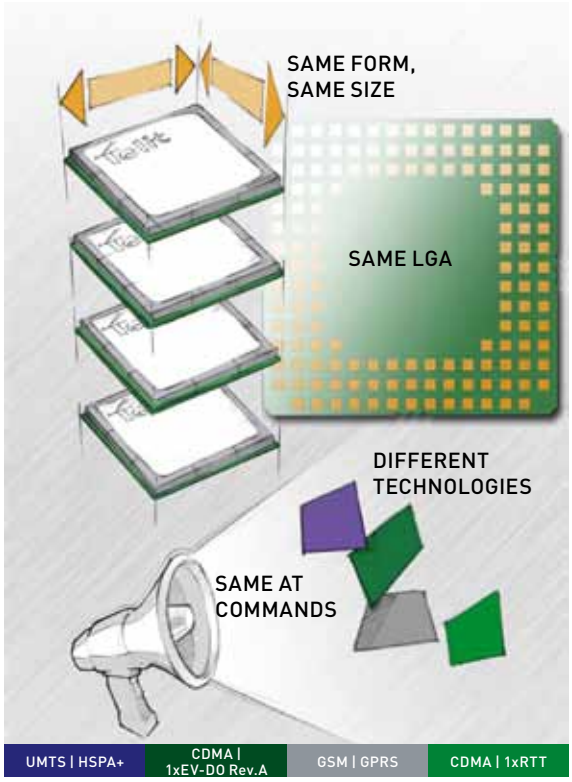
Beside these new developments, Intel's best-in-class HSPA+ platform XMM™ 6260, already implemented in Telit's HE910 module, is the basis of Intel's 3G variant of this new WWAN module. The LTE platform XMM™ 7160 is a perfect fit with respect to size, power and the number of RF bands for the 4G version.

Not only PCs, notebooks, tablets and in particular Ultrabooks™ will benefit from this smaller sized module, m2m applications will also take advantage. While a large portion of the m2m market will only require small amounts of data to be transmitted, more and more IoT devices e.g. in embedded applications, need to transmit data at 3G speeds, some even require 4G capabilities. The new form-factor standard, combined with the power of Intel's modem platforms, makes this an extremely attractive combination for consumer and industrial applications. Telit has all the required skills to employ this module and to further drive these interesting applications. Stay tuned. <<

DESIGN ONCE AND DEPLOY GLOBALLY

Marco Contento, *Product Management EMEA, Telit*

THE TELIT XE910 FAMILY FORM FACTOR



>> Telit is the first and, to date, the only m2m module manufacturer to offer its customers a family concept having a unified form factor for all major cellular technologies. For example, modules in the xE910 family have the same size and shape; they're pin-to-pin compatible and have the same software interface. There's the GE910 for GSM/GPRS and the HE910 for UMTS/HSPA+. And for the North American market there's the CE910/1x RTT and the DE910/EV-DO. The LGA form factor has a footprint of just 795mm2 and a total size of 28.2 x 28.2 x 2.2mm.

The advantage for solution providers is clear; one design can address different geographic markets because modules are interchangeable. When an application has been designed the customer can realize a global solution simply by selecting the relevant cellular technology as well as frequency bands and data rate. This concept reduces the effort, time and costs associated with development. In total the xE910 family has nine global and regional variants, thereby enabling ubiquitous, cost-effective coverage for m2m applications and consumer electronics devices such as eReaders, tablet PCs and consumer mobile health devices.

Pin-to-pin compatibility is also provided for the GNSS modules. The JN3 GPS module has the same form factor as the state-of-the-art SL869, which uses the entire spectrum of GNSS systems available in the world: GPS, GLONASS and QZSS. Similar functionality is provided for the Short Range modules, e.g. the LE family is pin-to-pin compatible with the ZE family.

In addition Telit strives to provide the same mechanical footprint for the GC product family as well as the hardware platforms of the CC and UC families (G = GSM; C = CDMA and U = UMTS). The second C stands for "connectorized", a Telit term that indicates that the module employs an 80-pin board-to-board connection to a PCB daughter board. The former Motorola products – G24, C24, H24 and G30 – also have a common form factor but in this case a 50-pin board-to-board connector is employed.

BGA is a commonly used package in consumer electronics that employs surface mounted technology (SMT). The main advantages of BGA components are the high density of interconnection for surface unit, improved heat dissipation and excellent long-term connection between the application and the module. The GE and HE families are provided with a full grid array package (different pitches for different models).

Telit modules are also available in LCC castellation package technologies. Like BGA, they are surface mounted package devices that use metalized pads on the sides of the package. LCC is ideal for relatively simple, low-cost applications based on a four-layer PCB.

Within the constraints of this short article I have tried to convey the breadth and depth of our unified form factor concept. The concept itself is not unique, but Telit is the only manufacturer that has applied it to all major cellular standards, short-range device technologies and Global Navigation Satellite Systems. As a one-stop shop we bring together all key wireless disciplines, thereby providing our customers with a single vendor choice that has fewer design risks, easy integration and a faster time to market. <<

m2mLOCATE: RX NETWORKS' CELL-ID POSITIONING

TECHNOLOGY FOR TELIT BASED APPLICATIONS

Adrian Stimpson, *Sr. Vice-President, Sales & Marketing, Rx Networks Inc.*

www.rxnetworks.com

>> It used to be that determining your location meant GPS or nothing. While GPS is a highly accurate positioning technology, it does have drawbacks with regard to coverage between buildings, indoors, and underground.

Although Rx Networks has been in the Assisted-GPS business since 2006, the company also saw market demand from customers who want location performance where GPS doesn't work and are satisfied with "city-block" level accuracy.

The solution: XYBRID RT™ (Real Time), a cloud-based Cell-ID location service that is a standard, no-cost service on Telit modules. How does it work? When a Telit module is in the vicinity of a cellular network it notes the "ID" of the cellular transmitters and sends these Cell-IDs via the cellular network and the internet to Rx Network's servers. This new Telit Service is called m2mLOCATE. XYBRID RT then looks up those Cell-IDs in its extensive database and returns a position location direct to the device. For devices that are connected occasionally, the Cell-IDs can be captured and then post-processed to identify the route.

For accurate positioning, the database of Cell-IDs is crucial. Today our database contains over 40 million Cell-IDs worldwide. These are a result of continuous investment acquiring Cell-IDs from practically every part of the world over many years, routinely verified and updated by the millions of consumer cellular devices using Cell-ID positioning. This comprehensive database ensures position fixes can be provided from within containers, in basements, warehouses and other harsh environments.

The Cell-ID capability of XYBRID RT is part of a suite of complementary capabilities. These include Wi-Fi positioning, Assisted-GPS, and Assisted-GLONASS for devices equipped with a GPS/GLONASS chip. Wi-Fi positioning works the same way as Cell-ID, however the location can be accurate to a few meters given the relatively smaller range of Wi-Fi access points.

By working with Rx Networks, Telit has partnered with a world leading company focused on location technology and services. Only Rx Networks provides cross-chipset support for all location and AGPS use-cases. Unlike other providers of location services for m2m, Rx Networks uses a superset of databases built over many years from direct input from millions of consumer based devices, resulting in global coverage of over 40 million Cell-IDs and over 185 million Wi-Fi access points, delivering the service from carrier-grade data centers backed by a 99.999% SLA. The company supports over 500 million devices and is relied upon by the majority of North American mobile operators as a critical part of their E-911 infrastructure.

More information is available at www.rxnetworks.com <<

DELIVERING THE INTERNET OF EVERYTHING

DRIVING M2M CONNECTIVITY TO 3G AND BEYOND

Nakul Duggal, *VP Product Management, Qualcomm Technologies, Inc.*

www.qualcomm.com

>> As wireless network operators migrate from 2G to 3G and 4G LTE technologies to accommodate the mobile and computing-driven explosion of data over their networks, there is an opportunity being created to drive connectivity into entirely new categories of devices.

The future, however, will not simply be about connecting more assets via the new high-speed networks. Rather, it will be defined by products that are designed to deliver greater functionality and intelligence because of the higher bandwidth capabilities of the networks.

Just as mobile devices evolved from simple voice and SMS handsets to today's mobile devices capable of everything from web browsing to HD video playback, the ability to optimize the end solution is driving a new generation of connected products and machine-to-machine (m2m) applications. Developers are responding by building greater value into their products and creating differentiated offerings.

The Internet of Everything

Qualcomm Technologies, Inc. (QTI), a leading global supplier of 3G/4G LTE chipsets for mobile and computing devices, is bringing its technology leadership to these emerging products. As everything around is becoming more connected, the use cases and business models require that everything also become more intelligent. From cars, to electricity meters and home security systems, to industrial automation and other m2m applications, QTI is helping to deliver the technology building blocks that are powering the next wave of connected devices, as well as helping to expand the Internet of Everything (IoE).

QTI offers a broad portfolio of Gobi™ modem chipsets for various device uses, including chipsets for 3G, 4G LTE and 4G LTE Advanced. QTI is also one of the first companies to provide 3G/4G-LTE multi-mode chipsets for all cellular modes and also integrate voice, data, Bluetooth, Wi-Fi, location and security features, making its chipsets among the most complete solutions for the broad range of uses that will help make up the IoE.

Growing IOE

To bring its technology to the many end solutions of the IoE, QTI is working with its customers who build the cellular modules that are integrated into the final devices. Telit Wireless Solutions, an experienced and pure-play IoE/m2m module OEM, is one such solution provider.

Telit offers form factor families of modules that address automotive, home, and a range of industrial and enterprise applications. Telit has built a portfolio of modules based on QTI chipsets, including a complete technology line-up in Telit's popular xE910 family for industrial applications, as well as xC864 and xE920 families for automotive.

From basic 3G connectivity to in-car LTE hotspots

QTI understands that different segments have different bandwidth requirements. QTI's Gobi QSC6270 chipset, with multi-band and voice support, addresses the needs of entry-level 3G applications such as home and commercial security and surveillance systems, as well as asset tracking and monitoring. Telit recently announced the UE910 V2, and is planning for a variant based on the Gobi QSC6270-Turbo chipset with additional support for Java ME 3.2 and eCall. In North America and other markets where CDMA 1x networks are deployed, QTI's Gobi QSC1105 chipset provides an entry-level CDMA offering, such as Telit's CE910.

In addition, QTI's Gobi MDM6600 EV-DO/HSPA+ and MDM6200 HSPA+ multimode chipsets offer increased functionality and higher bandwidth to meet the requirements of mid-tier applications such as healthcare, smart home and smart grid. With integrated GPS and Glonass support, these chipsets can power not only bandwidth intensive mass market Connected Car programs, but also simultaneously support the EU eCall mandate and Russia's ERA-GLONASS law. Telit offers the DE910 and recently announced the HE910 V2 to address customers in the non-automotive segments, and offers the HE920 HSPA+ product for automotive customers.

As LTE networks proliferate, the opportunity to support bandwidth-intensive applications with a single technology

globally presents attractive options for developers. QTI was one of the first companies to commercialize LTE modem chipsets and is already delivering its second-generation Gobi MDM9x15 chipsets. The MDM9x15 chipset offers automobile manufacturers a transition from basic telematics services to the adoption of a more complete infotainment experience. Telit recently announced the LE920 to target the auto industry and will introduce the LE910 to address opportunities for industrial applications where fixed or mobile assets can be connected via ultra-fast networks.

Integration and optimization

QTI is committed to help grow the industry by reducing cost and complexity and speeding time to market. Leveraging its rich mobile and computing device chipset portfolio, QTI delivers an IOE portfolio of chipsets that have application processing environments with support for various programming languages alongside its cellular modem, from Java ME on the HSDPA and HSPA+ QTI chipsets to Linux on the HSPA+ and LTE QTI chipsets.

With the onboard processing power contained within the QTI chipsets, developers are able to design optimized, low-energy solutions without the need for certain other discrete components, which reduces the bill of materials, yields physical space savings, and contributes to driving 3G cellular penetration for the IoE.

Lasting solutions

Whether designing for automotive or industry, for North America or Europe, for CDMA, HSDPA/HSPA+ or LTE, QTI offers a broad portfolio of chipsets. This powerful line-up, with support for various air interface technologies, has helped enable m2m customers, such as Telit, to build a portfolio of modules in different form factors to meet the applications and business needs of various developers today, as well as help to provide the flexibility to address future demands. <<

QTI'S GOBI CELLULAR IOE PORTFOLIO:

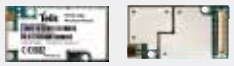
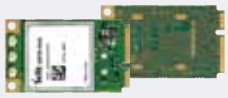
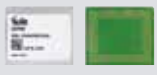
- CDMA2000 1X – QSC1105
- EV-DO – MDM6600
- HSDPA – QSC6270/QSC6270-Turbo
- HSPA+ – MDM6200
- LTE – MDM9x15

CELLULAR PRODUCT RANGE

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		
	Embedded	**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-DUAL V3** **GL865-QUAD**		2 G (GSM/GPRS)	GPRS Class 10	2 G (GSM/GPRS) Kbps: 42.8 /85.6		x	x	x
		GE910-QUAD **GE910-GNSS**		2 G (GSM/GPRS)	GPRS Class 10	2 G (GSM/GPRS) Kbps: 42.8 /85.6	2.0-FS	x	x	x
	Embedded / Compact	**G30**		2 G (GSM/GPRS)	GPRS Class 10	2 G (GSM/GPRS) Kbps: 42.8 /85.6		x	x	
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 | 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: 42.8/85.6 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			
		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: 42.8/85.6 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			

		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	Ready for Ecall	Run AT Commands Remotely	Jamming Detection	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	30 x 30 x 2.8 mm	BGA	120	RF PAD	-40°C to +85°C		x	x	x	 x 	x	x	 x 	R&TTE, CE, GCF, PTCRB, FCC, IC R&TTE, CE, GCF, PTCRB, FCC, IC R&TTE, CE, GCF, ATEX
x	x	30 x 30 x 2.8 mm	BGA	120	RF PAD	-40°C to +85°C	48	x	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 24.4 x 24.4 x 2.6 mm 24.4 x 24.4 x 2.7 mm	LCC QFN LCC	48	RF PAD	-40°C to +85°C		x	x	x		 x	x	x	R&TTE, CE, GCF, FCC, IC R&TTE, CE, GCF, R&TTE, CE, GCF, PTCRB, FCC, IC
x	x	28.2 x 28.2 x 2.25 mm	LGA	144	RF PAD	-40°C to +85°C	 32	x	x	x	 x	 x	x	x	R&TTE CE GCF PTCRB FCC IC
x	x	24.4 x 40 x 3.5 mm	LGA Board2Board	81 70	LGA PAD / U.FL U.FL	-40°C to +85°C		x	x		x			x	R&TTE CE GCF PTCRB FCC IC
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		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

TELITPRODUCTS

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)
UMTS I HSDPA	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
	Embedded	**UE910 V2** 	2 G (GSM/GPRS) 2.75 G (EDGE) 3 G (UMTS) 3.5 G (HSDPA)	GPRS Class 12 EDGE Class 12	2.75 G (EDGE) Kbps: 236.8/236.8 3 G (UMTS) Kbps: 384/384 3.5 G (HSDPA) Kbps: 384/Mbps: 3.6	2.0-HS	x	x	x
UMTS I HSPA	Embedded	**HE863** 9x Product Family 	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: 85.6/107 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	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: 384/3.6	2.0-HS	x	x	
	Embedded	**UE910** 	2 G (GSM/GPRS) 2.75 G (EDGE) 3 G (UMTS) 3.5 G (HSDPA) 3.5 G (HSPA)	GPRS Class 12 EDGE Class 12	2.75 G (EDGE) Kbps: 236.8/236.8 3 G (UMTS) Kbps: 384/384 3.5 G (HSPA) Mbps: 5.76/7.2	2.0-HS	x	x	x
UMTS I 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	
	Mini PCIe	**HE910 Mini PCIe** 	2 G (GSM/GPRS) 2.75 G (EDGE) 3 G (UMTS) 3.5 G (HSDPA) 3.5 G (HSPA) 3.75 G (HSPA+)	GPRS Class 33 EDGE Class 33	2 G (GSM/GPRS) Kbps: 85.6/107 2.75 G (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 I 1xRTT	Compact	**CC864-DUAL** **CC864-SINGLE** **CC864-K** **CC864-KPS** 	CDMA (1xRTT)		CDMA (1xRTT) Kbps: 153.6 (full-duplex)	2.0-FS 1.1	x	x	x
		C24 	CDMA (1xRTT)		CDMA (1xRTT) Kbps: 153.6 (full-duplex)	2.0-FS	x	x	
	Embedded	**CE910-DUAL** 	CDMA (1xRTT)		CDMA (1xRTT) Kbps: 153.6 (full-duplex)	2.0-FS	x	x	
CDMA I 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
	Mini PCIe	**DE910 Mini PCIe** 	CDMA (1xRTT) CDMA (EVDO)		CDMA (1xRTT) 153.6 Kbps (full-duplex) CDMA (EVDO) Mbps: 1.8/3.1	2.0-HS		x	x
LTE	Embedded	**LE920 Family** 	4G (LTE)	GPRS Class 12 EDGE Class 12	2 G (GSM/GPRS) Kbps: 85.6/85.6 2.75 G (EDGE) Kbps: 236/236 3 G (UMTS) Kbps: 384/384 3.75 G (HSPA+) Mbps: 5.76/42.0 4G (LTE) Mbps: 50/100	2.0-HS	x	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	Ready for Ecall	Run AT Commands Remotely	Jamming Detection	Main Approvals
x	x	30 x 36.2 x 4.8 mm	Board2Board	80	GSC	-30°C to +80°C		x	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	28.2 x 28.2 x 2.2 mm	LGA	144	RF PAD	-40°C to +85°C		x		x		x	x	x	R&TTE CE GCF PTCRB FCC IC
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	-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 2.2 mm	LGA	144	RF PAD	-30°C to +85°C	28	x		x		x	x	x	R&TTE CE GCF PTCRB FCC IC
		51 x 30 x 3.2 mm	Data Cards	52 pin edge connec-tor	U.FL	-30°C to +85°C	28	x		x		x	x	x	R&TTE CE GCF PTCRB FCC IC
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 2.05 mm	LGA	144	RF PAD	-30°C to +85°C		x							FCC IC CDG1 & 2
x	x	28.2 x 28.2 x 2.05 mm	LGA	144	RF PAD	-30°C to +85°C	32	x							FCC IC CDG1 &2
		51 x 30 x 3.2 mm	Data Cards	52 pin edge connec-tor	U.FL	-30°C to + 85°C	32	x							FCC CDG1 & 2
x	x	34 x 40 x 2.8 mm	LGA	198	RF PAD	-40°C to +80°C	28	x			x	x			R&TTE CE GCF FCC IC

CONNECTING THE INTERNET OF THINGS

Oyvind Birkenes, *General Manager low-power RF, Wireless Connectivity Solutions, Texas Instruments Incorporated*

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>> The market for wireless connectivity has experienced considerable growth over the past five years, and it shows no signs of stopping, with industry analysts anticipating 50 billion connected devices by 2020. The Internet of Things (IoT) has many opportunities for the entire ecosystem to enable users to control and monitor a wide range of previously "disconnected" end products. The IoT also delivers "Internet-aware" products with much more sophistication and intelligence to improve ease of use and in many cases installation.

The most exciting thing about the IoT is the endless possibilities because of the many wireless connectivity technologies and the capabilities they deliver to devices. A home gateway that connects to the Smart Grid using ZigBee and the Internet via Wi-Fi can help a consumer monitor their energy usage as well as control ZigBee-enabled LED lighting. A Bluetooth low energy-enabled personal health device can send workout data or health-related metrics such as heart rate, blood pressure and temperature to a smartphone or tablet for tracking. This data can also be shared automatically with care givers or doctors for monitoring.

And the IoT is not just for home or personal use, with wireless sensors becoming commonplace in industrial, commercial and metropolitan settings. Without wires and often battery-powered, wireless sensors can detect problems with machinery and send notifications, wirelessly change the pricing on an electronic shelf price tag, and even wirelessly network street lights.

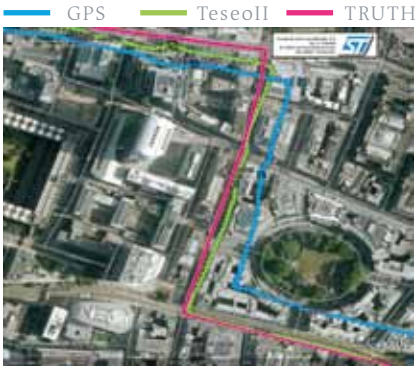
Wirelessly networked devices also offer a great opportunity for manufacturers, such as the ability to remotely troubleshoot product problems prior to sending a technician – with the right part. Additionally, through the IoT, manufacturers have an incredible opportunity to provide tailored customer support and maintenance based on usage data from their products and also gain a much better understanding of how the devices are being used.

The opportunities in the IoT are aligned with the portfolio of more than 14 technologies that TI has developed over the past 12 years in the wireless connectivity space. With hardware, software, development and evaluation kits, and support as well as third parties including Telit, manufacturers can quickly design and productize their contribution to the IoT. I can see a future home having as many as 150 low-power RF radios as well as numerous Wi-Fi radios, often found in some of the same devices. Regardless of the wireless technology used, the IoT is all about making our lives more connected, but also manageable anywhere, anytime. <<

POSITION ACCURACY
IS KEY TO SUCCESS

Gianvito Giuffrida, *Infotainment Marketing Manager, STMicroelectronics SRL*

www.st.com



Comparison between tracking results of a GPS-Only tracker, TeseoII Multiconstellation and truth in an urban canyon, showing the high accuracy of TeseoII.

>> Position accuracy is a key parameter in the fast-growing, satellites-based market. The service is primarily associated with telematics and road tolling. These applications are tightly linked to the user's position. The accuracy of the satellites positioning receiver mainly depends on the number of satellite that can be seen. The parameter used for position accuracy is the so-called DOP (Dilution Of Precision). It measures the geometry of the satellites seen by the receiver.

When the visible satellites are close together in the sky the geometry is said to be weak and in that case the DOP value is high. When the satellites are far apart the geometry is said to be strong and the DOP value is low. The higher the number of visible satellites the lower the DOP and then the position accuracy is higher.

GPS-only receivers give acceptable position accuracy wherever they are in open sky or in the middle of an obstructed scenario. But often they are not able to get good position accuracy and sometimes face difficulties in even getting a fix. This is the case in obstructed environments like urban canyons. There are two reasons that reduce position accuracy: visibility is limited to a small number of satellites and the reflection of the satellite signals is narrow due to the tall buildings. In these scenarios the ability to handle parallel signals coming from different satellite systems enables a significant improvement in position accuracy. Therefore ST has introduced the first autonomous solution that can track parallel signals coming from different satellite constellations.

ST's TeseoII product family is able to simultaneously acquire and track up to 32 GPS, Galileo, QZSS and GLONASS signals. This is done by using two parallel RF paths and two acquisition channels for GPS/Galileo/QZSS and GLONASS respectively. Field tests performed in different scenarios confirm the better position accuracy achieved by the TeseoII receiver versus any other GPS-only receiver. The ability to track simultaneously multi-constellation satellite signals makes it the right solution for all the customer applications that require high position accuracy.

In addition to multi-constellation, the TeseoII product family includes advanced software features like:

- ST-AGPS, which allows the initial task of downloading GPS ephemeris data from the satellites to be skipped. This results in an extremely fast Time-To-First-Fix. ST-AGPS is available in both autonomous and server based versions
- ST Dead Reckoning, which improves position accuracy in very obstructed scenarios by merging multi-constellation satellites and data from sensors
- Timing, which provides an independent and accurate 1PPS synchronized to GNSS/UTC with a TRAIM algorithm and Static Survey mode

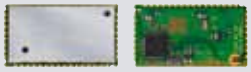
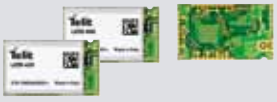
The STA8088FG, which is a stand-alone solution, embeds the above features in a stacked flash memory. It's the ideal device for a GNSS module solution.

The Telit SL869, powered by STA8088FG, is a state-of-the-art GNSS application module. Telit's SL869 in combination with their GPRS/GSM modules provides optimum solutions. <<

Being never lost again thanks to the combination of all available satellites: GPS, Galileo, QZSS and GLONASS

SL869
16 x 12.2 x 2.4 mm

SHORT RANGE PRODUCT 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		TinyOne	**TinyOne® Pro 868 MHz** 	4000 m	868 MHz
	Embedded	Tinyone	**TinyOne® Pro 868 MHZ RF modules** 	4000 m	868 MHz
			TinyOne® Pro 915 MHz RF modules 	4000 m	915 MHz
		LE Family	**LE50-433 RF modules** 	up to 2000 m	433 MHz
			LE50-868 RF modules	up to 2000 m	868 Mhz
			LE70-868 RF modules 	up to 10 Km	868 Mhz
		NE Family	**NE50-433 RF modules** 	1500 m	433 MHz
			NE50-868 RF modules		868 Mhz
		ME Family	**ME50-169 RF modules** 	5000 m	169 MHz
			ME50-868 RF modules 	2000 m	868 MHz
			ME70-169 RF modules 	up to 25 Km	169 MHz
IEEE 802.15.4 | ZigBee		ZE Family	**ZE51-2.4 RF modules** 	1000 m	2400 MHz
			ZE61-2.4 RF modules	4000 m	

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 64 x 40 mm (casing only) 200 x 64 x 40 mm (with antenna and connector)	4.8 or 38.4 Kbps	500 mW	-105	70µA	Mesh & Star	Removable
38 x 21 x 4 mm	4.8 or 38.4 Kbps	500 mW	-105	4µA	Mesh & Star	RF pad
38 x 21 x 4 mm	38.4 Kbps	500 mW	-100	4µA	Mesh & Star	RF pad
26 x 15 x 3 mm	9.6 to 115.2 Kbps	25 mW	-109	1µA	Star	RF pad
	4.8 to 115.2 Kbps	25 mW	-109			
26 x 15 x 3 mm	4.8 to 57.6 Kbps	500 mW	-112	1µA	Star	RF pad
26 x 15 x 3 mm	38.4 Kbps	25 mW	-103	1µA	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	2.4 to 19.2 Kbps	up to 1W	-120	1,5µA	Wireless M-Bus	RF pad
26 x 15 x 3 mm	250 Kbps	2.5 mW	-97	1µA	ZigBee Pro	Integrated - RF pad
		100 mW	-100			

A NEW PORTFOLIO ADDITION FOR TELIT:

JUPITER SE880

3D-SYSTEM-IN-PACKAGE (3D-SIP)

Desmond Wong, *Manager of Business Development and Advanced Technologies, Telit*

Jupiter SE880, 4.7 x 4.7 x 1.4 mm

>> The Navman acquisition provided Telit access to new GPS customers and products beyond the traditional m2m industry," said Oozi Cats, CEO of Telit, a year ago. Today Telit is not just a major contender in the GNSS market that provides enhanced GPS + GLONASS (SL869) functionality to combined applications and mobile/tracking data devices. With the introduction of the Jupiter SE880 ultra-compact GPS 3D-SiP receiver we meet end user requirements in various high-volume, fast growing consumer and commercial products, e.g. sports watches, tablets, GPSDVR, wearable tracker, OBD dongle and other emerging ultra-compact devices. Furthermore, when the SE880 is bundled with a Telit cellular module it becomes the optimal Wireless + GPS solution in terms of total cost effectiveness, footprint, ease-of-integration, and time-to-market.

SE880: NOT JUST A PACKAGE

Traditionally GPS modules have been developed with a GPS IC, PCB circuitry, SAW filter, passive components, TCXO, RTC crystal and a metal encapsulated package to provide complete GPS functionality. Performance and size are pre-defined by the vendors' specification. In most cases it is not feasible to achieve the required GPS performance by adding off-the-die (OTD) circuitry (passive, filters, matching networks) on a traditional PCB. However, the implementation of an RF sub-system in a 3D-SiP package gives developers a new option. SE880 is the result of combined skills of product, integrated circuit, process, materials, and substrate design in such a way as to optimize the off-the-die circuitry as a unified sub-system.

INNOVATION THROUGH INTEGRATION

The novel SE880 receiver module was conceived to shorten time-to-market and to make the chipset-versus-module decision an easy one for device integrators. Integrators can attain a working SE880-based design in as little as a week versus several months when starting from a chipset reference design. The miniature 4.7x4.7mm LGA (Land Grid Array) SiRFstarIV™-based receiver module delivers best-in-class performance in all critical dimensions for regular and size-constrained GPS applications.

The Jupiter SE880's RF front-end is truly state of the art, employing spatially calibrated waveguide-quality radio paths inside the three-dimensional space of its architecture. This drastically reduces the parasitic impedance characteristic of traditional 2-D RF designs. Inside, a multi-filter system includes not only the traditional SAW filters typical in GPS receiver designs, but also a 2.4 GHz notch-filter capable of nullifying the jamming effects of high-energy radio devices such as Wi-Fi hot-spots, Bluetooth systems, cordless phones, and others. These factors greatly affect a GPS receiver's ability to resolve weak satellite signals in the hostile radio environments where they need to operate.

Jupiter SE880 is enhanced for maximum sensitivity, which makes it capable of class-unique achievements such as: a one-satellite acquisition of UTC (typically 4 are required); fix acquisition with minimal sky-visibility (indoors, garages, urban canyons, etc.); and much lower TTFF under standard operating conditions (as much as 200 seconds quicker from a cold start). Figure 1 shows the drive test results in downtown Tokyo.

Figure 1: Tokyo drive test

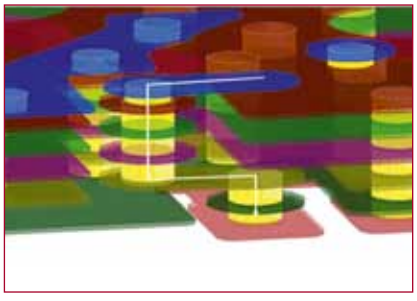
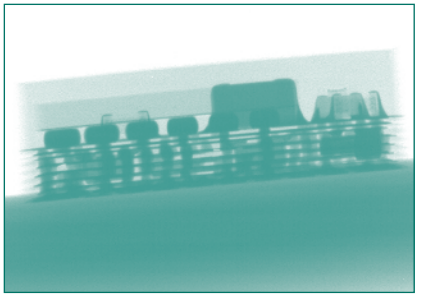
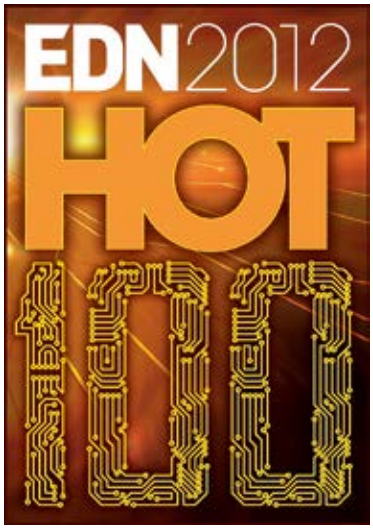


Figure 2: 3D simulation



SE880 as X-ray



SE880 named as one of EDN's Hot 100 Products 2012.

Other distinguishing features of the SE880 include an extended operating temperature range, wherein noise-versus-gain performance is linearly balanced throughout the range, with class-leading sensitivity stability particularly at the extremes of -40 and +85°C, which is critical for applications such as sports watches and OEM automotive navigation systems. With its micro-power stand-by mode, the SE880 draws a low 50 to 500 µAmps, making it extremely battery-power friendly. It can produce a first-fix in a few seconds when waking from a few hours of stand-by and still less than 10 seconds when waking from a full day of stand-by. This makes it ideal for wearable devices and personal digital device applications. Six-Sigma quality assurance processes employed in producing the Jupiter SE880 significantly increase manufacturing yields for the integrator's end product. That is due to a number of factors including higher tolerance to satellite signal variances input to the SE880's RF front end (less than 1dB part to part variation versus a more typical tolerance range of 3dB) and other issues introduced by the end-manufacturing process.

Telit's Jupiter SE880 includes all components necessary for a fully-functioning receiver design. It only needs a 32 KHz external crystal for its time-base and TCXO to complete the design, along with antenna, power and data connections.

INCREASES ENGINEERING EFFICIENCY AND REDUCES COST

3D-SiP is the state-of-the art technology that allows us to bring the best modular solution in a single, miniaturized package with almost no limit for the merging of heterogeneous technologies (Die-package-passives). A highly effective characterization methodology during the design phase delivers a "first time right" design, which increases engineering efficiency, reduces cost and enables a faster time to market.

Figure 2 demonstrates one of the spatially calibrated stack structures of Jupiter SE880 during the early design phase. The structure is precisely characterized in all aspects as well as the components, package, materials and manufacturing process. The production is capable of achieving less than 0.7dB part to part variation. The process capability index in figure 3 indicates that the quality process of the Jupiter SE880 has reached six-sigma level with a Cpk equal to 2.01. This results in improved reliability and ability to achieve greater performance in a short time-to-market window, something that a chipset reference design cannot meet.

CONCLUSION

3D-SiP opens a new era of performance, footprint reduction and modularization, thereby leading to tremendous advances in portable electronics. Benefits include improved flexibility in applications development, reduced PWB application routing complexity, and improved time. <<

PRODUCT RANGE GNSS

			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	Embedded	**Jupiter JF2**	11x11x2.3mm	QFN	32	RF PAD	-40°C to +85°C		x	48	x					x	UART, SPI, IIC USB	A-GPS Jammer rejection Internal Flash memory (optional)	CE
GPS	Embedded	**Jupiter JN3**	16x12.2x2.4mm	LCC	24	RF PAD	-40°C to +85°C			48	x					x	UART	A-GPS Jammer rejection Internal Flash memory (optional)	CE
GPS	Embedded	**Jupiter SE880**	4.7x4.7x1.4 mm	QFN	34		-40°C to +85°C			48	x					x	UART, SPI and I2C	A-GPS Jammer rejection External Flash Memory (optional)	CE
GPS | GLONASS	Embedded	**Jupiter SL869**	16x12.2x2.4mm	LCC	24	RF PAD	-40°C to +85°C	x		32	x	x	x	x	x	x	UART, CAN bus	A-GNSS Jammer rejection Internal Flash memory	CE

Build Your Dreams

BYD
Telit Best Strategic EMS Partner

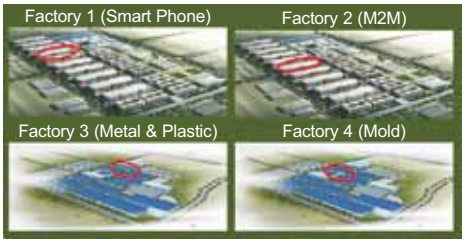
Stanley Liu
General Manager
BYD Division 9

Overview Introduction

>>Established in 2006, BYD EMS Service (hereinafter "Div 9") is taking the advantage of its strong vertical integrated capability on consumer electronic, home syncretic, and automotive device. Its vertical integrated service for customers to provide complete design, manufacturing and logistics throughout the product's whole cycle life help its OEM customers acquire the ultimate solution. It is specialized in SMT, Assembly, Testing, Package, Shipping and Customer service, and earns lots of big and stable customers, like SUMSUNG, NOKIA, MOTOLORA, HUAWEI, LENOVO, TELIT owing to its reliable quality and flexible delivery. It also owns many world-class SMT equipments with high density and speed, and had already shipped 54 million devices in 2011 with 6 million-10 million monthly capacities.

Key Numbers:

- Revenue: 5.6B RMB（2011）
- Shipment: 54M devices（2011）
- Area: 75，070m²（Up to now ）
- Employee: 10000（Up to now ）



Telit & BYD Cooperation

Telit and BYD started business from 2009 with GSM、CDMA、WCDMA、HSDPA etc. Modules. and achieved 0.5M shipment at that year.

Upon finished 4.2M shipment, the business increased twice in 2010. Due to BYD's good quality service, Telit award "The Best Supplier" to BYD at the end of 2010.

BYD finished 5M shipment and got TS16949 certification at the same time in 2011.

During 2012, with the continuous development of business, BYD configure dedicated factory and source to Telit and endeavor its best to help its customer to achieve 8M shipment at the end of the year.

It also has good relationship with Local Government and can help Telit and its other customer to get adavantage in Chinese market.


Telit award BYD as the "Best supplier" in Nov 2012

Div 9 Development Roadmap

2006
- 2006.02 Motorola Business Unit Set up
- 2006.10 Motorola Project MP
- 2006.11 Div9 Set up

2007
- 2007.06 Hui Zhou Factory Set up
- 2007.09 Nokia EMS Project MP

2008
- 2008.06 Lenovo Project MP
- 2008.07 Nokia ODM Project MP

2009
- 2009.04 Huawei Data card MP
- 2009.07 Huawei "Best supplier"

2010
- 2010.5 Dell Notebook MP
- 2010. 12 Telit "Best supplier"

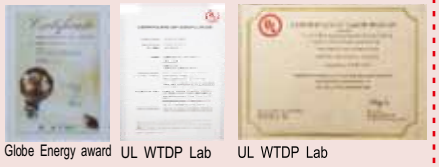
2011
- 2011.04 Start Smartphone Business
- 2011.12 Shipment volume: 54 Million

2012
- 2012.10 Telit "Strategic Supplier"
- 2012.12 Samsung Introduction

Enterprise Honor

Quality Assurance

Energy certification


Globe Energy award | UL WTDP Lab | UL WTDP Lab

Medical certification


Medical certification | ISO 13485 | Medical certification

Auto certification


ANSI/ESD | ISO/ TS 16949 | ISO/ TS 16949

Manufafure certification


ISO 14001 | ISO 9001 | OHSAS18001

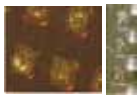
Manufacture Technology and Capability

39 worldwide brand SMT lines（High-speed）,include Fuji NXT /Siemens D/Panasonic （N2 Reflow）

Capacity

- 6M—10M/month capacity with 37 SMT lines
- 8M/month capacity with 53 Ass'y lines

	Type of Machine	Process Capacity
SMT	Printer: MPM/DEK/Panasonic Mounter: Fuji NXT /Siemens D/Panasonic Reflow: ERSA 2-20 AOI: VI 3K2/Agilent SJ-50 X-Ray: Phoenix 3D/SMG 2D MDA: TR518FE ICT: TR8100ULV Glue dispenser: Camelot /Asymtek	PCB Size: Max: 450*328 Min.50*50 PCB Height: Max: 4.5mm Min:0.8mm Chip size: Min: 01005 Connector: Min: 0.4mm Pitch BGA/CSP/ Min: 0.3mm SOP/TSOP Min: 0.4mm QFP: Min: 0.4mm AOI: Online X-Ray: 2D/3D ROHS: Available



Advanced Technology of POP and experienced in smallest size 01005 manufacture.

GSM/CDMA Test Stations

WCDMA/TD-SCDMA Test Stations

LTE Test Stations

Hundreds of multi-mode equipments for smart devi ces, such as Agilent8960, CMU200, Wi-Fi analyzer and so on.

Quality Assurance

Div 9 of BYD got all the basic certification at the beginning of its establishment, like quality certification ISO9001, international environment certification ISO14001, health and security certification OHSAS 18001, and became the Great Partner of Sony in 2009. It got the certification of TS16949 in 2011, which was about Automotive electronic; and had passed the certification of ISO13485 during the first half year of 2012, which was about medical device. Div 9 of BYD has a complete quality controlling process from ESI, SQE, IQC,RTE to customer service, which insure the production moving smoothly and with high quality. In 2011, the average first pass yield rate of Div 9 was over 95%.

BYD EMS & ODM Service introduction

As a industry's leading EMS provider, BYD provide worldwide range of supply chain service which can simplify the global product development process, help its customers greatly shorten product development time, and reduce the unnecessary cost.

EMS

JDM&ODM

OEM Services' Supplier

Div.9 of BYD provides data card、mobile phone and M2M module EMS Service.

Total sales volume reached 200 million pcs.

In the future Div.9 of BYD will focus on smart mobile device, wireless communication device and Medical device.

JDM&ODM Services' Supplier

ODM Solution：

1）IPTV STB: Except HD playing, It can also make smart phone、Pad、TV connecting and sharing with each other.

2）M2M Terminal（GPS Tracker，Router，RFID Tag and Reader）.

3）Smart peripheral（Accessory，Dock）.

Application of ODM Solution

Make pad, TV, and other home devices connecting and sharing with each other and use your smart Phone as an controller.

Multi-screen

Transfer resources from smart phone to PAD, or drive resources from PAD to TV for watching.

HDMI Dock can connect pad with TV

M2M Terminal (GPS Tracker)

GPS on time Localization :
With GPS module, track the container's location.

Long-distance Telemonitor:
Use GPRS and CDMA network, can Doubly track the location.

Warning automatically:
The tag will check itself automatically
And warn when any abnormity happens.

Durable energy and intuitionistic LED appearance.

Anti-salt, water, dust and vibration, can fit for various Environment. <<

Monitor tracking system

GPS+GPRS

Address & Contact

Address: Xiang shui River Daya Bay Economic Development Zone Huizhou Guangdong P.R China 516083
Contact: Fax: +86-752-5181617
Telephone: +86-752-5118888-68184
E-mail: Vincent.zhu@byd.com; William.cai@byd.com

TAKING QUALITY TO NEW HEIGHTS & DIRECTIONS – TS16949 CERTIFICATION PERMEATES THE ORGANIZATON

Mathi Gurusamy, *Chief Operations Officer, Telit*

>> ISO/TS16949 is the stringent quality management standard covering design, development, production and the entire supply chain. It sets the bar in the demanding automotive industry. Telit sets it for m2m modules. Our global manufacturing facilities are certified to this standard, as are the R&D and support operations. But we go further.

The assembly of electronic products in numerous industries is usually outsourced. Vendors give the contract manufacturer the design and the company will procure the components, set up production, do end-of-line testing, pack and ship. That's about it. Telit, however, cannot employ this hand-it-over process because of the complexity of our products. We create the documentation that specifies, step by step, the manufacturing process for our TS16949 compliant modules and we also designed the test equipment for end-of-line testing. Generic documentation and equipment doesn't cut it when you want to maintain the highest possible standards.

BYD, our main manufacturer, is located in Huizhou, China, and we have two dedicated offices inside their factory. Specialist engineers from Telit are on site 24/7 and they do more than monitor the process: they audit it continuously. They make various quality control tests in order to ensure that products are up to our demanding standards,

e.g. open up random packages that are ready to ship and do additional spot checks. Over 90% of the company's products are manufactured at this site.

In a nutshell, this exhaustive quality process equates to the contact manufacturer being an extension of Telit. That is why we are able to obtain TS 16949 compliance. Telit has a dedicated manufacturing space with dedicated resources from Line Operators to Engineers and various Functional Specialists. Normally it can only be realized by employing manufacturing facilities that the company owns and operates.

The test equipment at all our outsourced manufacturing plants is networked and inventories of all the test results are maintained at the company's data centers. Therefore if a customer calls and reports a problem with a module that is out in the field, then once we have the serial number, which identified the production batch, we can call up all the relevant production information, i.e. when was it made, what processes were involved, what were the test results and so on. There is no need to go back to the contractor.

Modules operate 24/7 for many years, a decade or more in many cases, and while it is clearly impossible to avoid the odd failure, systemic faults cannot be tolerated. Therefore it is hard to overstate the importance of quality: it's something that permeates the organization. Telit doesn't like to boast, but this set of quality processes, as far as we know, is unmatched in the industry.

ADAPTIVE MANUFACTURING MODEL

The massive investment that Telit has made in quality control has been a major factor in the company's success and as sales volumes rose so did the need to find a more flexible manufacturing model. The regular "build to order" model has a delivery time of around twelve weeks, mainly because the procurement of components starts when a sales order comes in. They could be stocked, but maintaining an inventory across the company's comprehensive product line would be prohibitively expensive.

Alternatively, knowing what future demands are expected would allow us to build an inventory position and maybe add a bit more in case new orders come in. But then money is still tied up in finished products. What Telit has done is to create an adaptive manufacturing model. We still employ forecasts based on previous sales with established customers, but very often their medium-term requirements fluctuate from month to month. Therefore we aggregate the numbers across the customer base in order to establish what components we are going to need.

The next step is to make hardware configurations and build products up to the end of the SMD (surface mounted device) process. You can think of these as generic, intermediate stage products. The requisite feature sets and software variants are added when the actual orders come in. Implementing such a model decreases product lead times, thus decreasing dependency on inventory to absorb fluctuations in product demand. Adaptive manufacturing is a closed loop, end-to-end process that tightly links the forecasting process to the manufacturing facilities and vice-versa.

The vision behind the model came from Yossi Moscovitz, the President of Telit Wireless Solutions, and a fact that clearly indicates that the company's commitment to quality starts at the top. Moreover the company has received TS 16949 certification as a corporation. This is only given when the audit indicates that quality is an integral part of the design and it also takes in all the elements involved in delivering products and services.

Telit is also accredited according to the Annex V R&TTE Directive of R&D testing laboratories with respect to measurement instruments and methods. This allows the company to autonomously issue CE declaration of conformity resulting from our own R&D lab measurement reports.

OTHER LOCATIONS

Ensuring compliance with TS 16949 started at ml&s, Germany, in Greifswald. This was implemented in order to be able to supply automotive certified products to Audi. Although over 90% of the company's products are produced in China, the process has been implemented at Hi-Mix, Brazil, because of local regulatory requirements, as well as Eli France, France, where our short-range devices are manufactured. <<

The gate to your m2m ideas

Partners from concept to product

Terminal solutions for Celluar, GNSS & RF

Terminals based on Telit xE910 modems

GT-HE910-EUD	Europe 3 bands UMTS
GT-HE910-EUG	Europe 3 bands UMTS + GPS
GT-HE910-NAD	North America 3 bands UMTS
GT-HE910-NAG	North America 3 bands UMTS + GPS
GT-GE910	Global 4 bands GPRS
GT-GE910-GNS	Global 4 bands GPRS + GPS + GNSS
GT-HE910-G	Global 5 bands UMTS + GPS
GT-CE910	CDMA 2 bands
GT-DE910	EV-DO 2 bands + GPS + GNSS

gatetel.com/offer

GateTel

In Gatetel, we develop, manufacture and sale terminals based on Telit modems, since 2002

www.gatetel.com • sales@gatetel.com

CAN YOU?...

... see if your critical devices have **network coverage and troubleshoot**?
... adjust connectivity usage from one to all your devices instantly to **avoid overage charges**?
... find an m2m rate plan that will **only bill you for devices generating revenue** for you?
... tell where each of your devices is, **anytime, anywhere, without using GPS**?
... ask the module in your device to **report its setup and running status**?

m2mAIR's Remote Module Management Service answers YES to all your questions.

SEAMLESS SERVICES:

Omer Pesach,
VP R&D and Products, m2mAIR

EASY DEPLOYMENT & USAGE

As the industry continues to grow so does the complexity of m2m technology, along with challenging deployment and management issues. New tools and enablers are needed to facilitate large-scale application rollouts.

Building a working, scalable client server application isn't easy but it's the core competence of m2m application developers and solution providers. Handling complex logistic issues like global connectivity procurement, scalable subscription lifecycle management, and efficient troubleshooting deployment issues aren't part of their core skillset. These issues pose a barrier to progress. Better tools and solutions should be provided to enable them to overcome these issues and focus on their core business competence.

These and other issues are not going to disappear: they're intrinsic to m2m communications, but the barrier should be lowered. For example, reliable global mobile connectivity can be seamless: it can come "out-of-the-box"; this would remove the need to be concerned with procurement procedures, complex logistics and integration into solutions and applications.

Similarly, a portfolio of the requisite management and value-added services can allow application developers and solution providers – "the market" – to focus on their core competence. Then all they really need to do is design, develop, and deploy their business applications. Everything else runs in background mode.

Telit believes that when connectivity is seamless, when it is tightly integrated and easy to use, then m2m will be embedded, used and integrated everywhere. It will evolve into a powerful, managed services eco-system that is truly pervasive. And like other leading edge developments the benefits will become something that we take for granted. Mobile communications, for example, is woven into the fabric of our society. That is a goal that m2m is set to replicate. It's not a dream-on scenario because Telit has risen and continues to rise to this formidable set of challenges. We have developed, integrated and are marketing:

- Lifecycle management tools that address all aspects of SIM card deployment
- A cloud-centric Module Management System to remotely and proactively diagnose and troubleshoot network performance and other service metrics
- Multi-dimensional security based on both preventive and defensive technologies
- Technical support as an integral part of our "seamless connectivity" offer
- A Business Support System designed to handle complex m2m connectivity issues
- Automated, rule based subscription life cycle management
- An agile billing system that supports deployments of different sizes coming from different verticals and having different footprints.

That was a quick take on the key functionality of our m2mAIR offer. The article "A game changing development" (see page 16) indicates how it will take m2m to the next level via a shorter value chain and an enhanced deployment process.

TELEFÓNICA'S M2M STRATEGY

Jean Triquet and Juan José González Menaya, *Telefónica* www.telefonica.com

Contract signing ceremony between Telefónica and Telit

>> Telefónica has strengthened its commitment to provide m2m services and solutions through a global unit within Telefónica Digital, which is now responsible for supporting its business partners and customers around the world. Telefónica has successfully implemented and developed m2m products and services for over 10 years and enjoys a leading position in this segment in terms of number of lines and revenues.

Telefónica Digital is a global business division of Telefónica. Its mission is to seize the opportunities within the digital world and deliver new growth for Telefónica through research & development, venture capital, global partnerships and digital services such as cloud computing, mobile advertising, m2m and eHealth. It is also driving innovation in over-the-top communications services under a new umbrella brand called TU.

Strategic Partnership between Telit and Telefónica

Telit and Telefónica have formed a strategic partnership with the aim to create, cooperate and sell innovative m2m products. It is the first time that a global telecom operator and one of the biggest m2m module manufacturers are jointly targeting the market.

Joined into a single partnership, Telit and Telefónica, both of them leaders into their respective markets, have created an unique, simple, reliable and best-in-class m2m product, known as m2mAIR. It's an unbeatable offer that includes: m2m modules; superior network services; redundancy; managed connectivity, including real time cost control; supervision; remote module management; security; reporting; alerts and customer support.

This agreement represents an extraordinary opportunity for Telefónica to provide its m2m services into the module market segment and, more precisely, to target innovative and fast growing SMEs. Telit is extremely efficient in providing services and technology to high-tech customers and Telefónica is taking advantage of this marketing position. Telit has been placed in the center of an ambitious business development initiative and Telefónica is consolidating its fourth position and fastest growing position (Gartner, June 2012) due to partnering with a key player: Telit.

Key advantages of this agreement for the market

What is the benefit of the Telit-Telefónica solution for the end customer? Why is Telit's offer such an attractive addition to Telefónica's Connectivity services?

First of all, the Telefónica Global m2m solution, powered by Jasper Wireless, is probably the best platform in the market. It allows customers to manage, control and supervise their connectivity by themselves, with a full control on SIM card life cycle, usage, services, coverage, expense, troubleshooting, alerts, reports, business rules, billing, etc.

The second advantage is that Telefónica can offer a unified and global proposal for module connectivity. Customers don't need to run to their local operator (where to call? Does my usual operator know the kind of service I need?). Telit simply provides the requisite modules together with the connectivity for almost everywhere in the world in a single, straightforward proposal.

In addition, Telefónica and Telit are able to provide end customers with doubled up operator coverage. If connectivity is not realized on the first network the solution will connect immediately to the best available network: robustness and reliability are built on the top of connectivity.<<

VALUE-ADDED SERVICES:

A COMPREHENSIVE PORTFOLIO

m2mAIR derives its comprehensive VAS offering from the synergy between Telit's control of the module firmware and the connectivity related VAS innovation at m2mAIR.

This synergy, coupled with Telefonica's core connectivity services and global coverage, enables Telit to offer m2m connectivity solutions above and beyond the services that even Tier-1 Mobile Network Operators can provide on their own. A good example of this is our unique remote module management service made possible by Telit's embedded remote AT command feature and the tight functional integration with Telefónica's state-of-the-art Service Delivery Platform (SDP).

Let's take a look at some of the key value-added services that m2mAIR is offering along with core connectivity. They allow Telit to function as a one-stop shop for m2m application and solution providers, thereby helping them overcome scalable, wide area connectivity challenges and allowing them to focus on their core business competence.

Subscription Lifecycle Management: Subscription lifecycle management SDPs were conceived to address all aspects of SIM card deployment. Once a design is completed, cards are shipped for installation and testing at the customer's premises. Upon activation (either automatic or manual) SIMs are set to a 'test ready' mode when a data usage threshold is configured. This enables installation and testing without initiating billing cycles. Billing only starts after the subscription is put into an active state and the cards can be activated and deactivated as required in order to optimize costs for the customer and to align the subscription's activation mode with the customer's application business cycle.

Post deployment feature access (remote AT): m2mAIR features a cloud-centric remote module management service that enables customers to remotely and proactively diagnose and troubleshoot network performance and other service metrics on an individual m2m terminal basis, on both home and

Proactive Remote Problem Solving

roaming networks. Features and services can be accessed after the modules have been shipped and installed (post-production). In addition, we provide a rich set of AT commands that function as APIs to the modules. They allow customers to deploy and employ features over the air for which their applications were not initially designed.

Remote module management also features pre-packaged queries for: Network Diagnostics; Remote Reset; Module Inventory Properties; Remote IP Testing; Remote Hardware Testing; and in upcoming versions for Usage Policy Management as well.

The Main Building Blocks of m2mAIR

These services are additional to those implemented by the SDP. Together with the rest of the offer, they can be seen as a "cycle" that starts with problem detection, then with analysis, and ends with resolution.

Security: Our approach to security is multi-dimensional. It is based on preventive technologies focused on authentication and encryption, as well as defensive technologies that deal post factum with malevolent events like interception and theft. Technologies employed include:

IPsec (SSL) VPN Tunneling: goes all the way from the module to the m2m application / solution provider's backend. It employs embedded SSL stack implementation and the m2mAIR IP Core. This provides powerful encryption and removes the possibility of eavesdropping on the data traffic.

Dedicated APN: a dedicated association to the subscription prevents a stolen SIM card being misused for unwarranted data communication.

Secure SIM authentication and PIN code: authentication is required before a data channel is set up, either explicit or implicit. It is based on the hardware identification. This prevents unwarranted data usage and misuse of stolen SIM cards.

SECURE SMSC

This solution ensures that all SMS communications to the deployment subscriptions are performed by a designated secure SMSC. This prevents spoofing and the ability to send false commands to applications that use SMS as a Mobile Terminated Over The Air (OTA) control and configuration bearer.

Module based policy management: a real-time, module-based usage hedging solution that protects against unpredicted data usage caused, for example, by application software issues.

Customer support and professional services: we emphasize technical support as a fundamental pillar of our "seamless connectivity" offer.

Proactive support focuses on application validation and certification. Reactive support focuses on the analysis and resolution of connectivity issues. m2mAIR is well positioned to offer both types of support through its capabilities as a network connectivity provider, its managed services infrastructure, and its partnership with Telefónica.

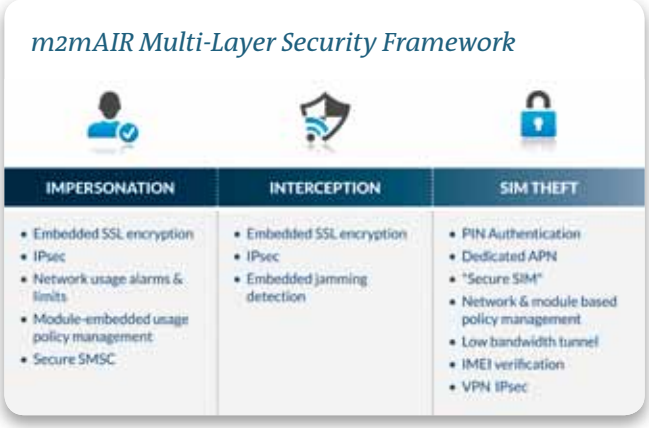
Billing and BSS: Billing is one of the most important features. It's pivotal because in m2m it is even more complex than in consumer connectivity services. ARPU is usually quite low and therefore m2m applications are typically cost sensitive. An inappropriate billing plan can be detrimental to a solution's business case and can induce operational expenses that would cripple deployment.

Supporting customers of different size deployments, from different m2m verticals, and with different geographical footprints often requires the ability to rapidly set up a tailored billing plan with customized business rules that are unique for specific customers. The billing plan must also accommodate the subscription lifecycle rules that fit that specific customer. Legacy MNO billing systems are not designed to support this level of flexibility and customization

CONCLUSIONS

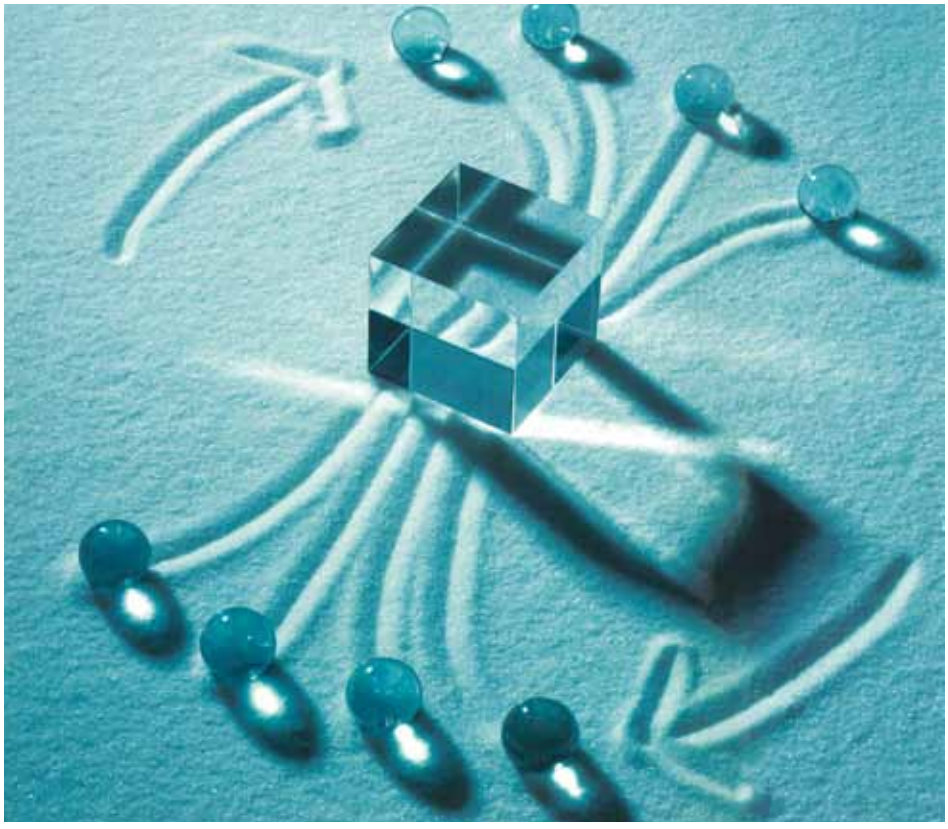
The three articles on m2mAIR (see also pages 16 and 56) have indicated that we offer our customers services, solutions and ways of effectively dealing with all major m2m connectivity challenges. The partnership with Telefónica brings in scale, presence and a wide geographical footprint, which enables customers to purchase connectivity from a single provider. The service delivery platform combined with our billing and business support system enables effective, scalable subscription lifecycle management and billing flexibility. And we offer real-time cost control solutions that enable verification that the cost of connectivity on some units is not running rampant.

m2mAIR Multi-Layer Security Framework



WORLDWIDE SALES CONCEPT
FOR GLOBAL ECOSYSTEMS

Dominikus Hierl, *CMO, Telit*



>> The Key Account Management Initiative, launched in 2009, focuses on three verticals: telematics, automotive and energy. These sectors are set to realize significant growth in the coming years and the initiative was created in order to optimize the equally significant opportunities.

It was a wise decision: one that involved the creation of dedicated sales and support teams that could function locally and at the same time be managed on a regional and global basis by senior Telit specialists who are recognized authorities. Cyril Zeller is the specialist who heads up our telematics activity; Peter-Rene Zucker and myself are responsible for automotive; Emmanuel Maçon-Dauxerre looks after the energy sector.

This development means that we serve our key accounts via a unified team that understands the needs of their sector as well as that of their customers' customers. In turn this allows Telit to operate within their global ecosystems. We are not simply close to our customers; instead we become an integral part of their marketing operation. In a nutshell, Telit aggregates all relevant disciplines into a team of experts. We provide local interfaces to our customers and we follow their ecosystems around the world.

Let's look at the energy sector in order to see how it works. Massive deployments of smart meters will take place on all continents: 1.4B between 2011 and 2020 according to Machina Research. There are more than 500 manufacturers worldwide but there is only a small handful of smart metering technology companies. Their ecosystems comprise other smart meter and smart meter gateway vendors. On a global basis, a typical ecosystem could comprise up to ten companies who all work together in order to optimize the potential of this critically important sector of the economy. That is the global market on which Telit has focused its key account management initiative.

Different communications technologies are used on different continents and in different environments. Serving the m2m industry therefore involves having all mainstream, wireless technologies in house: cellular, CDMA, 3G and GSM/GPRS; RF short range and mesh; plus ZigBee and Wireless MBus. Telit has the requisite product portfolio, one that meets the different spectrum requirements of the various regions. In addition the regional managers and the local sales and support teams are fully aware of regional compliance and other issues. It's a winning combination that is rounded out by the Key Account Management initiate.

The company's positive results and continued growth in today's adverse economy clearly demonstrate the success of our long-term strategy and the relentless focus on customers' requirements. We will continue to strive for best-in class products, superior support, and cost-effective solutions. Details of the company's operations in the various regions can be found in a series of "Telit Update" articles on pages 64 through 69. <<

VALUE-ADDED DISTRIBUTORS
ROUND OUT OUR OFFER

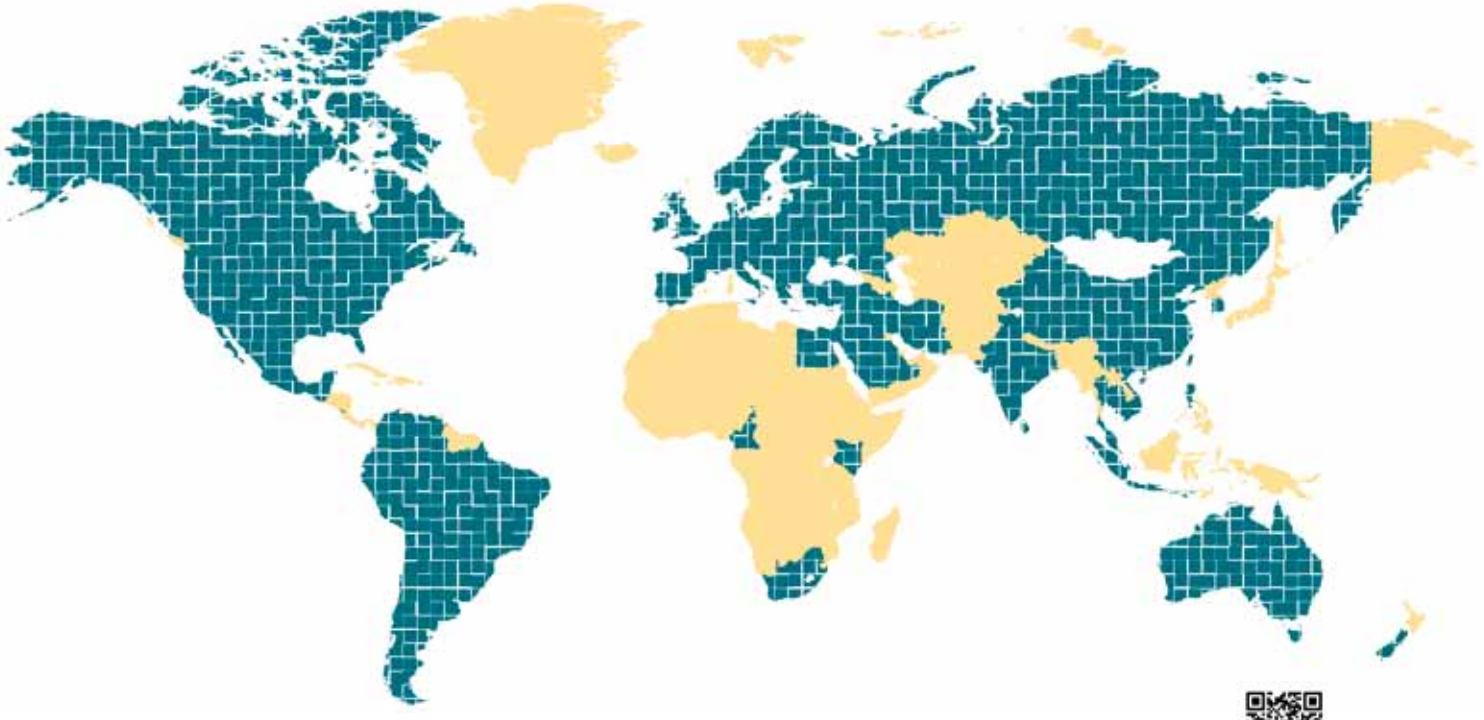
>> Our indirect sales network has played and continues to play a major role in Telit's success. The company's value-added distributors provide national geographic coverage, possess detailed local knowledge and expertise, and allow maximum customer reach at reasonable cost. Additionally, these valuable partners provide technical expertise on Telit products, which streamlines logistics and demand fulfillment and enhances operation of the supply chain. Overall, Telit's indirect distributor network contains the right mix of competencies to be able to meet the needs of customers that have relatively low-volume requirements.

■ **Telit** Distributors

Telit's direct sales force, which operates out of 27 offices around the world, handles the customers that have high-volume requirements. The distribution channel currently comprises 59 specialized distributors in over 80 countries. They report to the local sales office and have access to Telit's comprehensive set of support services.

The services we provide to our distributors are very similar to those of the direct sales force. Telit does not distinguish between the level of support it gives to its customers. It starts with advice at the initial design phase and it continues at the application level.

In addition to technical support and product documentation distributors benefit from our marketing communications activities, joint roadshows and customer events as well as our annual sales conference. Equally important is the fact that Telit never competes with its clients and we make sure that our distributors do not compete with each other. If one of them is at the proposal phase with a potential client we make sure that no other distributor makes a similar offer. That gives our distributors the trust and security they need to achieve outstanding results and continue to grow year on year. <<



FIND OUT MORE ABOUT OUR DISTRIBUTION PARTNERS HERE: **WWW.TELIT.COM → WHERE TO BUY**

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TELIT'S GLOBAL STRENGTH

• Over 5,000 customers in 80 countries around the world • 27 sales offices with a sales force of more than 100 • 59 distributors covering 80 countries with a sales force of more than 350 • Headquarters in Rome (Italy), regional headquarters in Raleigh (NC, USA), Sao Paulo (Brazil), Seoul (Korea) • 500 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

TELIT EMEA UPDATE

Carlos Perez, *Senior Vice President Sales, EMEA*

>> Looking back to 2012 and analyzing the results in EMEA, we see one of the key words when anyone tries to define the m2m market: "Fragmentation".

Telit Wireless Solutions EMEA
Corporate Global HQ in Rome
Coordination of all disciplines Trieste
- Product Development LTE
- Product Development HSPA
- Product Development GSM/GPRS
- Product Development Short Range
- Product Management
- Operations
- Technical Support
- Sales & Marketing for EMEA

m2mair by Telit m2m experts

All markets were expecting to see the first deployments of the big AMR/M (Automated Meter Reading/Management) projects in 2012, but for different reasons the various projects are all delayed and we will not see first field trials until 2013/beginning 2014. This fact may have impacted on our results last year, pushing us below expectations, but this has not been the case: on the contrary, we managed to over achieve them. How to explain this? Fragmentation.

Telit's strategy is, and has been, not just to focus on a few large projects, but to follow all projects in the m2m market, either directly or through our distribution network. As a result over the years we managed to build a very broad customer base, with completely different applications and that is one of our pillars: it leads to stability and long-term growth. A good example are the 2012 results, where we have seen fast deployments for other projects not related to AMR/M and that allowed us to balance the delay in the metering projects. The most significant project has been Ecotax in France, with deployments of around 800k units during last year.

This broad customer base was the perfect foundation on which to grow our new business units: Telit Locations Solutions and m2mAir.

The acquisition of Navman Wireless OEM beginning of 2012 gave us a definitive push into the GNSS (Global Navigation Satellite Systems) market. We have successfully integrated their sales network and the new products have been well accepted among our customers. Growth was over 100% in 2012 and we are aiming for the same results in 2013. Our target is to be the leader in this market, as we are already in the cellular m2m module market in EMEA.

During 2012 m2mAir customers realized the first mass production deployments. The acceptance of our Value Added Services (VAS) and connectivity offer has gone beyond our best expectations. This is confirmation that our value added proposition is exactly what customers were looking for. It brings them an easy and straightforward way to deploy their projects, allowing them to focus on their core business and rely on Telit for the remote management and connection of their devices in the field. We see 2013 as a phenomenal opportunity to grow m2mAir, and based on the number of pilots in place and customers already interested in our proposals we expect outstanding results.

We still see many uncertainties in the Euro Zone economy and we don't expect an improvement until 2014. Nevertheless, and regardless of the slow down in the economy in 2012, our strategy during last year was to keep investing in new resources in the key markets, i.e. Germany, France, South Africa and Central Eastern Europe. This strategy has allowed us to strengthen our leadership position in EMEA and it will contribute to our growth during the coming years.

Summarizing 2013 in a nutshell, we see a very challenging year for EMEA, with significant growth of the new business units and finally a ramping up of national AMR/M projects, mainly UK, The Netherlands and Italy. We are ready for this challenge and we will keep investing throughout this year to secure our growth towards 2014 and beyond. <<

TELIT NORTH AMERICA UPDATE

Michael A. Ueland, *Senior Vice President & General Manager, North America*

>> The transition from 2G to 3G/4G technology continued at a very rapid pace in 2012. The trend away from GPRS has been dramatic with Telit sales shifting from GPRS products to 3G and CDMA. m2m developers were busy with new m2m designs in 2012 and we are now seeing the results of the recent design activity with very robust sales at the end of 2012 of our new 910 family. The 910-form factor has been very popular with customers who have multi-region and multi-carrier requirements. Telit certified many variants of our 910-product family this year on the major U.S. carriers, including our HSPA, HSPA+, EV-DO and low cost 1xRTT products.

Telit Wireless Solutions North America
- Regional Headquarters
- Regional Product Certification
- Regional Product Management
- Regional Technical Support
- Sales & Marketing for North America
- Product Development GNSS

The evolution of the product portfolio from low-bandwidth GPRS modules to high bandwidth HSPA+ modules capable of 21MB downlink speeds expanded Telit's markets and customers. In 2012, we became an associate member of Intel's Intelligent Systems Alliance and met new customers in the embedded computing space. Companies like Kontron and Eurotech provide industrial grade computers that power a variety of computing intensive applications, such as gaming machines, medical equipment, kiosks and digital signage. With our mini PCIe form factor we are able to offer a retrofit and OEM solution to devices that support this form factor. In many cases we can connect the millions of devices that already have a mini PCIe slot but no or limited connectivity. With a real-time connection, OEMs can provide additional value added services to their customers, including remote device management, preventative maintenance, consumables management, etc.

The opportunities for developers to incorporate 3G/4G in their products are numerous, but now the value proposition only makes sense for a few applications with the connected vehicle being the largest and most relevant opportunity. For example, our LE920 module can support an in-car display running HD movies. Imagine the in-vehicle application where people are watching their own separate movie, streaming from Netflix, Hulu+, Amazon or other providers of digital content.

LE920

Considering all the bandwidth that LTE provides, network deployments are still immature. This means that service levels for applications such as streaming video will be limited to the most populous areas for now, which is not ideal for core m2m applications that have a need for universal coverage. Since there are potentially more than 40+ LTE bands globally, it will be a challenge for module manufacturers to provide all the band configurations that customers require.

Since most m2m applications are delivering KBs instead of MBs on a daily basis, there continues to be a need for cost, size and power optimized modules that run over networks with strong geographical coverage. Telit's CE910-DUAL, a low-cost 1xRTT module, is ideal for low bandwidth applications. Certified on Verizon and Sprint's networks, both carriers have announced their plans to keep the 1xRTT network up through 2020. This is very good news for m2m customers.

As we begin 2013, we continue to see many new deployments this year using both CDMA 1xRTT and HSPA technology. We should also see some early LTE customer design activity in 2013 with customer launches coming in 2014 and 2015. Whatever the technology, the connected world is delivering important business, personal and societal benefits and m2m continues to evolve as an integral part of the mix. <<

TELIT LATIN AMERICA UPDATE

Ricardo Buranello, *President, Latin America*

>> Brazil is an exceptional market. It's one of the top four emerging economies, the others being Russia, India and China. It's a huge country with a population close to 200 million and enormous potential, which Telit recognized in 2008 when the company opened its Brazilian office.

Telit was a new brand in a market dominated by big competitors, and just to make things even more complicated a few months after beginning our local operations, the biggest financial crisis in the country's history started. Despite those startup challenges the results are in line with the company's potential. Telit has consolidated its position and has become an m2m leader; we have a state-of-the-art ISO TS manufacturing facility and we offer what is by far the most complete product portfolio. Being part of the team that started the business in 2008, I am pretty happy with the results.

When we look to the future, I get even more enthusiastic. Brazil is changing for good. We see more and more entrepreneurs and local companies launching innovative products and numerous multinational companies are making plans to be in Brazil. These developments reinforce our belief in this market. In Q4 2012 we announced national production of 3G modules, which makes Telit the first producer to manufacture this technology locally. We already have several design wins for 3G products and this development will facilitate the creation of new innovative products in all verticals that use GSM modules. We currently have a capacity of over 2 million products a year and it will be expanded in future.

The Brazilian Contran 245 mandate requiring GPRS devices to be embedded in all new vehicles is still an open issue. The law has been delayed several times and the credibility in the new agenda is questioned by carmakers, tracking device manufacturers and the components industry. However Telit is ready to meet the demand when it arrives.

With regard to tracking solutions we foresee great opportunities. Our products have special features to minimize the epidemic usage of Jammers. The quality of our Jamming Detection functionality is well known by the market, and we are working hard to bring even more innovative technologies to this sector.

TELIT APAC UPDATE

Derick Tsang, *President, APAC*

From its Brazilian base Telit is making investments in order to promote innovation in other Latin American countries. Despite the delicate political and economic situation that exists in Argentina, we have significantly increased our share of this market, despite the presence of serious companies having a global view and deep local understandings of their market. In 2013 we can be sure the results will continue to be positive and that we will keep expanding our penetration in other LATAM markets. Latin America is a huge region and we want to be close to our customers. We are expanding our team; we are expanding our production lines and our product portfolio. I feel very confident about the future; I can see the challenges, but I am sure that the rise of the m2m industry in this region is just starting. <<

>> We have entered an era where people, businesses and social organizations are beginning to understand the profound impact that awareness, collaboration, and intelligence will bring. In the not too distant future billions of individuals and businesses, with trillions of smart communicating devices, will stretch the boundaries of today's business and social systems and create the potential to change the way we work, learn, entertain and innovate.

In APAC Telit remained a market leader and was able to show an impressive annual rate of growth of over 220%. In 2012 we made additional investments in Japan and Australia to further increase our presence. Both markets are poised for substantial growth. In Australia Telit opened a new office in Melbourne and we are happy to have m2m veteran Marcos Kinzkowski, who previously served as Telit's Latin America vice president of sales, to head up the Australian office. In Japan we have signed distribution agreements and forged business partnerships with prominent Japanese companies. As there are enormous growth opportunities for m2m in both regions, Telit will leverage our presence by providing the highest quality service to regional customers.

Korea continues to lead the industry on the communication technology front. Korean carriers are beginning to deploy LTE modules in various m2m applications. With its wealth of experience in the market and highly qualified engineers, Korean R&D has already begun working on LTE module development while other regions in the world are still focusing on 2.5G and 3G designs.

Furthermore, by selecting Melper, a Seoul-based leading company in application design and solution consulting as Telit's Korea Competence Center, local customers could take full benefit of m2m design, development and integration assistance. Established in 2009, Melper has broad knowledge of the

Telit Wireless Solutions APAC
- Regional Headquarters
- Product Development CDMA & UMTS
- Product Management
- Manufacturing, Logistics
- Regional Technical Support
- Sales & Marketing for APAC

m2m application market. The firm recently provided application devices and support for the Ubiquitous-Automatic Weather Station (u-AWS) enhancement project, an initiative of the Korean Meteorological Administration whose objective is to build a system that will enable real-time weather forecasts.

In China Telit is growing at over 30%, which is faster than that of the market. For Telit, China is currently the biggest revenue-generating market in the APAC region. As the only global brand in the industry, Telit takes the largest market share among top 3 global m2m module companies. This has been realized by dedicated engineers and a sales force that offers a high-quality service to their customers. In addition, the local, proprietary unique testing capabilities give the China teams a significant competitive edge. These two reasons are at the core of the company's success and Telit will continue its high growth rate in this high-growth market.

With the Indian m2m market growing at 35% annually the road ahead is visibly promising and the timing for Telit to enter this market seems just right. The company started its India operations in early 2011 and has received a very promising response from the market, both in terms of establishing a brand as well as a defined roadmap. During the first year of operations, Telit India has successfully sown the seeds of its remarkable journey into the market and that will help to build a strong brand and allow Telit to emerge as a leading m2m player in the industry.

By 2012, Telit was already well positioned to address the fast maturing m2m market in India with nationwide coverage through its extensive technical & sales support structure across all regions. During the first half of 2012, Telit entered an alliance with four key AMR players, thereby extending its presence within the energy sector. Towards the end of 2012, Telit added five key players for handheld devices and four key players of AVL based applications and this will help to spread out its reach across all the key verticals. In 2013 the company will build on its strong client base and nurture growth in this market.

With uncertainty in some of the biggest economies of the world, Indian industry is banking heavily on its domestic consumption and this is supported by government policies. There are a lot of government initiatives being taken in the m2m arena that are fuelling growth in areas like energy, telematics and mobile computing. Also, with the voice market growth slimming down and ARPU declining considerably, operators are being pushed to promote wireless m2m as their next revenue stream. Therefore, the time is right for Telit to establish a presence and realize our business goals. <<

HOW WILL M2M TAKE OFF IN INDIA?

Prof. S. Sadagopan, *Director of the Indian Institute of Information Technology Bangalore*

www.iiitb.ac.in

>> Mobiles are truly "made for India"; no other technology took off so well in India. While the Indian telecom subscriber base could not reach 45 million after more than a century, mobile has grown at a rate of 10+ million per month for many months! Today, it has reached 960 million after 17 years, and together with landlines, the overall telecom subscriber base is expected to reach one billion by the end of the year.

The next stage of growth will come from m2m! While there are numerous applications that are relevant, many of us believe "energy and communication optimization" will be a major driver of m2m in India. Let me explain.

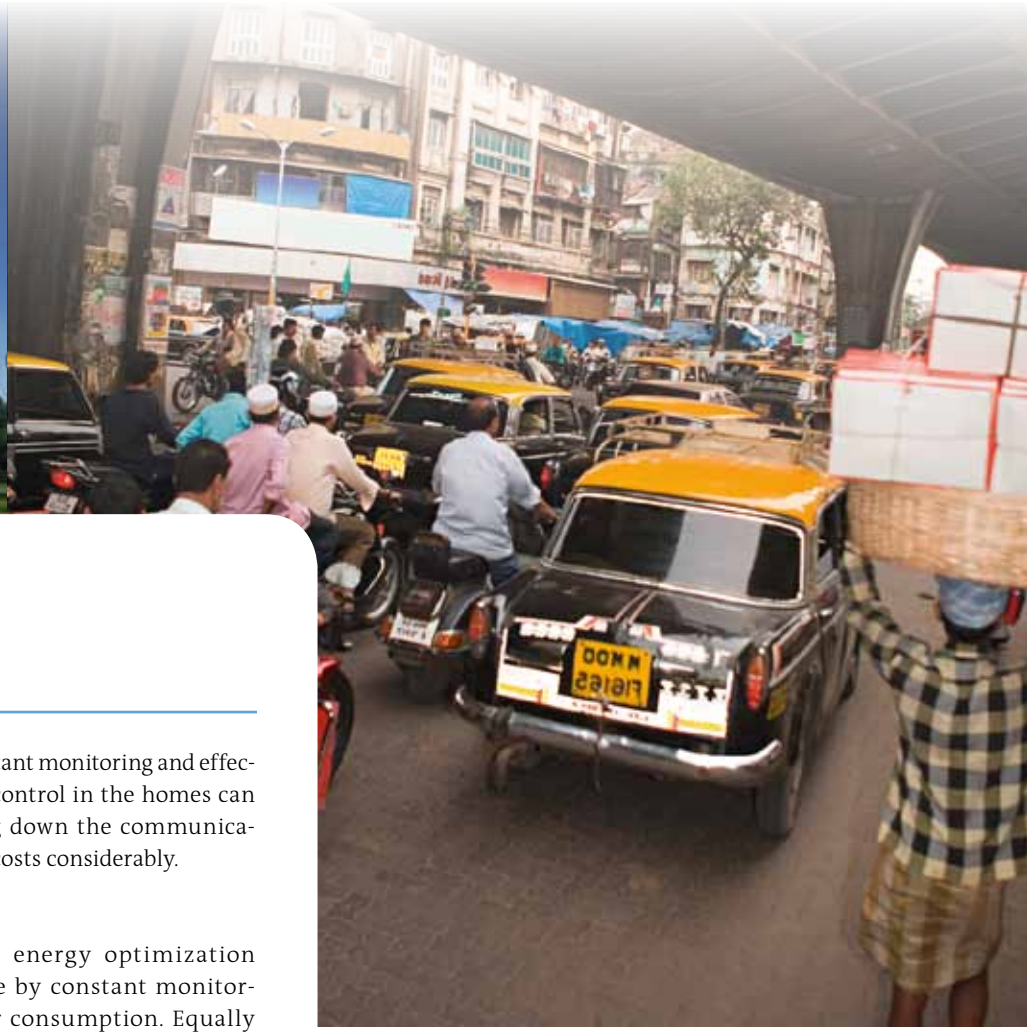
Thanks to services growth in the past 20 years (fuelled by IT services) there is considerable growth in office and residential space. For example, India added 5.2 times more office space in one decade (1997 to 2007) than the previous five decades (1947 to 1997). With the rise of the middle class and the growth in IT services industry, Indian office space is becoming an energy intensive environment (air conditioning and high speed elevators for example). And with a tropical hot and humid climate in most parts of India for more than six months in a year, there is also an increased use of air-conditioners in homes.

Coupled with the use of other home appliances (e.g. washing machine and microwave oven) the "quantity" of domestic electrical consumption has been going up. With the increased use of gadgets (PCs, laptops, tablets, cameras, printers) and home Internet (Wi-Fi routers, wireless printers), home entertainment (TV, stereo, home theater) there is an increased need for "quality" power. And with communication needs going up (phone, SMS, Chat, email, Internet, Skype, Facebook, Twitter) the "communication" costs are also increasing.

India has perhaps the highest cost of energy (partly due to very high dependence on imported crude oil) plus the high cost of transmission & distribution loss - partly due to theft and the very high subsidy in the form of very low tariffs compared to the actual cost of production. Indian consumers also pay a lot for bandwidth due to poor Internet penetration. The overall result is that organizations and individuals pay a disproportionate amount towards energy and communication costs.

Vita

Professor Sadagopan is the founding director of the Indian Institute of Information Technology, Bangalore, a new generation of institutes, promoted jointly by the Government of Karnataka & the IT industry. The Indian Institute of Information Technology Bangalore focuses on all aspects of information technology.



HOW CAN M2M HELP INDIA?

Constant monitoring and effective control in offices can bring down energy costs considerably.

Monitoring the ambient temperature, switching off the air conditioners, and switching them on again when the temperature has risen can reduce air conditioning costs. However, monitoring must be continuous, day after day, for many years. Until recently, such measures were nearly impossible or prohibitively expensive; temperature monitoring and switching the air conditioner on and off had to be done manually. The thermostats could not communicate and were not remotely controllable.

Today we have wireless networks in most offices and many homes and thermostats that communicate. The cost of the control equipment is decreasing, thanks to the use of commodity processors and standard networking protocols like Ethernet. Therefore solutions that constantly monitor and control air conditioners have become cost-effective. The same idea can be extended to lighting devices and elevators that consume much electricity.

Constant monitoring and effective control in the homes can bring down the communication costs considerably.

In homes energy optimization is possible by constant monitoring power consumption. Equally important for consumers is the constant monitoring and control of communication costs, particularly across different sectors: landlines, mobiles, DSL modem, other Internet gateways and Cable TV. However, there is no easy way of doing bandwidth optimization. It can be done manually by constantly tweaking "billing plans" across the communication channels.

Some smart phones, not all, can switch to "fixed tariff" Wi-Fi for communication (Email, Internet, Facebook) in place of 3G networks. But with m2m one can do much more; the phone, PC, printer, modem, router, set-top-box are all intelligent communications devices that can be constantly monitored and controlled.

A lot has to happen before this vision is realized. It requires innovative software that ties in all the equipment via an intuitive user interface so that such energy and communication optimization can get into the mainstream environment.

The smart thermostat "Nest" launched recently in the US market that combines monitoring, networking, control, big data and analytics is an example that gives us hope that m2m can in fact deliver.

With a very large pool of engineers, software expertise and entrepreneurship, I am optimistic that such innovative m2m applications will take place in the next 3-5 years in India. When that happens it can lead to considerable savings in energy. In an energy-starved country like India it would also lead to improved quality of life by reducing pollution. <<

M2M WILL BE THE DRIVING FACTOR FOR THE DEVELOPMENT OF

THE INTERNET OF THINGS IN CHINA

Bao Ran, *Member of China Internet and Technology Industry Experts Committee*

>> As early as 2015, the overall market size of China's Internet of Things will reach 750 billion Yuan, and m2m will become one of the two driving factors in its development, together with the "smart city", thereby creating an Internet of Things world.

China has the world's largest public communication network and Internet and it employs state-of-the-art technology. Government departments attach great importance to the development of m2m technology, which can have a far-reaching impact on the social economy. Domestic m2m industrial development is driven by telecom operators in a similar way to some Asian countries, such as Japan's NTT DoCoMo and South Korea's SK Telecom: both rely on a wholly-owned subsidiary to provide m2m connectivity services. Operators in China began construction of the m2m platform in 2006; now applications in multiple sectors have been realized. China Mobile, China Telecom, and China Unicom all have been actively employing m2m platforms and implementing business plans.

Around 2007 China Mobile started to develop m2m business, which included services in the TD-SCDMA development plan. Currently, China Mobile's m2m business products include the Shenzhou car steward, the elevator operation management system, an enterprise security monitoring and management system, the telemetry buoy remote control management system, a street light monitoring system, a dangerous source centralized monitoring system, etc.

After taking over the CDMA network, China Telecom sped up the research and development of its m2m business and this was listed by China Telecom Group as key products for developing and nurturing in 2009. The m2m platform of China Telecom is almost complete, the residual work being bringing the platform's billing system into China Telecom's integrated business management platform.

In 2006 China Unicom developed m2m business in the areas of Zhejiang, Guangdong, Beijing, Jiangsu, and Shandong. This involved electricity, water, transportation, finance, weather and other industries, with Motorola, Korea SK, Shenzhen Hongdian and other companies as cooperative developers. Typical applications of a GPRS network system are represented by the distribution automation of the Power Supply Bureau of Wuxi, Jiangsu Province; meteorological monitoring of Hubei Provincial Weather Bureau; water monitoring in Jiangxi Province; and POS machine business in Bank of Beijing.

Focus on the verticals

Compared to foreign countries, m2m applications in China are still in the infancy stage. Applications are more concentrated in vertical sectors, which require considerable time for education and guidance. Most users of m2m technology did not refer to it as such; instead they named it according to the specific industry application. Whatever the business, it is ultimately the market-driven result that counts. Regardless of the development trend, the final aim is to provide users with better services, and the key is to let the customer have awareness of it's potential.

Currently, applications are still driven by the system integrators and the market is somewhat fragmented. Due to the lack of a dominant force in the industry as a whole, applications are mostly based on vertical markets, with the systems integrators building their own platform and terminal manufacturers providing end products based on different platforms. Deploying this type of case-by-case solution makes them difficult to scale.

A lack of standards

Because there are no unified technical standards for remote data collection and monitoring in China, and since terminal manufacturers and integrators are targeting different applications, they need to perform re-development and re-integration every time. This increases costs and takes time, which means that industrial users have a high initial investment and that elevates the m2m threshold. Due to the lack of standards, industrial terminal manufacturers need to base developments on different platforms and employ different industrial terminal interfaces. For system integrators, the fact that interfaces are different means that they tend to stay with one device manufacturer in order to reduce system integration cost and time. In turn, the management of terminals deployed in factories needs to be done through different interfaces, which generates a huge development workload. For industrial customers, the deployment of numerous terminals and the application development results in a large initial investment, which is beyond the capability of some small and medium-sized industrial users, thereby deterring the expansion of m2m business activities.

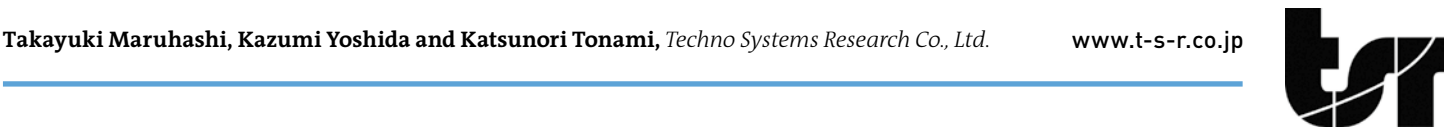
A solid foundation

To further develop the m2m industry in China, solid foundations must be laid in three areas: the first is the standardization of the communication terminal, needed to reduce cost and facilitate scaling; the second is to establish a standardized management platform, needed to enable fast location and operational maintenance; the third is to integrate the industry chain (including system integrators, industrial application developers, etc.). This is needed to facilitate the expansion of industrial applications, which represent the innovative power of m2m technology. It is anticipated that, with the rapid development of the converged network, there will be many more useful applications, which will result in the generation of even more applications and in turn that will accelerate network evolution.

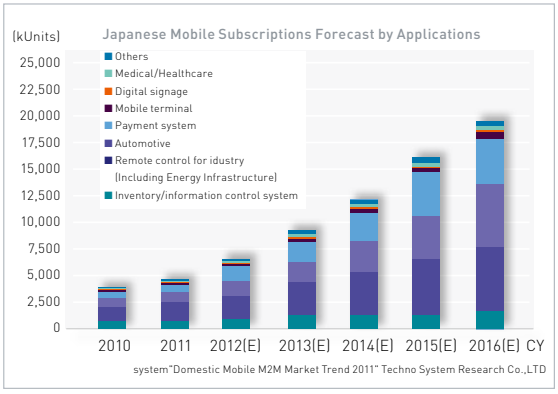
m2m covers a wide range of applications. Viewed from the current economic conditions of domestic users and market trends, the smart home, electricity meter reading, energy saving and environmental protection monitoring applications will be the leaders. I hope that the Internet of Things Expert Committee of the Chinese Institute of Electronics, assisted by the resources of the whole m2m industry chain, will attract and unite more industrial organizations and institutions in order to form a unified force that promotes the healthy and long-lasting development of the domestic m2m market. <<

PROMISING M2M MARKET IN JAPAN: TELEMATICS & SMART METERS

Takayuki Maruhashi, Kazumi Yoshida and Katsunori Tonami, *Techno Systems Research Co., Ltd.* www.t-s-r.co.jp



>> In Japan, the m2m market is expected to enlarge in future. Segments of the automotive and energy industries along with cellular/wireless communications have started to expand the market. For example, the number of cellular subscription reached 4.7 million in 2011 and it will reach to 19.7 million, in 2016.



Japanese Embedded Telematics Market to Exceed 1 Million units in 2017

The Japanese embedded Telematics service has been stagnating but it is set to change in the next few years. This market has been dominated by Car OEM makers including Toyota, Honda, and Nissan. Originally they focused on embedded Telematics. However, the cost of installing a data communication module (DCM) and the annual subscription cost of the service were too expensive for the end users, so not many people became subscribers. To increase the subscriber base, the Car OEMs started to provide a free Telematics service if users bring in their own cell phone. Meanwhile, in 2010 Honda was the first Car OEM in Japan to provide embedded Telematics with no annual subscription fee. This is called Link up free. In the beginning, the car navigation models which supported Link Up Free were limited to high end cars and EV/Hybrid cars, but Honda continues to increase the number of the supported models. This will help the Car OEM embedded Telematics market in Japan to expand for next five years.

Just like the case of Car OEM embedded Telematics, the After Market Telematics market has been slow in Japan. Unlike Europe and the United States, there is no insurance company that provides Usage Based Insurance in After Market, although Aioi Nissay Dowa Insurance provides Usage Based Insurance called PAYD based on Toyota G-Book Pro platform. In addition, the Fleet Management market is still premature with roughly 400k subscribers. This is much lower compared with other countries, but this is going to change due to new government regulation.

Government regulations will play a very big role in expanding the Telematics market. eCall in Europe and Contran 245 in Brazil are good examples. New regulations in Japan might propel the market expansion of After Market embedded Telematics. The Ministry of Land, Infrastructure, Transport and Tourism (MLIT) in Japan is considering mandating the inclusion of digital tachographs in heavy duty vehicles. Similar regulation can be found in the EU where European Commission regulation 1360/2002 made digital tachograph mandatory for a certain vehicle type from 2006. The fleets that are fitted with digital tachograph do not necessary carry embedded DCM on board, but the attach ratio of DCM will become much higher compared with the fleets which are fitted only with analog tachograph. Fleet Management will therefore become one of the driving forces for the expansion of embedded Telematics.

Techno Systems Research or TSR has recently published "Automotive Connectivity Market Analysis 2012." In the research paper, TSR expects embedded Telematics market in Japan will exceed 1 million units in 2017, since both OEM and After Market will grow.

Smart meters could be the first step to expand the energy management market in Japan

In Japan, a number of major companies have started energy infrastructure businesses, and government has set "green business" as one the most important segments. However, it is at early stage, therefore the players committed to the market are currently facing with issues which need to be overcome.

With respect to energy management, mass roll out of smart meters will be the first step. Although there are 82 million electric meters, only 3-5% of them are smart meters. Japan has 10 electric companies, and the top two are TEPCO (Tokyo Electric Power) and KEPCO (Kansai Electric Power). Before the 3.11 earthquake, only KEPCO was installing smart meters for automatic reading using its own PHS infrastructure. Government and electrical companies did not focus on smart meters since there are few electric outages and electric bills are accurate.

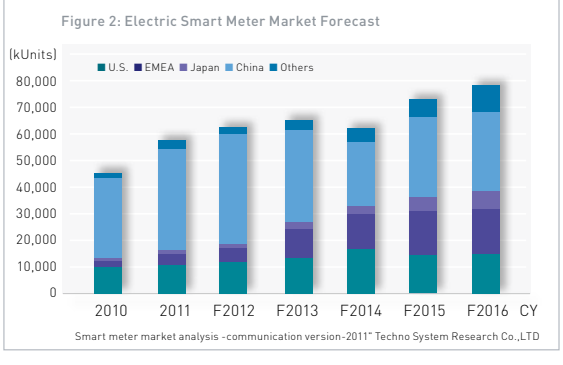
However, the earthquake has changed the market. TEPCO covers 28 million households, including Tohoku where the earthquake happened. They decided to rollout smart meters to manage energy. The first schedule was to install 17 million units smart meters from 2012 to 2018. Yet, the first bidding schedule was delayed to 2013 due to the high cost. TEPCO is now

requested to invite more venders from home and abroad to reduce costs. In 2012 the schedule had not fixed, but the market will expand for the next few years. TSR expects electric smart meters will be 5.7 million units/year in 2016, by TEPCO and major companies. (Figure 2)

Moreover, smart meters are very attractive for the communication module market. KEPCO was mainly using PHS from houses to concentrators. However, PHS will shrink and they will use wireless communications instead. On the other hand, TEPCO will use three communication tools, i.e. RF (Radio Frequency), PLC and long range communication. MIC (Ministry of Internal Affairs and Communications) has moved the smart meter frequency band from 400MHz to 920MHz because most countries have set the smart meter band near 900MHz. Most electric companies are willing to follow TEPCO. However, TEPCO has not fixed the communication tools, multiple communications, such as 920MHz mesh for main area, PLC for apartments, and Cellular for rural area, will be the major communication markets.

Currently, the market has been led by each electric company, which means that Japan was unable to leap forward. In order to shift to the development phase of the market, it requires a solid strategy and a grant program, preferably provided by the government. When the government puts it into practice, the market volume will be more than 8.0 million units/year and 920MHz mesh market could be mainstream in Japan. <<

Figure 2: Electric Smart Meter Market Forecast



Smart meter market analysis -communication version-2011" Techno System Research Co.,LTD

M2M IN KOREA – CHANGE IN THE ENVIRONMENT, M2M'S CHALLENGE

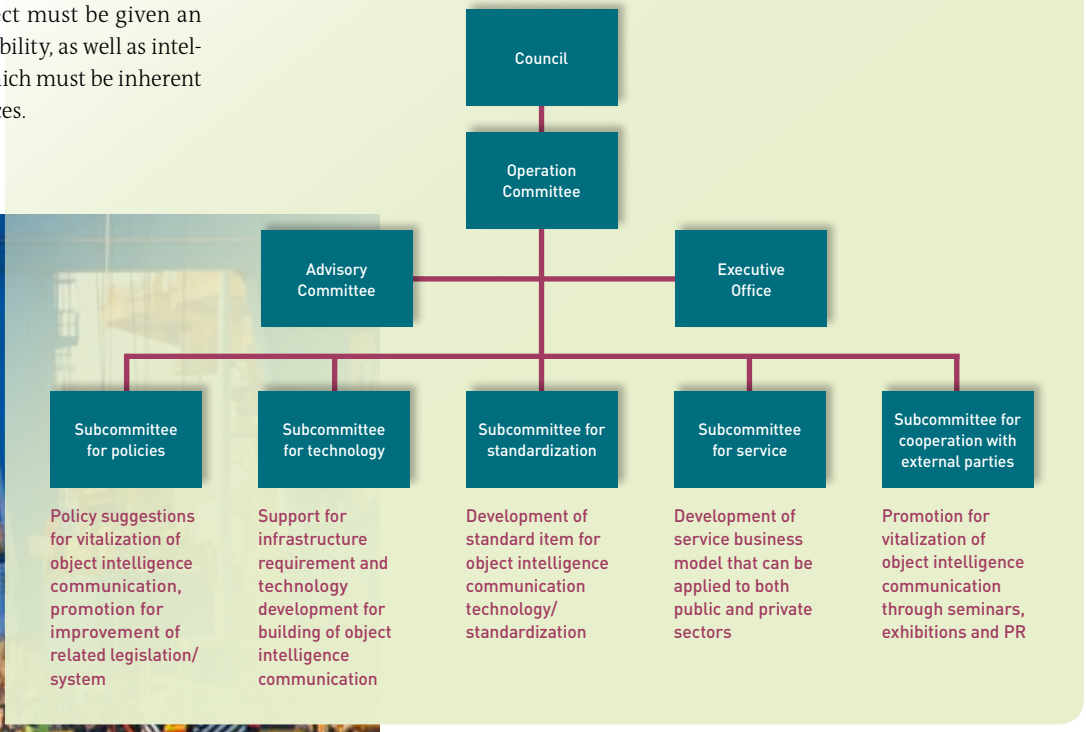
Yoon-deock Lee, *Professor at Sungkyunkwan University / Head of M2M/IoT Forum* www.skku.edu

>> The scope in collecting and utilizing information has expanded from people to objects and the demand for a new service infrastructure has increased. m2m business is emerging as a tool to seek out new market opportunities. In particular, with the expansion of the smart phone based intelligence service market, requests for information related to transportation and weather also increased exponentially.

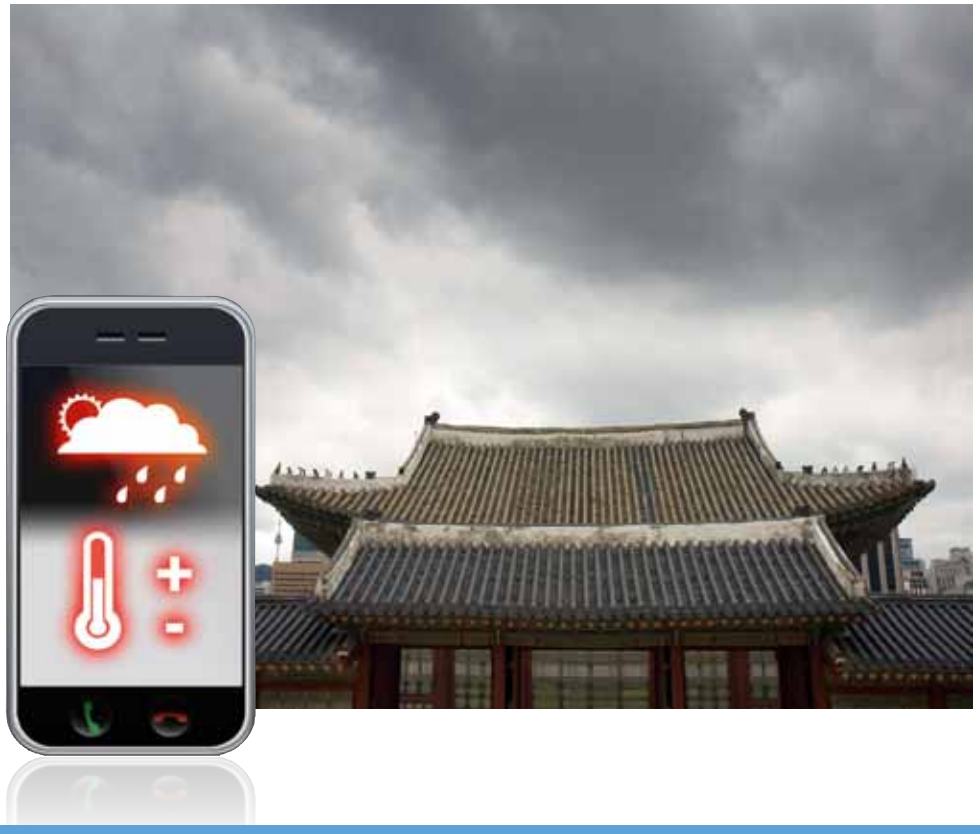
Efficient delivery and utilization of information created by objects, such as sensors, became essential. Standardization and technology development for communication between objects are also needed. As a part of this effort, the m2m forum was established in 2009 to work on legislation for the creation of standards and institutional support. In particular, the group has been holding strategic workshops and conferences to broaden and deepen the understanding of m2m and to expand the market base. To enable communication between objects, each object must be given an identifier and a communication capability, as well as intelligence to enable communication, which must be inherent in order to provide intelligence services.

However, due to the lack of a business model, delays in standardization and lack of related legislation, it is still difficult to vitalize the m2m ecosystem in Korea. It is also hard to say what level of participation in the industry is active. Therefore, in order to create a basis to activate object intelligence communication in the market, the forum aims to create opportunities for related parties in the industry, schools, research institutes and government offices to work on sharing skills and technology, the development of a business model, policy suggestions to government, and the creation of standards. In particular, to achieve its goals, which are the development of object intelligence communication technology, securing of related technologies and playing a leading role in creating standards, the forum has selected four areas (building infrastructure, vitalization of service, technology development, creation of environment for expansion) and established subcommittees to work on each project. Although the forum is composed of a council and committees, the main activities are done by subcommittees. These subcommittees provide results of their activities, such as technical reports and suggestions for standards, to its members. A Korea-Europe conference and Korea-China collaborative workshop were also held for international collaboration.

Organization of the M2M/IoT Forum



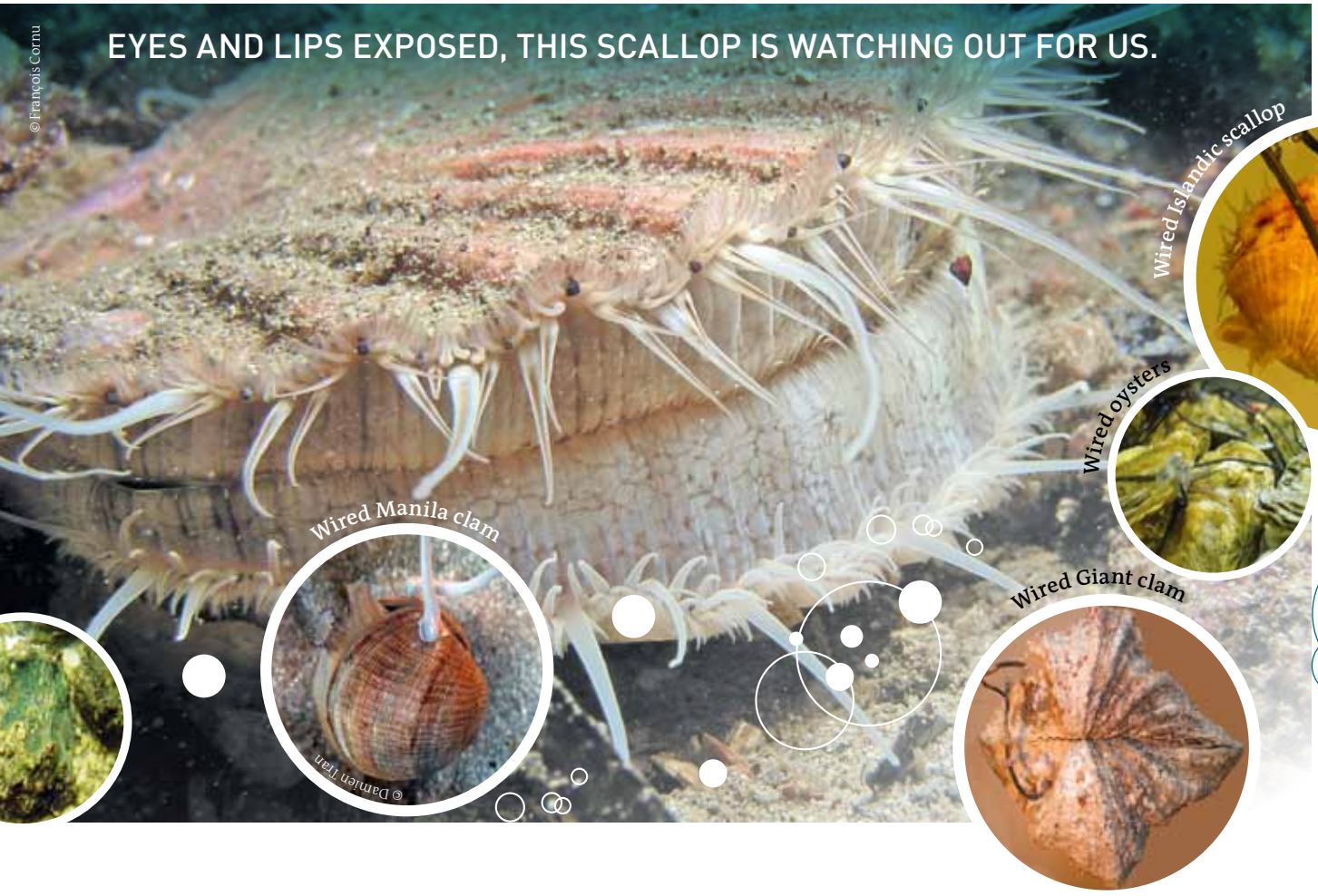
Recently m2m, which provides convenient real-time intelligence communication between a person and an object or between objects anytime anywhere, has been expanding its territory to the IoT (Internet of Things). The forum has reflected this development and has changed it's name to the M2M/IoT Forum. With the emergence of new intelligence based service through diversification in creating and acquiring information, the forum expected that the service would evolve into a new level, from a mere information sharing between a person and an object to communication between two parties, and started researching for related technologies and standardization. Services, such as those for disaster prevention and medical emergencies, would require more than simple information sharing. It would be at a level where a person and an object, or two or more objects, would be communicating. <<



http://molluscan-eye.epoc.u-bordeaux1.fr/

MOLLUSCAN EYES ARE WATCHING OUT FOR US

Dr. Jean-Charles Massabuau, *PhD, Research Director CNRS, Physiological Ecology & Ecotoxicology, Aquatic Systems, Université de Bordeaux & CNRS*



>> Our world's environmental quality has been changing rather quickly, and water quality everywhere is also changing. We speak about this more and more and the time for action has arrived.

The MolluSCAN Eye project (see "Get a Ring from Oysters" in telit2market 03/08), makes use of the bivalve behavior (oysters and others) of shell opening and closing and of the m2m world to monitor water quality anywhere there is a cellular network, and quickly publish the results online. The project began in 2006 in Arcachon Bay in France, and the principle is to use bivalve behavior as an indicator (a biosensor) of the quality of the water in which they live.

When faced with pollution or poor quality water, we see that a bivalve closes its shell, or in extreme situations it dies and the shell is gaping and the valves completely open. But there's more to it than that because bivalve behavior is in fact rather complex, and can change dramatically after exposure to even very low levels of pollution. Those who know how to read a bivalve's lips (actually a bivalve's valves) can gauge most of their emotions, and the bivalve has many, as shown by their cool or shaky behavior, the size of the opening, the speed of movement and their biological rhythms.

Since its inception, the project has evolved and the places where we have worked, work now or have been asked to work are begin-

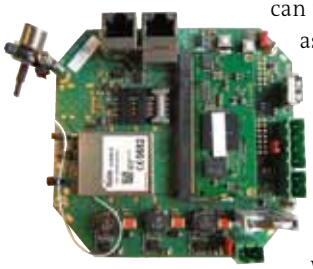
Polar glacier

THE MOLLUSCAN EYE TEAM:

Jean-Charles Massabuau, leader, biology
Pierre Ciret, electronics
Gilles Durrieu, mathematics
Mohamedou Sow, mathematics
Damien Tran, biology
with Lionel Camus, Akvaplan-niva, biology

ning to spread over the globe. As a reminder, the project core is based on the activity of a multidisciplinary group of basic researchers and university professors – biologists, electronics specialist, mathematicians, webmasters – and the approach is always to get information from a group of 16 animals left alone for months in the sea, set up such that they don't know that we're recording them, and obtain enough data to rebuild their excited or relaxed behavior on our computers.

To do this, we glue light electromagnets (< 1 g each) to each of their valves and continuously, 24/7, measure the valve's opening movements. A recent technological advance is a 2nd generation of field slave units, developed by SMI EUKREA Electromatique (Pessac France). They are still composed of a 1st card in a waterproof case next to the animals (to acquire data) and a 2nd card out of water (which transmits them), but their total energy consumption is now reduced to 1 watt. The whole system is a fully-rugged, Linux microcomputer supplied by batteries or solar panel and the 1st card can then work alone as a data logger (0.5 watt). Reliability has been improved, a benefit of the experience gained from six years of ground work, sometimes in high seas or extreme cold. Thanks to improved amplification process, the precision of the distance measure between electrodes gets even more precise.



2nd card

Finally, our computer programs have progressed following new theories of applied mathematics and a new DELL 8 core biprocessor work station (the master unit, located in our lab). In fact, side by side, four PhD thesis (one in chronobiology, three in applied mathematics) will be done from 2011-2013. Mathematicians are really interested because we are not only helping to protect the planet, but also because every field slave unit produces 864,000 triplets of data points per day every day, providing an exceptional data playground for those who love numbers. Finally, a more user-friendly website has been designed where the results of field recordings from everywhere in the world are published daily. To get more informations and see field pictures, simply google: molluscan eye.

1st card

Today both the project and the approach are of interest to many scientists who see a tool for new questions in basic research, decision-makers who want to survey the environment and ecologists. For them, and everybody, a hot spot is clearly the Arctic, considering the velocity at which it is melting. In 2012, ice floe melting again broke records and made the newspapers. Since 2011, we have been in Svalbard, at Ny Alesund 1200 km from the North Pole (see "Get a Ring from Arctic" in telit2market 04/09) and we are now also in the Russian Arctic.

The idea is a 24/7 following of melting-induced changes on marine life by using a native Arctic inhabitant as a witness, the Icelandic scallop. How will they react to warming polar waters and the concomitant changes in concentration of the algae which nourish them? And to the arrival of maritime traffic and the oil and gas workers who come to exploit the newly accessible reserves? One of our goals is to show that even in the cold and endless night of the polar environment the mature MolluSCAN Eye project can provide reliable informations in places where nobody can stay. Some major companies may join the project by working along with MolluSCAN Eye to limit their impact as much as possible. In reality, the workers and executives of the oil and gas companies know very well, as well as we do, that the world is changing. They too have children or grandchildren, the inhabitants of tomorrow's Earth, and everyone is now concerned.

The biggest thing to fear, my dear reader, is without a doubt, us. We have talked for many years about planetary changes, the taboos have fallen. We know that we consume too much of our non-renewable resources, and we consume them badly. And our consumption of fossil fuel energy doesn't stop rising. In any case, the goal of the MolluSCAN Eye is to help document these changes, to be a witness, and if possible to have a positive impact by enabling the widest possible sharing and exchange of information. A big challenge for the m2m market and ... for all of us <<

Polar night

Brittany

New Caledonia, East coast

TRANS-PORTATION

Expert's View

TELEMATICS: WHY WE NEED A NEW BUSINESS MODEL

Cyril Zeller, *VP Global Telematics Segment, Telit*

>> It's hard to exaggerate the potential of vehicle telematics. There are close to 300 million commercial vehicles in use but a mere 7.5M telematics units (2.5%) are in service. The market is fragmented, but it's growing and significant benefits are being realized.

Government legislation is a key driver. There is the ERA-GLONASS initiative in Russia, Contran 245 in Brazil and e-Call in Europe, which should be mandatory in most countries by 2015. These are positive developments that Telit has tracked and we already have the requisite products. The acquisition of Navman Wireless OEM brought new, innovative GNSS products into the portfolio. The state-of-the-art SL869 module, for example, employs the entire spectrum at the same time, i.e. GPS, GLONASS, Galileo, and QZSS. That is a unique capability.

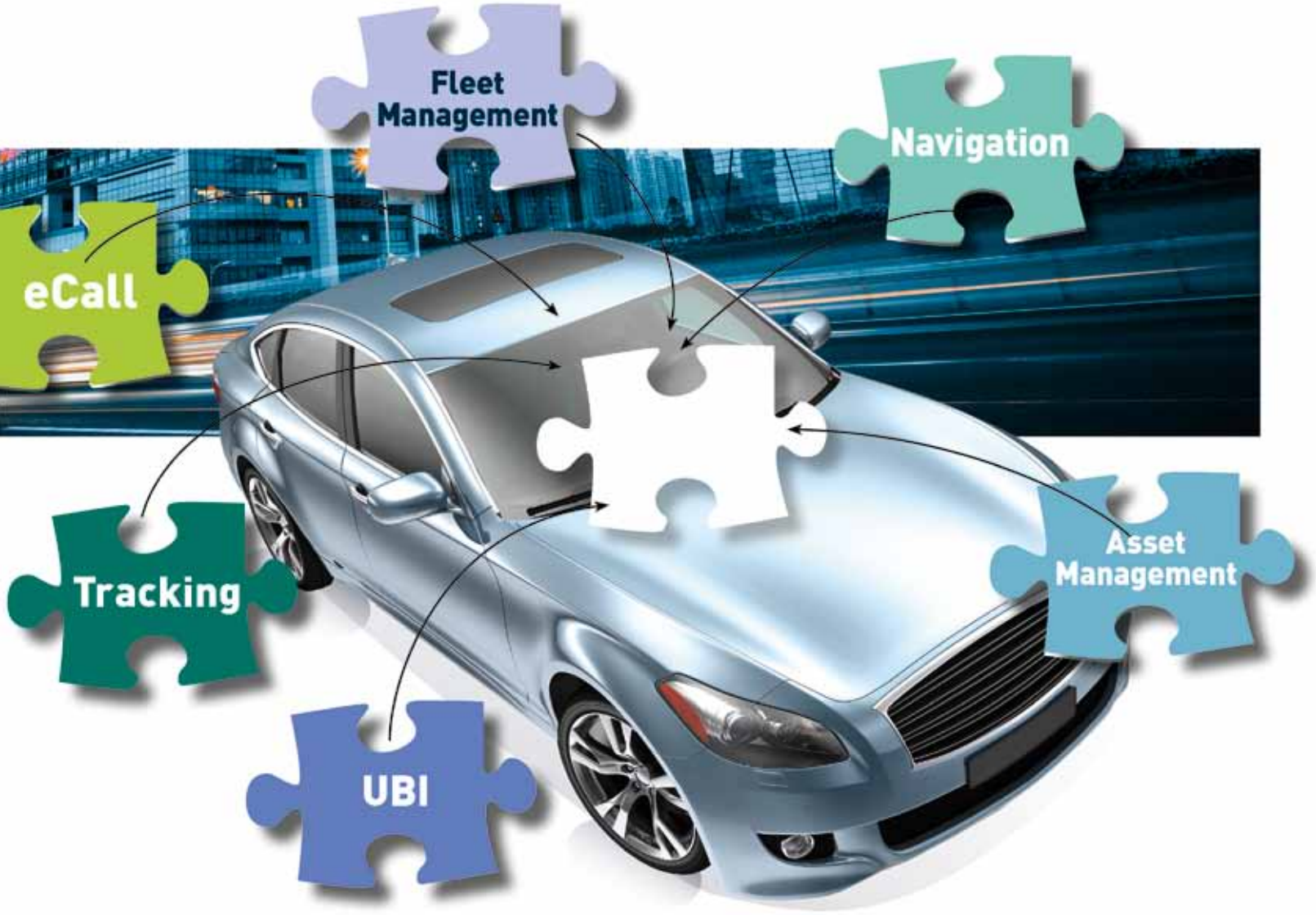
There is, however, uncertainty about the future of 2G in some regions and AT&T has announced its intention to shut their network down in 2017 and other carriers look set to follow. Vendors who market globally will need to migrate to 3G or CDMA and that can be an issue, but again it is one that we have addressed.

When the time comes for our customers to migrate from 2G to another cellular technology they simply remove one module and insert another. All modules in the xE910 family have the same size, shape and they're pin-to-pin compatible. Moreover there are nine global and regional variants, which enable global, cost-effective coverage. These and other capabilities such as unrivalled global support add up to a cost-effective, one-stop shop for Telematic Service Providers (TSPs).

Right now there is a lot of telematics activity but mainly it's a technical, bottom-up approach. Many TSPs are enhancing the functionality of solutions that address their vertical sector, which is yesterday's business model. What we need, and it's something to which Telit is committed, is a top-down, marketing approach that addresses the big picture and optimizes the support we give to our customers.

We have created a brand-new, software-driven concept called m2mAIR, it allows solution providers to focus on their core competence: the creation of innovative applications and attractive, user friendly interfaces. This concept delivers cellular connectivity out-of-the-box and it also removes the need to know anything about the dark side of the m2m moon, i.e. deployment and maintenance. We handle all those issues.

This is a groundbreaking development for the industry and Telit. For example, it allows TSPs to enter new geographic markets without having to negotiate terms with new MNOs. And by becoming a Value Added Service provider we move up the value chain. What we didn't do, and will never do, is start competing with our customers, i.e. design our own standard applications or develop our own turnkey solutions.



TELEMATICS TODAY

The industry is still fragmented and vertically integrated, but solutions are delivering very significant benefits. Apart from fleet management and vehicle leasing companies, insurance companies, public transportation agencies, law enforcement & emergency response agencies are employing m2m technologies and applications to enhance efficiency and business profitability.

Pay-How-You-Drive insurance has the proven ability to reduce accidents, particularly involving young drivers. Premiums are based on driver behavior, not age. PHYD solutions collect driver data and this is used to calculate the premium: better driving equates to lower premiums. There is also an increasing trend amongst insurers to employ m2m technologies to reduce losses due to car thefts. Devices fitted into vehicles not only have the power to track the location, but they can also disable the engines if an unauthorized access has been determined.

CONSOLIDATED SOLUTIONS

Fleet management is a mature vertical. Many fleet owners would like to employ a PHYD solution that includes parameters like how hard drivers brake, how fast they accelerate, how hard they take corners and so on. They may also like to have a navigation system and in future eCall functionality will be mandatory. But what they won't accept are offers based on different boxes employing different data plans. There is a clear need for consolidated solutions: legislation and market requirements will be the key drivers and the all-important enabler will be an open operating system.

What we will see in future is the emergence of low-cost, but more sophisticated platforms that allow the hardware and the related data plans to be shared with the various telematics solutions. Employing powerful processors such as the ARM 11 are affordable and they enable new functionality to be added over the air whenever it's required. This will allow solutions having low price points to be marketed together with incremental functionality upgrades and charges. Let's see how it could be applied in a hypothetical scenario.

A vehicle manufacturer will typically be interested in a telematics solution that provides maintenance and security information. If some vehicles were sold to a leasing company they would require everything related to asset management. If they were leased on to a company like Coca Cola they would need a dispatch application. And some urban drivers would require local traffic information that integrates with the dispatch app.

This indicates that during the life cycle of a vehicle different applications might be needed and it is clearly impossible to predict which ones when vehicles leave the factory. It is also clear that the current business model of the telematics industry, which is still broadly firmware led (as opposed to OS + APIs and apps), cannot meet this market requirement. <<

TRANS-PORTATION

Expert's View

HOW TECHNOLOGY IS RESHAPING MOTOR INSURANCE

PTOLEMUS Consulting Group

Frederic Bruneteau, *Managing Director, PTOLEMUS Consulting Group*

www.ptolemus.com

>> The way that motor insurance risks were assessed stood still for many years. It was based on static, statistical data like age, gender, car model, etc. Telematics technology allows assessments to be based on real-time, dynamic data like mileage, area, time of day, adherence to speed limits as well as driver behavior. It allows insurers to detect and retain the majority of lowest risk drivers, who can receive significant discounts on their premiums.

The benefits that telematics technology enables are tangible and quantifiable. The market for pay-as-you-drive solutions is huge but it is largely untapped: a mere 3 million UBI (Usage-Based Insurance) policies right now and it took 15 years to reach that figure. Our research indicates that it should rise to 100 million by 2020. One reason for the low take-up is the conservative nature of the insurance industry. Another is the way that solutions are packaged and installed in the vehicle. Right now there are five main options, each of which has pros and cons.

In Europe, insurers have gone for the so-called **black box** option, where the electronics are packaged in a robust, tamper-proof enclosure that is embedded in the vehicle. From a technical perspective it's an ideal way to enable fully featured telematics, but the downside is the cost. The insurer has to buy boxes from a vendor and then they have to be installed by a professional, but costs can be recovered and a return on investment realized. In many countries insurance companies lose money on most regular car insurance policies; UBI allows them to offer a fair price on all drivers and notably low risk drivers, who will benefit from lower premiums. The issue is the need for the investment to be made up front and deciding which party makes it.

First time drivers pay huge premiums, particularly in the U.K. But instead of waiting a few years to establish as no-claims record they can drive carefully and obtain a 20 to 30% reduction in the premium. UBI therefore has a positive influence on their driving behavior and in turn that helps minimize accidents, which is good for society. Being proactive with their customers also helps insurance companies establish meaningful, individual relationships.

Innovative solutions are emerging

Solutions that employ the same basic telematics technology but are packaged and implemented in innovative ways are being marketed. In the US solutions based on **OBD (On-Board Diagnostics) dongles** have become the preferred option. The driver simply connects the dongle to the OBD connector. The term refers to the interface that garages use for reading information when they are servicing vehicles. These telematics-enabled dongles are relatively cheap and there is no installation cost.

A number of innovative insurers are starting to launch solutions based on **smartphones**. These devices have the requisite computing and storage resources, data connectivity is an intrinsic function and they also incorporate satellite navigation, which records the mileage, and an accelerometer that measures acceleration, braking and cornering.

A nice feature of the smartphone model is the ability to see your driving behavior on the device, e.g. at the end of a journey. The phone can also store the results and/or they can be transferred to the Web, thereby enabling drivers to see how they improve over time. It's too early to talk about these solutions gaining traction, but smartphone solutions are being trialled by several insurance companies and at the time of writing, Q3 2012, the first commercial service is operational in Northern Ireland (Autoline Insurance).

A fourth innovative solution involves sticking a **self-energized module** to the windscreen: the size is about the same as



a cigarette pack. The computing and other resources are similar to those of a smartphone, i.e. accelerometer, satnav and data connectivity, but there is no screen. The device made by PayGo Systems is battery-powered and the company states that the batteries last for two to three years. MetaSystem's equivalent model is powered from the car battery.

These devices and the smartphone get a stronger GPS signal than dongles, which are buried away under the dashboard, i.e. where the OBD connector is located.

Embedded systems

A number of European manufacturers, notably Daimler-Benz and BMW, are planning to **embed** insurance telematics solutions in their cars. This is a logical development as all new vehicles must be equipped have an eCall capability by 2015. This is a European initiative intended to bring rapid assistance to motorists involved in a collision anywhere in the EU. In the event of a serious accident the system will automatically dial 112 and send airbag and impact sensor information, as well as GPS coordinates to local emergency agencies. It's also logical because these cars already have an embedded satnav system so it is pointless to duplicate functionality. Moreover eCall data will also be sent to the insurance company.

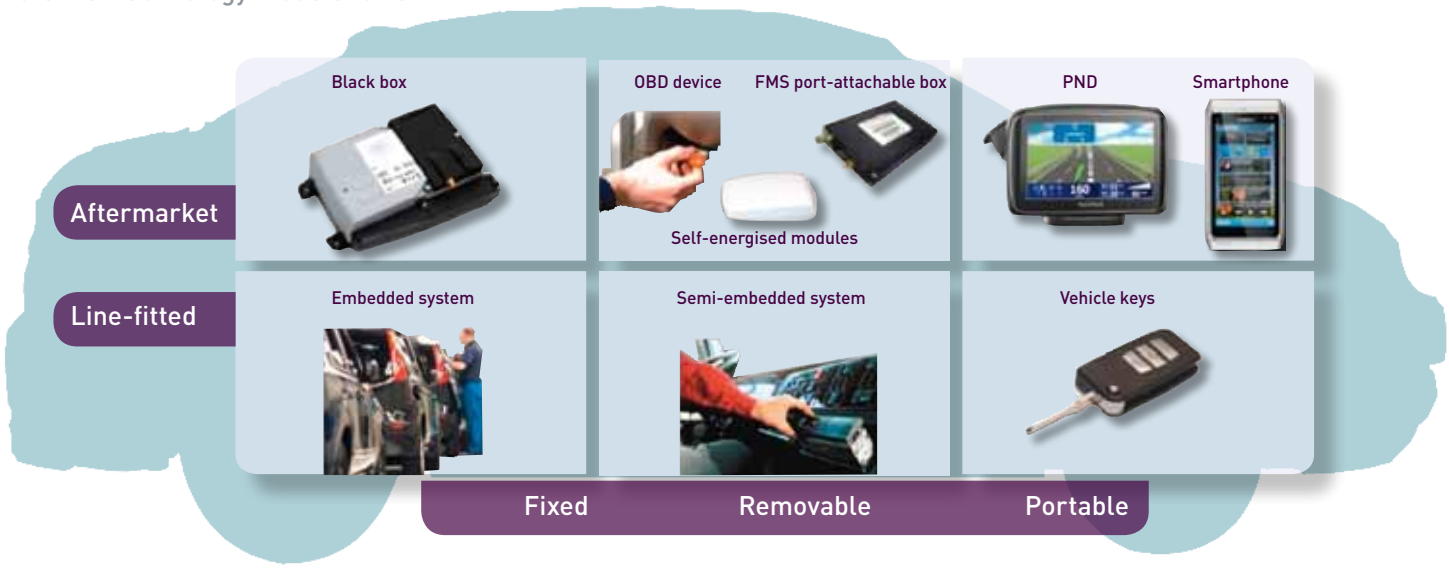
Conclusion

UBI is clearly a win:win concept for insurers and drivers. The only major potential issue is that of privacy. Research conducted in the UK by the Association of British Insurers indicates that around 40% of the target market already accepts it; another 20% are not sure; and the remaining don't want it. 40% already represents a huge market, but we can expect many of the "don't knows" to come on board once they realize the potential reduction in their insurance premium. In addition, an insurer could launch a privacy-enabled UBI service that does not store the customer's location. <<

Vita

Frederic Bruneteau has gained 17 years of strategic and operational experience in 10 countries in the field of mobility services. He is expert at designing and implementing strategies in the mobile ecosystem, particularly in telematics and LBS. He is also an active blogger, writer and frequent speaker at trade conferences. He recently published the Insurance Telematics Study, the most comprehensive report on Usage-based Insurance (UBI) globally.

Potential technology models for UBI



UC864-G
UMTS | HSDPA

IoT SUPPORTED TRAINING FOR ELITE SAILORS

"YachtBot is a tool for training sailors. It's built on the Igtimi IoT (Internet of Things) platform, but YachtBot is now making waves of its own."
Kylie Robinson, *Managing Director*

FACTS

Igtimi
www.igtimi.com

System
YachtBot, which uses the Igtimi IOT platform

Which Telit module do you use and why?
UC864: a modular, multi-band 2G/3G solution that's ideal for low power design having roaming capabilities.

Benefits
- Innovative tool for coaching elite sailors
- Web interface enables easy usage
- YachtBot showcases the real-time IoT platform
- Proven results in demanding, real-world environments

YACHTBOT

>> Igtimi provides a secure, real-time, platform designed to enable the connection of data visualization products to real world objects. The company's IoT platform provides telemetry providers with accelerated access to markets such as remote environmental monitoring and control systems.

As a showcase of Igtimi's IoT platform capability, we put a team together to build a tool for coaching elite sailors, called YachtBot that can be used by high-performance sport institutions.

Igtimi has specialist knowledge in real-time data delivery for television coverage of international sporting events. They include the 33rd Americas Cup and the 2012 Volvo Ocean Race, thereby enabling millions of spectators to watch live racing.

The key challenge was to make a complex data transmission and storage system simple and reliable to use.

For television and coaching the solution also needs to function in true real-time. Coupled that with the environment of ocean sailing, training in multiple world locations, multimedia transmissions, and the system being used by non-technical customers, YachtBot was a challenge that stretched the capability of the platform and the design of the tracking hardware.

Using the Igtimi IoT platform meant that the YachtBot development team could spend their design time ensuring the Web interface was easy to use. The smarts of the platform looked after cloud-based data storage, transmission, security, sharing and management.

In designing the YachtBot tracking hardware, the team decided to use Telit for cellular communication. This critical design decision gave our engineers flexibility in selecting a modular, multi-band 2G/3G solution suitable for a low power design. Telit's roaming capabilities enabled simple configuration but still allowed global usage.

Using Telit and the Igtimi IoT platform allowed the YachtBot team to quickly develop a visualization tool, using real-world hardware sensors that are easy for sports people to deploy.

YachtBot has shown that the benefits, to elite sailors, of using live data transmission, are improved learning with visualization of real world data, reaching a larger audience, and saving sports scientists' time via data collection. <<

CASE STUDY

TRACKING 2.0 WITH GPS AND GLONASS

GE865-QUAD
GSM|GPRS
Jupiter SL869
GPS|GLONASS

FACTS

Monitech Sp. z o.o.
www.en.monitech.pl

System

Car Lighter Tracker or CLT

Which Telit module do you use and why?

We use a GE865-Quad and the SL869 modules. The SL869 allows the CLT to obtain a position fix from GPS and GLONASS satellite constellations.

Benefits

The CLT is a tracking device that can be installed in a car's cigarette lighter or 12VDC power port. It is designed for the automotive aftermarket and fleet management segments. Thanks to GPS and GLONASS functionality, the CLT enables tracking of vehicles even in areas traditionally challenging for GPS-only tracking devices. Please visit http:/carlightertracker.com/ for more information.

m2mAIR

With m2mAIR we can maintain tight cost control over cellular subscriptions for each CLT, allowing the SIMs and cellular modules to be provisioned and managed throughout the integration cycle. In addition, the comprehensive coverage was fundamental for our decision to buy these services from Telit.

CarLighter Tracker

"With the CLT you are always in-the-know: notifications about your vehicle's whereabouts and alarm events are sent straight to the cloud service. All the data goes immediately to smartphones, Web applications and the 3rd party services with whom you are registered. Thanks to Telit and its m2mAIR offering the product works right out-of-the box."
Patryk Szymczak, *Chief Executive Officer*

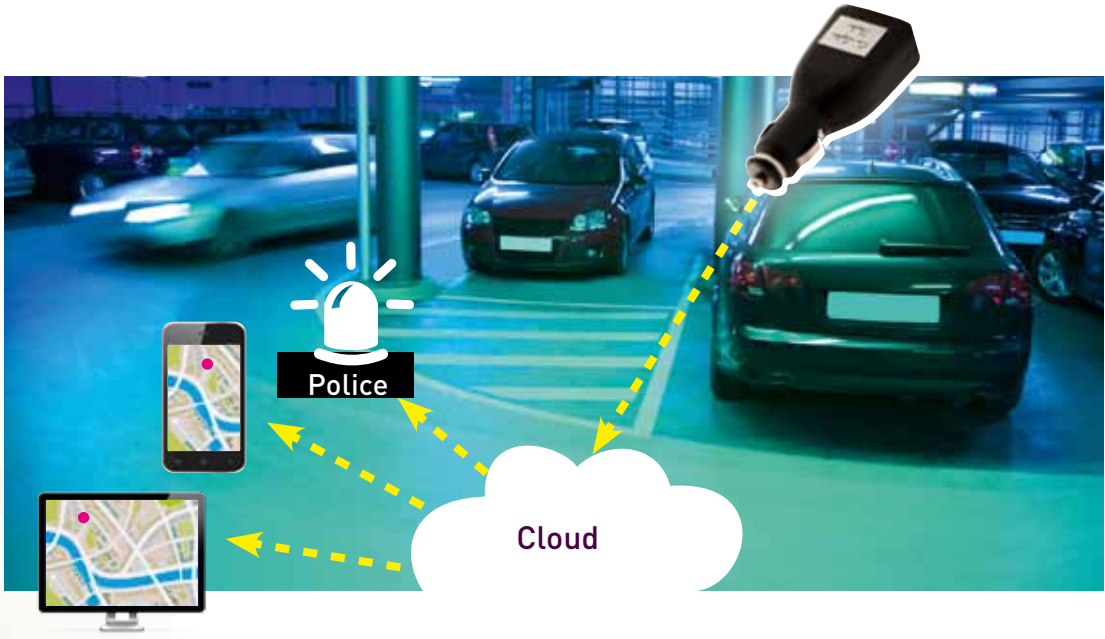
>> In autumn 2012 Monitech Sp. z o.o., a Poland-based tracking technology innovator, developed the Car Lighter Tracker (CLT), a zero-installation compact tracking device designed for the automotive aftermarket and fleet management segments. The CLT operates directly from its installed position in the car's cigarette lighter or a 12VDC power port.

It employs Telit's Jupiter SL869, a state-of-the-art, 32-channel global position satellite receiver module capable of obtaining a position fix from either GPS or GLONASS satellite constellations. This feature gives the CLT superior precision and speed, making it possible for vehicle coordinates to be obtained quickly, even in areas traditionally challenging for GPS-only tracking devices, such as urban canyons and parking garages that are below ground.

Besides ultra-accurate tracking while parked or driving, built-in high-sensitivity accelerometers will be incorporated in the next generation, which is planned for release in 2013. This will allow the CLT to detect attempted intrusions or collisions while the vehicle is parked. When these are detected, alerts can be transmitted according to users' programmed preferences: via Facebook, Twitter, SMS-text message or e-mail to a law-enforcement agency or other recipients.

The CLT is managed and cellular connectivity enabled through a comprehensive suite of advanced services from Telit's new business unit, m2mAIR. The advantages for Monitech are numerous because tracking devices need ubiquitous, reliable connectivity, but not at the expense of economic viability. With m2mAIR, Monitech can maintain tight cost control over cellular subscriptions for each CLT, allowing the SIMs and cellular modules to be provisioned and managed throughout the product's life cycle. m2mAIR's comprehensive coverage is also fundamental to cellular-connected tracking business models.

Telit's GE865-QUAD enables reliable cellular data communication for the CLT anywhere in the world, in consumer, commercial and industrial segments such as automotive aftermarket, fleet management, asset tracking, security, and other location-based services (LBS) application areas. <<



THE NEXT GENERATION OF VEHICLE MONITORING

GE865-QUAD
GSM|GPRS

FACTS

Danlaw, Inc.
www.danlawinc.com

System

OBD II Vehicle DataLogger

Which Telit module do you use and why?

We selected the GE865-QUAD because of its small size and competitive price.

Benefits

The DataLogger 7-Series is a small, self-installed, cost effective, OBD connected telematics solution, used for monitoring, logging and transmitting vehicle network message and position data. The DataLogger 7-Series is a one-of-a-kind, hybrid wireless communication device that enables data communication and connectivity through GSM and Bluetooth wireless connections.

OBD II Vehicle DataLogger

„Danlaw's three decades of vehicle electronics experience combined with Telit's expertise in the telematics industry guarantees success for our connected vehicle clients."
Tim Morris, *VP Business Development*

>> Danlaw provides insurance, fleet and mobile resource management clients with the latest connected vehicle telematics solutions. Danlaw's goal is to meet our customer's individual needs, while exceeding their expectations. We do this through the use of the Danlaw DataLogger, a self-installed, wireless communication solution that allows users to easily collect, monitor and log critical vehicle network message data, accelerometer and GPS position information.

Three decades of vehicle network protocol development and diagnostic testing for nearly every major automotive OEM, ensures the success of our connected vehicle programs. This experience combined with millions of miles of vehicle data, collected across one of the largest cross-sections of automobiles in the world, confirms Danlaw's reliability and vehicle compatibility.

The market's demand for a small, cost effective device with the latest technology drove Danlaw to create the DataLogger 7-Series. Danlaw has delivered on the customer's needs by providing a one-of-a-kind, hybrid wireless communication solution that has been reduced both in size and cost.

Danlaw's hybrid approach allows for dual-path wireless connectivity to the cloud, or directly to the back-end server. The DataLogger's powerful on-board processor manages critical data processing by communicating between either a Bluetooth connected Smartphone or through the DataLogger's internal GSM/GPRS modem.

We chose Telit's GE865-QUAD module for our DataLogger 7-Series device based on our success and experience with Telit modules in the past. Porting our firmware from our previous generation DataLogger was straightforward and allowed for a reduced development time cycle. In addition to reducing our development time cycle, the GE865-QUAD module offered a smaller size at a reduced cost, helping us meet our cost and size reduction goals.

The new DataLogger 7-Series provides the nation's largest insurance, fleet and mobile resource management companies with the most reliable connection to their vehicles, while offering the most cost effective connection to their data. <<

CASE STUDY

SENSEL TELEMATICS

M2M ENABLES SMART FUEL MONITORING

GE863-GPS
GSM/GPRS

FACTS

Sensel Telematics Private Limited
www.sensel.in

System

Sensel VTX61i – vehicle tracking device

Which Telit module do you use and why?

Telit GE863-GPS. Its level of integration has helped us build a high reliability, feature rich and extremely competitive product.

Benefits

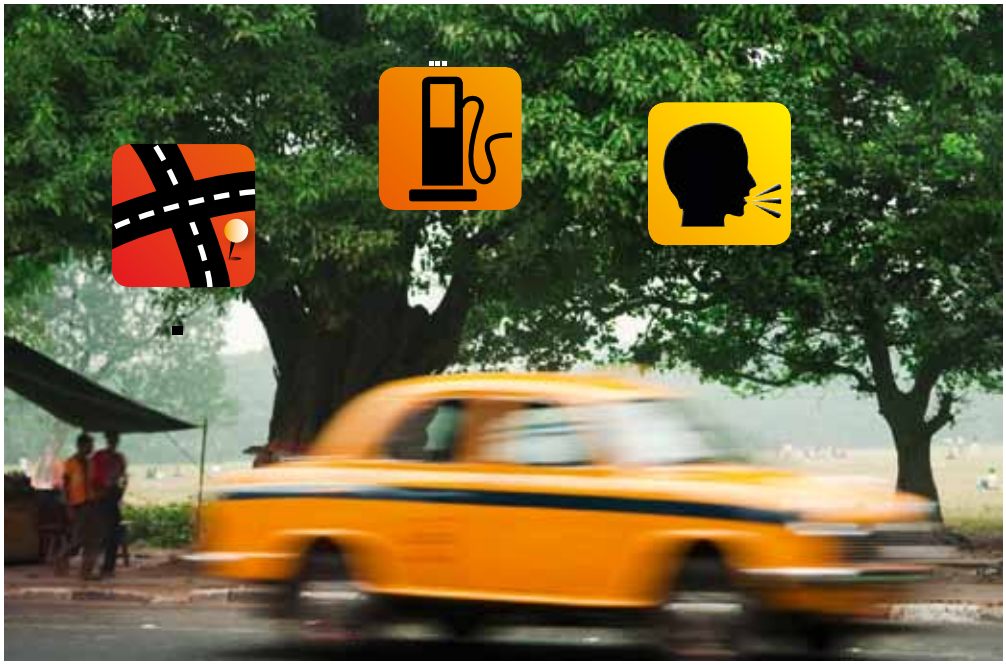
- Extremely reliable hardware that supports a host of external peripherals such as immobilizer, RFID reader, temperature sensor, keypad and display unit
- Base unit has built in hands free voice, fuel monitoring and action key support
- High voltage inputs such as AC monitoring can be directly connected to the device without the need for any level translation or protection
- Solid value for money

Sensel VTX61i

”Telit's GSM/GPRS module enabled us to make a feature rich product.“ **P Srinivas Rao,** *Managing Director*

>> Sensel Telematics Pvt Ltd is one of the leading end-to-end telematics solutions providers in India with over 120 customers across the different segments. The number one strength of Sensel has been the extremely reliable VTX61 hardware that is feature rich and extensible with a host of peripherals. The fleet-SMART application suite is comprehensive and yet simple to use, and it comes with the best-in-class fuel monitoring solution.

Our decision to build Sensel VTX61 hardware based on Telit GE863 was vital in addressing the main challenges – reliability, performance and value. We made sure that all of the “must have” requirements and most of the “nice to have” requirements in terms of features nicely map to our scalable base hardware. Our base unit – Sensel VTX61 based on the GE863-GPS comes with GPS tracking capability, 2 way TRUE-HANDS-FREE free voice, fuel monitoring and three action buttons. This basic unit has a bus to extend and connect to a host of external peripherals such as an immobilizer, RFID reader, temperature sensor, keypad and display unit. The bus also has pins where high voltage lines or additional analog signal may be directly connected for monitoring. All this has allowed us to use the same basic hardware with different peripherals across segments at multiple levels of integration or complexity of deployment. <<



The Demand Side Factors: the Indian market is an extremely value seeking market. It is very fragmented with a large number of small and medium enterprises across most vertical segments. For many segments fuel monitoring is very important. There are also many niche segments seeking specific customization.

The Supply Side Factors: Having a good reliable hardware device that works 24/7 is critical to the scalability and success of this business. A comprehensive, reliable application suite and the capability to customize the application suite rapidly is also critical for success.

M2M ENABLED SMARTER PUBLIC TRANSPORTATION SYSTEM

kentkart

HE910-EUR
UMTS|HSPA+

FACTS

KENTKART
www.kentkart.com

System

KentTablet On-Board Computer

Which Telit module do you use and why?

We selected Telit's HE910-EUR module because it is a high quality 3G product that supports both GPS and GPRS in the market.

Benefits

The KentTablet is an on-board public transport tablet that combines fleet management with passenger information, video surveillance and scheduling.

KentTablet On-Board Computer

"We appreciated the quality of Telit 's products."
Güliz Öztürk, *International Marketing Manager*

>> KENTKART, one of the most successful companies in Intelligent Public Transportation Systems, has developed a new generation of KentTablet. This innovative product, which has multiple features, was first introduced in Belgrade, Serbia, at the beginning of 2012. It was widely accepted as a very user-friendly and smooth application, both by the citizens and the municipality of the city.

KentTablet or the "Onboard Public Transport Tablet" combines different applications covering automated fare collection, automatic vehicle management, passenger information, scheduling and onboard video surveillance systems in a single device. This combination improves operations and delivers a quality service to passengers.

KentTablet is a multi-tasking vehicle computer that provides the following services: contactless fare collection by a capacitive LCD touch screen; vehicle tracking and fleet management; passenger information in the vehicles and at the station; employee management; emergency and alarm management; and onboard video surveillance services for both public and private transportation companies. It supports multiple fare tariff applications such as check-in/check-out, time based transfer, zone based, flat fare etc. The device gets its energy through a single Ethernet cable (PoE standard) and it can transfer the fare collection and location data (GPS) to the dispatching center through GPRS.

The tablet, which supports multimedia devices using a single cable, can also run audio. In addition, it can change the route number and the line at vehicle destination boards. KentTablet enables next stop/current stop announcements and helps passengers to navigate their route. It also provides two-way communication between the drivers and the dispatch center, an important factor for intervention in case of an emergency. It is clear that these significant features increase the service quality of public transportation and in turn this contributes to less use of private cars in metropolitan areas.

For the KentTablet the company used Telit's HE910-EUR 3G module, which is a combo-device that includes both GPS and GPRS. <<

CASE STUDY

Hirschmann Solutions
A business unit of Hirschmann Car Communication

GPS RECEIVER ANTENNA – ROBUST AND HIGH-PERFORMANCE

FACTS

Hirschmann Solutions – A business unit of Hirschmann Car Communication
www.hirschmann-solutions.com

System

RAS 1575: "plug & play" GPS receiver antenna

Which Telit module do you use and why?

The antenna is based on the Telit module SE880. This offers maximum performance in an extremely compact housing.

Benefits

The RAS 1575 gives customers a versatile GPS receiver antenna that comes in a compact housing with simple "plug & play" magnetic installation. It's ideal for any kind of telematics solution.

- Water-jet-proof in accordance with IP66
- Easy connection via USB 2.0
- Power supply via USB connection
- High GPS sensitivity
- Compact dimensions (38 mm x 34 mm x 15.5 mm)
- Robust, high-quality housing

RAS 1575

"Thanks to our excellent partnership with Telit, we can offer our customers an extremely compact, robust and high-quality GPS receiver antenna."
Laurie Burns, *Head of the Solutions business unit*

Hirschmann Solutions is a leading manufacturer of sophisticated, customized m2m solutions for users in the energy sector, the vehicle industry and many other sectors and branches of industry. The company offers numerous applications for high-performance data transfer and bases its solutions primarily on its long-standing competence in the field of high-frequency technology.

Challenge

The aim at Hirschmann Solutions was to develop a compact and robust high-performance GPS receiver antenna. Comparable solutions already available on the market have so far often failed to impress customers. The reasons for this include poor GPS reception, the devices not being small enough, and quality defects in the housings. It was also important for customers that the finished product should be introduced quickly, without any need for them to start development work.

Solution

The partnership between Telit and Hirschmann Solutions has enabled these two leading manufacturers to complement each other's skills and expertise in the fields of high frequency applications and module developments.

The GPS receiver antenna RAS 1575 is based on the Telit module SE880. As a result, it delivers maximum performance in an extremely compact housing. During development, emphasis was also placed on ensuring the easiest possible integration in an existing antenna housing.

Thanks to its low current consumption, the module is ideal for mobile applications. Another advantage is its high level of resistance to interference – even without the use of additional external components.

Benefits

The RAS 1575 gives customers a versatile GPS receiver antenna that comes in a compact housing with simple "plug & play" magnetic installation. The antenna can be used, for example, as a retrofit solution for telematics applications in the transport and logistics sector, as well as by system integrators who use the product in larger systems (e.g. traffic control systems). <<

EXTENDED VEHICLE'S LIFE TIME CYCLE THANKS TO SMART DATA

GE863-GPS
GSM|GPRS

FACTS

Traffilog, LTD
www.traffilog.com

System

TraffiSafe and TraffiMech

Which Telit module do you use and why?

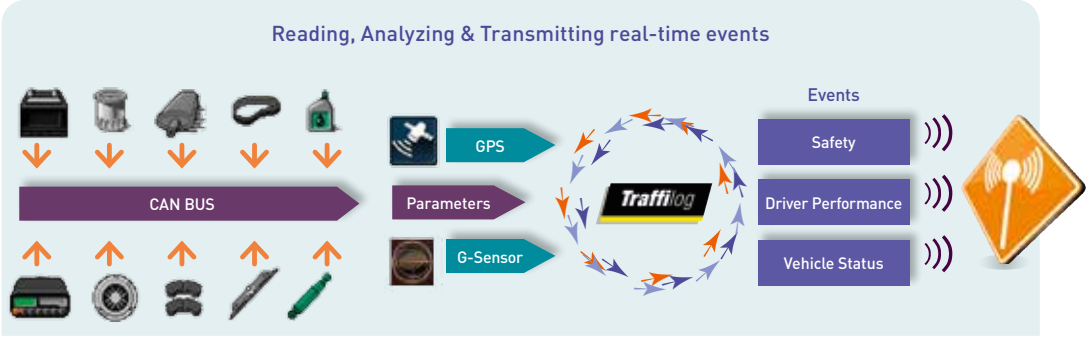
We use the GE863-GPS module because of its compact size and embedded GPS receiver. In addition it is extremely reliable and rugged.

Benefits

The Traffilog Fleet Management System is a combination of an on-board device installed in the vehicle that collects and diagnoses parameters, and transmits real-time customized events and alerts to the fleet owner. Thus fleet operators save money through more efficient vehicle use, reduced fuel consumption, preventative engine maintenance data as well as enhanced security.

TraffiSafe and TraffiMech

"Telit's GE863-GPS module is a mission-critical component of our application because of its high reliability, ruggedness and quality performance. That's why we rely on Telit modules for a large percentage of our systems worldwide."
Yoav Megged, *Executive Vice President*



>> In tough economic situations, with shrinking profit margins, Traffilog is saving fleet owners important sums in fuel, maintenance, repair, accidents and emissions thanks to its state-of-the-art technological achievements.

Our onboard device is connected to the main CANBUS of a vehicle, where it collects parameter data, combines it with data from the G-sensor and GPS location, analyzes the information and transmits real-time events and alerts to the fleet manager.

The Traffilog solution is an excellent predictive maintenance tool, as it allows the fleet manager to detect evolving problems that may risk the vehicle's health. By proactively monitoring the vehicle status, we can recommend the owners to fix components before failure. In addition, Traffilog also provides fleet management and location based services, as part of the global solution.

Traffilog solutions have been recently installed by Alexander Dennis (ADL), UK's largest bus and coach manufacturer, and by Kings Ferry, a prestigious UK coach operator, for their public service vehicles for last year's Olympic Games in London.

The Traffilog devices feature the GE863-GPS advanced cellular modules from Telit Wireless Solutions. They wirelessly transmits real-time driver and mechanical performance data to the fleet management centre. The devices also enable remote control of the vehicle by authorities, as deemed necessary. The GE863-GPS is a very compact GSM/GPRS module with a GPS receiver. It's a perfect solution for m2m applications such as telematics devices for which overall size and height are critical factors.

The Traffilog solution, available in 26 countries, has been available in the UK since 2007 and supplies blue-chip organisations including National Express, Commercial Vehicle Solutions, Northern Ireland Water and Daniels Utilities. In addition it is used by Arriva Scandinavia, Arriva Italy, UPS, FedEx, Nestle, Danone, Cemex, Orange and many more. <<

CASE STUDY

HIGH PERFORMANCE GPS TRACKING

Jupiter JN3
GPS
HE910-G
UMTS|HSPA+

FACTS

Portman
www.ptm.com.cn

System

TT3601 – GPS tracking motor

Which Telit module do you use and why?

JN3 and HE910. We adopted Telit's modules into our terminal product to boost its performance.

Benefits

- Built-in 30 geofence settings
- Local data storage function when there is no internet access
- Built-in tangent angle sensor (optional)
- Valet switch function can achieve conversions between seven different functions
- Built-in 3.7V/2000maH battery with electricity detection function
- Display real-time terminal working conditions with LED light

"Creating a win-win situation with Telit." **Gamed Du,** *General Manager*

>> As a leading manufacturer of security devices, Portman has been dedicated to supplying GPS/GPRS/GSM tracking systems, car alarms, audio systems and home security systems for over two decades.

In order to become a preferred source in a global environment, Portman established manufacturing operations in China in 1991. With 200,000 square feet of state-of-the-art manufacturing and assembly technology (including vertical capabilities in tooling, injection molding, die-casting, and SMT lines), the China facility has become the heart of the Portman Group and together with our four additional facilities we are delivering superior products to over 70 countries worldwide.

To remain competitive, more than 100 highly qualified R&D engineers at Portman ensure its top position in the world-wide marketplace for product development and design. Armed with the most advanced professional hardware and software (CAD, PRO-E, PRO-TEL, in-circuit emulator, static electricity tester, etc), they are always ready for customers' requests for OEM and ODM projects.

Besides expanding our customer service network, we commit to the continual improvement of a quality management system that provides only the highest quality products to our customers. With ISO9001:2000 already in place, we achieved third-party certification for ISO/TS 16949, adding quality management disciplines to meet the requirements of some of the world's largest companies. We are proud to provide products approved to the standards of CE, E-mark, RoHS, Thatcham, EMC, FCC, UL and PTCRB.

To further improve reliability and stability, Portman adopted Telit's HE910 and JN3 modules in the TT3601-GPS, Portman's new product, as the solution for 3G communication and GPS positioning system. Its performance has been greatly improved by the perfect combination of Telit modules and TT3601-GPS itself. Meanwhile, the compatibility of Telit's module will enable future upgrades to the TT3601-GPS, for example, HE910 is compatible with Telit's GPRS/EVDO/LTE modules, and JN3 is compatible with GPS/GLONASS modules.

With its new features and stability, TT3601-GPS gains significant commercial success as well as customer support. We believe the long-term stable cooperative relation with Telit will create a win-win situation. <<

TT3601 – GPS

M2M ENABLED EMERGENCY CALL FOR RAPID RESCUE

GE865-QUAD
GSM|GPRS

FACTS

Meta System S.p.A.
www.metasystem.it

System

PA5, telematic device

Which Telit module do you use and why?

In our system we use the GE865-QUAD module. We have chosen Telit for its excellent price/performance ratio.

Benefits

PA5 is a telematic device with integrated microphone and speaker, which enables quick location of a vehicle in the event of car breakdown or accident, facilitating the rescuers intervention.

PA5

”For the connectivity of our products we were searching for a technological partner with two main requirements: a wide state-of-the-art portfolio at affordable prices and the openness to pay close attention to our needs. Telit had both.“ **Massimo Zenobi,** *CTO*

>> Meta System S.p.A., established in 1973 in Reggio Emilia, is the company of MetaSystem Group specialized in research, development and manufacturing of advanced electronic security and safety systems for car and motorcycle markets. The PA5 by MetaSystem is an advanced telematic device installed on the car windshield in the area near the rearview mirror. This allows a quick location of a vehicle in the event of car breakdown or accident, facilitating the rescuers intervention.

The system with integrated microphone and speaker, whose volume can be adjusted according to the customer's needs, allows the driver to get in touch with the Multiservice center, taking advantage of the services supplied by the Service Provider to which the product is associated (e. g. help request, check on driver's condition after an accident, traffic information etc.).

In addition the PA5 device is equipped with a button allowing the passenger to easily enable communication with the Multiservice center, and with a crash sensor that allows to detect the accident, reconstruct its dynamics and automatically send a warning to the rescue units.

This product is covered by a patent which is property of Meta System S.p.A.

The PA5 sends data through the GSM/GPRS Telit GE865-QUAD integrated module. Meta System has chosen Telit for the quality that has always distinguished its products and for its extreme sensitivity in understanding and satisfying customers' needs. Thanks to the connection provided by the module, the device can communicate in real time with the Multiservice center and automatically send a warning in the event of accident. Finally, the availability of the "In-Band modem" feature makes it compatible with the eCall European program.

The small size of the Telit GE865-QUAD integrated module, its flexible and easy-to-use audio features represent the strengths that drove to the decision to integrate this model in the PA5 device. Furthermore, its technology the high competence and availability of its technical support assure an excellent price/performance ratio. Finally, the reliability of the connection provided by the device delivers high standards of safety on the road, providing non-stop real-time assistance. <<

THE BUSINESS CASE
FOR INSURANCE TELEMATICS

Jessica Royer Ocken and Susan Kuchinskas , *Telematics Update*

www.telematicsupdate.com

>> Although usage-based insurance (UBI) is not yet widely available, it is currently being widely researched and tested by insurance carriers. UBI comes with real costs, and the technology and business models are still developing, so early adopters need to focus their investments.

"First, evaluate who your target customer is and whether UBI customers match that target," says Jon Inquimboy, associate product manager for Esurance.

John Canali, analyst, Strategy Analytics, notes that a key disconnect persists around UBI. "Insurers, OEMs, and wireless carriers are not aligned," he says. But waiting until all the kinks have been smoothed out may mean missing opportunities. So, when developing UBI business plans, balance urgency with strategy.

Benefits and startup costs

Gathering and managing the data that make UBI possible is also what makes it so costly, particularly at the start. Whether created and managed in-house or via a partner, the in-vehicle devices UBI requires are expensive, and it may be a while before increased demand drives down component prices.

A second cost consideration is how to analyze incoming data. Although analysis is already part of an insurance company's protocol, UBI may generate data at an unprecedented level. Translating all that data into usable information will take added effort. However, the biggest benefit a UBI program offers insurance carriers is the "opportunity to create a customer experience with auto insurance," says Inquimboy. Right now, auto insurance is merely transactional.

"Insurance is basically a product nobody really wants," adds Canali. "You're paying for a product you don't use, or you've been in an accident and are unhappy about that." However, UBI opens the channels for feedback and gives carriers an opportunity to interact more frequently with customers as well as perhaps to improve their driving behaviors.

The other big benefit is more effective pricing. UBI gives drivers more control over their premiums and allows the insurer to create more pricing segmentation and better accuracy, by using the customer's actual driving behavior as the basis for rates rather than proxies like driving record and number of tickets and accidents.

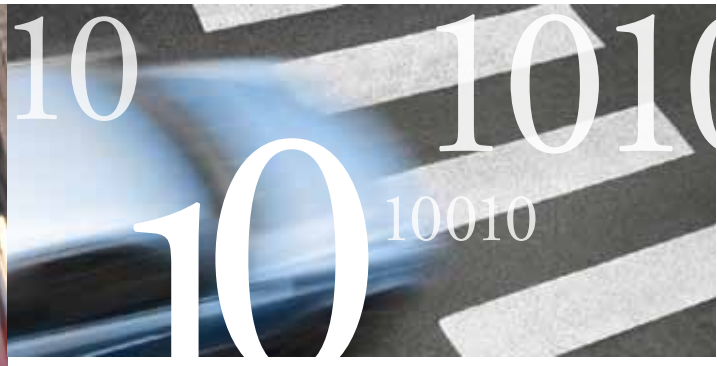
Canali points out, though, that "the insurance industry has been profitable because pricing is adjusted to the driver," and the information companies are currently able to gather is working pretty well.

Finding the right fit for UBI

UBI could benefit mobile phone carriers interested in expanding into m2m communications, notes Canali. He anticipates that consumer data plans will eventually be shared across devices, perhaps including cars, where UBI apps could feed information back to the insurer.

Despite these benefits, UBI is not a sure-fire win, nor is it likely a good fit for all auto insurers. "There are definitely some risks," says Inquimboy. Insurance carriers looking to write policies for "preferred business" may find UBI a compelling model as it can help with customer retention. However, if a company is focused on the "high turnover" part of the market, UBI is "not the wisest initiative because it's a capital-intensive program".

Inquimboy reasons that companies interested in UBI shouldn't wait too long to get a program started. Otherwise, they may experience "adverse selection" and be left mostly with customers who don't suit their pricing model.



insurers understand enough about automotive" to manage UBI data effectively on their own.

The data challenge

In July, Sprint announced Integrated Insurance Solutions, a low-cost, turnkey trial program for insurance carriers to start their own UBI trials and pilot programs. A device that plugs into the diagnostic port captures vehicle information and driver behavior data, which is transmitted over the Sprint wireless network. A cloud-based system analyzes the data with driver scoring software that enables insurance carriers to improve driver risk assessments, reduce costs and improve profitability.

That followed an announcement that Sprint was teaming with Agnik for advanced data mining of vehicle and performance data. Agnik, which is also a partner in Integrated Insurance Solutions, offers several products for the UBI market. It, captures vehicle and driver behavior, performing statistical data mining, clustering, segmentation, trend analysis and predictive modeling. Then it sends the resulting data analytics over the Sprint wireless network to a remote server that can be accessed by actuarial managers and policyholders.

Automotive use cases may require the analysis of millions of events per second, compared to hundreds of thousands of events per second for other applications. In fact, different markets may require different data sets and custom analysis. For example, insurance companies are hoping for more than simple risk scoring, according to George Kandt, m2m marketing manager, Sprint: "They also want help with customer risk segmentation, vehicle location and stolen vehicle recovery, and fraud detection. We've heard a lot about enhancing their bottom line, in addition to reducing the costs."

Working together

The best way to enhance the future of UBI is for OEMs, wireless carriers, and insurers to work together, suggests Canali. But with differing agendas and concerns among these businesses, this could be easier said than done. He cites Verizon's recent acquisition of Hughes Telematics as something to watch as a gauge of the industry's comfort with such combinations.

"OEMs and [wireless] carriers need to sort out their relationships before they aggressively court insurers," he says. But once they do, they could be well positioned to offer their own insurance. In addition, as OEMs and insurers begin to collaborate on UBI, Canali wonders whether OEMs risk alienating consumers by working with specific insurance companies.

Despite the challenges, Esurance's Inquimboy believes UBI has the potential to become an industry standard and a "permanent fixture as an option" among insurance models. Esurance is currently running a UBI pilot program in Arizona, and "so far it presents a very compelling case. If we decide to move forward, we can roll it out very aggressively."

You can subscribe to Telematics Update's newsletter at www.telematicsupdate.com.<<

Canali adds that once a company has decided to venture into UBI, it needs to research carefully and be sure it chooses the right partners to help deliver and enable the service. "I don't believe many

TRANS-PORTATION

Expert's Outlook

THE CONNECTED CAR:
WHAT DOES IT MEAN AND WHEN IS IT COMING?

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

>> The connected car, as defined by the ng Connect Program (ngconnect.org), is a set of services that will allow consumers to enjoy always-on mobile connection to the Internet, along with an array of entertainment, traffic, navigation, car maintenance and safety features. It's predicated on the availability of ubiquitous LTE connectivity.

The connected car is an exciting concept and in a decade or more it may turn out to be something that we take for granted. However, it will be realized, indeed it is being realized in discrete steps via stand-alone solutions that deliver tangible benefits today using legacy technologies, i.e. GSM and GPS.

For example, PAYD (Pay As You Drive) solutions allow insurance companies to market policies based on usage. As well as providing lower premiums to careful drivers, in case of accidents, breakdowns or theft they enable quicker help. To date take-up has been slow, but it is set to accelerate in line with mandatory emergency response systems: eCall in Europe and ERA-GLONASS in the Russian Federation.

It's clear that additional cost and convenience benefits will come via convergence, the most obvious example being user based insurance and emergency response. This is a logical development as all new vehicles must be equipped with an eCall capability by 2015. Moreover eCall data will also be sent to the insurance company. Converged solutions could also provide real-time traffic and location information, i.e. where is the nearest charging point for electrically powered vehicles.

There are numerous scenarios and time will tell how they play out. LTE services, for example, are being implemented in different timeframes. Ubiquitous coverage was realized in the States in 2012, but it will take three or more years in Europe. Embedded "black box" systems that employ more and more services will come to market, but additional standards are required in order to make them cost effective and thereby enable mass-market deployment. One exception will be the high-end of the automotive market, where cost is not a significant factor.

COMMON, CENTRAL ELEMENTS

All in-car services are based on robust wireless connectivity and accurate location information. Right now they are employed in various stand-alone solutions: tomorrow they will be in converged systems. In other words, those elements – connectivity and location – are always needed. This means that Telit can serve the needs of this diverse market, both now and in the future.

One guarantor for this is our new business unit m2mAIR, with its wide-ranging set of value-added services, including connectivity. In partnership with Telefónica, m2mAIR covers all network-related needs providing SIM cards, transparent rate plans, SIM management, enhanced security, reporting and monitoring, as well as exceptional customer support. In addition it offers groundbreaking module management: This allows customers, for the first

time in history, to use module APIs and features over the air in real-time even after the modules have been shipped and installed. This opens a new world of flexibility, also for eCall.

There is an emerging market for low-cost, easy-to-install eCall devices. We have dedicated modules that are eCall ready (in-band modem). And when there is a real need for high-speed connectivity we can supply our new LTE, automotive-grade modules. The LE920 combines two high-speed cellular modes. There is full fallback compatibility with HSPA+ as well as backwards compatibility with existing EDGE and GSM/GPRS networks. This is enabled through integrated quad-band radios that ensure connectivity even in remote areas devoid of 4G or 3G coverage. The LE920 is also equipped with a high-performance, multi-constellation GPS and a GLONASS receiver for improved location accuracy. This is a good example of the way that Telit future proofs our customers' solutions.

TRAFFIC MANAGEMENT

m2m can also enhance the driving experience by monitoring and managing traffic flows and in giving motorist the results in real-time. Sensors can monitor variables such as traffic volume and speed and send this information to computers that manipulate roadside or overhead signs. For example, suggest a lower speed than the legal limit in order to optimize the flow by preventing vehicles bunching up. Unfortunately all too often drivers ignore the sign, drive faster and everything slows down.

In future, and it's technically feasible, the same information could be sent to an on-board m2m system that would automatically limit the speed, i.e. it would function like a regular cruise control system. Moreover, so-called adaptive cruise control systems have been developed that employ a forward-looking radar sensor that automatically adjusts a car's speed to maintain a safe distance to the car in front.

CONCLUSIONS

It is hard to overstate the importance and potential of the automotive market to the m2m industry. Over 77M vehicles were manufactured in 2010: by now we may be heading towards 100M. But whatever the figure, the market for m2m systems and solutions is going to be huge. It will pan out in different directions and in different timeframes; more standards will be needed to allow the industry to realize the full potential. Telit's pivotal role as a leading, innovative vendor of wireless modules will cement our long-term position in this expanding market. <<

ENERGY
Expert's View

SMART TECHNOLOGY FOR SMART METERS

Emmanuel Maçon-Dauxerre, *VP Global Energy Segment, Telit*

>> Smart meters represent a huge, emerging market. RF mesh network and power line carrier connectivity have been the principal connectivity technologies, but recently wide area point-to-point cellular has emerged as a viable candidate. Deployment and management costs are significantly lower, particularly when Telit's m2mAIR offer is employed. This results in cost effective, easy to manage solutions.

Governments around the world have set very aggressive energy reduction targets. The EU has mandated that 80% of European homes should have installed a smart meter by 2020. The US made smart energy recommendations in 2007 but regulations are set at state level so take up varies. But whichever way you look, the market is going to be huge: Machina Research forecast is 1.5B units by 2020.

The market is also being driven by consumers who are being hit by high energy costs, which smart metering can cut by up to 25%. This has an obvious impact on the bottom line of the utility companies and it comes at a time when they are being asked to make significant investments. Unfortunately end users are not prepared to pay for new meters.

PLC (power line carrier) is the logical choice for electricity utilities to transport usage data, but there could be some issues, e.g. high noise levels. Wireless M-Bus, which specifies communications between water, gas, heat, and electric meters, is becoming widely accepted in Europe for smart metering. This technology is used to transport readings over a neighborhood area network to a concentrator/gateway that aggregates the traffic and transmits the results to the utility over a wide-area cellular network. Telit has the requisite products for solutions that employ this architecture.

Until recently the alternative technology, whereby every meter is connected to the utility in a point-to-point cellular architecture was judged to be more expensive, mainly because a SIM would be needed in every meter.

However, that perception is changing. Wide area solutions are more expensive in terms of capital expenditure, but installation accounts for more than 50% of the cost of the average solution, mainly because the utility has to plan, deploy and manage the smart grid communications network that they build. The combined operating cost can outweigh the lower, initial capital cost. Therefore there is a strong case to be made for utilities to use smart meters connected directly to a cellular network.

TELIT'S SMART TECHNOLOGY

The company's m2mAIR offer brings several significant benefits to wide-area, point-to-point networks and they are particularly relevant to smaller utilities



that are competing against the incumbent. The m2mAIR SIM cards can be embedded in the module, which eliminates the need for a holder.

m2mAIR SIMs make an immediate connection to Telefónica's global network. It's an out-of-the-box, smart solution, so the installation task can be performed by utilities that have minimal technical resources. Billing only starts after the subscription is put into an active state and the cards can be activated and deactivated as required.

Telefónica has integrated the world's leading Service Delivery Platform, which operates in conjunction with Telit's Remote Module Management system. This unique combination enables innovative features and capabilities, such as hardware and network diagnostics as well as enhanced cost control and inventory management. Network diagnostics is enabled by non-intrusive software that resides on Telit's modules.

In addition there is a feature-rich e-Portal that lets customers: provision SIM cards; run network based troubleshooting & diagnostics; manage data traffic consumption; manage user profiles and maintain network-based usage policies.

SECURITY AND COVERAGE

Utilities are particularly concerned about the security of smart meters and wireless coverage, which has to be ubiquitous and robust. Our approach to security is multi-dimensional. It is based on preventive technologies focused on authentication and encryption, as well as defensive technologies that deal post factum with malevolent events like interception and theft. Technologies employed include:

- IPsec (SSL) VPN Tunneling: goes all the way from the module to the network's CGSN (Combined GPRS Service Node).
- Static IP addresses and a dedicated APN: a dedicated association to the subscription prevents a stolen SIM card being misused for unwarranted data communication.
- Secure SIM authentication and PIN code: authentication is required before a data channel is set up, either explicit or implicit.
- Module based policy management: a real-time, module-based usage hedging solution that protects against unpredicted data usage.
- Embedded Jamming Detection: a diagnostic security feature that can report either in real-time or post factum that a jamming attempt was made.

Enhanced network coverage is another significant feature of Telit's offer. Telefónica has roaming agreements with at least two carriers in major markets and this ensures good coverage in the rural areas of large countries. This results in enhanced coverage, performance and redundancy. Moreover, m2mAIR supports real-time enforcement of data traffic steering to a preferred network. And unlike most MNOs, they have implemented a separate core network dedicated to m2m. This results in a service having higher quality and performance.

Please feel free to contact me to discuss the requirements of your energy requirements: Emmanuel.Macon-Dauxerre@telit.com <<

ELECTRIC VEHICLES – THE FUTURE?

Jonathan Spencer Jones, *Editor, Metering International*

>> Electrically driven vehicles have been around in some form since as long ago as the 1830s – outdating the traditional internal combustion powered motor that most of us drive today.

Thus clearly there has been longstanding interest in this form of transport, but mostly these vehicles have been viewed as curiosities and haven't yet entered the mainstream. However that is changing, driven on one hand by emission reduction/sustainability issues and on the other by the development of the smart grid as the supporting infrastructure.

In particular, while many different electric vehicle types are emerging, the most widespread use is likely to be as passenger vehicles (which will be the focus of the rest of this article). Reflecting this, all of the major vehicle manufacturers, as well as specialists such as Fisker and Tesla, have electric vehicle development programs well under way.

VEHICLE TYPES

Electric vehicles come in essentially two forms – all electric, in which a battery powers the vehicle, and hybrid (including plug-in hybrid), in which the vehicle has both battery power and an alternative power source, with seamless change between the power forms when the vehicle is in operation.

The main drawback with the all-electric vehicle is that its range is limited by the battery capacity and in general after 100 to 150 km the battery needs recharging. This restricts its use to short distance commuting and town driving. The hybrid obviously doesn't have this restriction but it requires two sets of drive trains, which increases the cost.

Examples of all electric vehicles are Mitsubishi's iMiEV and Nissan Leaf. Examples of electric hybrid vehicles are Chevrolet's Volt and perhaps the best known, with almost 3 million sold worldwide since its introduction in 1997, the Toyota Prius.

CHALLENGES

Many research and demonstration studies are being carried out in the industry by utilities, academics, vendors and others around the world to gain a better understanding of the characteristics and potential utilization of electric vehicles and to prepare for their large-scale introduction.

However, currently there are three main challenges for their more widespread use – cost and the provision of a charging infrastructure – particularly a public infrastructure to enable drivers to charge their vehicles away from home – and the battery technology.

The cost of purchasing a hybrid or electric vehicle is generally significantly more than that for a similar traditional vehicle. For example, at the time of writing in the US a Volt retails for almost $40,000 (excluding the government credit) whereas the Cruze costs about half that. At this early stage some differential can be expected and the cost of electric vehicles should decline as sales increase. In the meantime incentives, whether in the form of a rebate or reduced taxes, are necessary to stimulate 'early adopter' sales.

Various charging infrastructure models are being tested and the jury is out on whether this should be publicly or privately provided – in practice both types, and public-private partnerships, are likely, depending on local circumstances – and how the user pays. ChargePoint, for example, offers a subscription plan for drivers – much like a mobile phone contract, which then entitles the subscriber to go to any of that company's charge points. Better Place advocates battery switching, in which the user simply swops out an empty battery for a fully recharged battery – however, few vehicles as yet have switchable batteries.

Cross border continuity is also important, for example in crossing state lines in the US or crossing from one country to another in Europe. In Canada for example, Hydro-Québec and Plug'nDrive Ontario have recently formed a joint working group to plan the rollout of a public charging infrastructure between Québec and Ontario, citing their belief that this is necessary to support the arrival of these vehicles.

The other main challenge is the status of battery technology – as it is for grid storage in general. Again many research initiatives are under way to advance battery technology and with these will come improvements in range, which in turn will increase the attractiveness of electric vehicles to potential drivers.

IMPACT OF ELECTRIC VEHICLES

A major concern for utilities is the potential impact of electric vehicles on their network and several studies have indicated that this should be small, as long as the (majority of) vehicles are charged at night during the off-peak hours when other demand is at its minimum.

The smart grid will assist utilities in managing such charging – but this is not the only benefit. A large number of charged vehicles represent a potentially significant source of stored energy and with a smart grid, a utility could draw on this energy as required (assuming the vehicle is not being used) and supply it back to the vehicle so it is ready to be driven. This so called vehicle-to-grid technology is still nascent, but is expected to be an important element in assisting utilities to manage peaks in demand and limiting the need to build additional sources of generation.

ELECTRIC VEHICLES – THE FUTURE?

As is clear from this very brief overview, after almost 200 years of development electric vehicles are finally moving towards the mainstream. The market drivers are in place and the technologies are maturing, although there is still much development to be done. What then are the projections?

According to Pike Research, the worldwide market for electric vehicles is 137,950 units in 2012, and is projected to grow to 1.75 million units in 2019. This is but a small proportion of the more than 60 million new passenger vehicles that are produced annually, but nevertheless represents significant growth in what is one of the most costly assets acquired by the average consumer. <<

M2M ENABLED ENERGY MANAGEMENT SYSTEM

GL865-DUAL
GSM | GPRS

FACTS

Elster EnergyICT
www.energyict.com

System

AM110-R Embedded Communication Module

Which Telit module do you use and why?

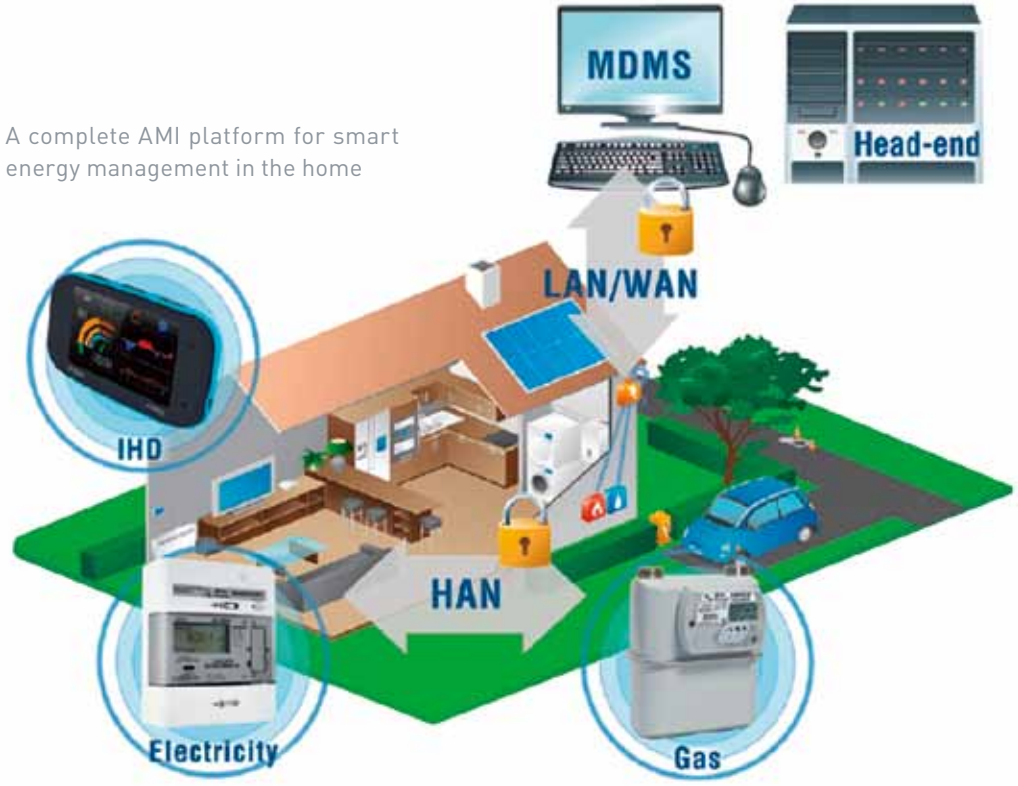
GL865-DUAL Embedded. We selected this product for its technical performance, its fit for the UK market, product maturity and excellent price.

Benefits

Smart Grid applications in the future will benefit from the existence of smart meters installed on the networks. The AM110-R, an embedded communication module inside smart electricity meters, supports ZigBee for HAN communication and IP-uplink capability via GPRS for WAN communication. It is designed for installation in the Elster AS300. Communication to the meter in which it resides is transparent.

AS300P with AM110-R Embedded Communication Module

A complete AMI platform for smart energy management in the home



> Our commitment to furthering technological advances throughout the Smart Metering and Smart Grid sector has ensured that we continue helping our customers make the vital connections in the Smart Metering and Smart Grid value chain.“
>
> **Jan Verplancke,** *Product Marketing Manager*

Elster EnergyICT is a market leader in its field, designing and offering highly advanced Energy Information and Communication Technology solutions and services to utilities, energy suppliers, service providers and end customers.

Since its foundation in 1991, the company has built up an impressive product portfolio that caters to all aspects of the international energy sectors. With years of world-class business practice and industrial knowledge, Elster EnergyICT has gained invaluable experience and fully understands its customers' expectations. Due to rapidly growing niches, our business has been split up in two major segments: Smart Grid and Energy Management.

The powerful EIServer© software platform lies at the core of Elster EnergyICT's IT solutions, serving as central Meter Data Management platform for utilities and as Energy Management System for end customers and service providers.

Elster EnergyICT's industry-leading hardware includes first-class data concentrators that collect consumption data from energy meters (e.g. electricity, gas and water) and post their collected data to the EIServer for further processing and distribution. The company's 100% in-house research and development team provides customers with the latest and best processes for their meter data and energy management needs by offering cutting edge, bespoke tools for each customer and maintaining its paramount standards throughout.

The AS300 forms an integral part of Elster's AMI solution that manages data from smart electricity, gas and water meters. A range of communication solutions can be deployed to ensure secure and reliable communication. The AS300 offers a modular solution for both WAN/LAN and HAN communications infrastructures. Modularity ensures a future-proof solution for the utility by allowing for a change of communications technology. Elster offers a variety of solutions to match market requirements including GSM/GPRS; PLC (SFSK and OFDM); LP RF for WAN/LAN communications. In addition M-Bus (wired or wireless), Wavenis and ZigBee are available for HAN communications.

The AM110-R is a communication module that is embedded in the Elster AS300P meter. The applications of the device are situated in the home/building and smart metering area. It features usage and event data collection, load profiles of multiple meters, firmware upgrades, Web-based configuration, enhanced credit/block tariffs, and prepayment.

The Telit GL865-DUAL component is embedded in the AM110-R device. Its specific benefits are the UK smart metering (SSWG) compatibility, the low space and form factor, and its ability to be fully integrated and embedded in the communication module's design.

Upstream communication such as DLMS uplink and gateway features combined with the GSM/GPRS option makes it a strong element in the value chain of the end-to-end solution. The downstream features are extensive: ZigBee Smart Energy Profile (SEP) compatibility; IF2/DLMS to the electricity meter AS300P; the In-Home-Display support (AS200); and connectivity to two devices (IHD/Gas).

The integration of the Telit GL865-DUAL embedded chip was extremely easy, thanks to the excellent support and a complete set of documentation that allowed a complete integration without a hassle.

The AS300 offers a highly flexible platform that should match current and anticipated market needs. The product is focused on the UK requirements and therefore matches the existing requirements of advanced metering. The hardware is specifically designed to meet all the current requirements of the UK Government prospectus, March 2011. The firmware will initially cover current credit requirements with full "thick" prepayment being available later in the year. The firmware is downloadable so any future enhancements could be introduced at a future date. The metrology code cannot be updated.

Elster's Multi-Utility Solution, from the meter all the way through to the MDM solution.

Smart Grid applications in the future will greatly benefit from the existence of smart meters installed on the networks. The AS300 has been designed to anticipate this requirement; the meter offers selectable and definable power quality monitoring as well as instrumentation profiling. By utilizing this comprehensive information, utilities/network operators can gain a detailed understanding of their network performance. <<

MESHSYSTEMS™

M2M ENABLES CLOUD BASED ENERGY MANAGEMENT

GE864-QUAD V2
GSM | GPRS

FACTS

Mesh Systems LLC
www.mesh-systems.com

System

MeshVista® Hydra is a cloud-based m2m platform

Which Telit module do you use and why?

The GE864-QUAD V2 module was selected because its form factor is perfect for cost-effective, high-reliability applications.

Benefits

- Third generation cloud-based m2m platform for device connectivity and management
- Device design, manufacturing, networking and management
- Local area wireless technologies available for multiple devices connected to one gateway device
- Fully customizable m2m application portals for the OEM
- Cloud-based Service Infrastructure

MeshVista®
Gateway Winthorp

"Cellular networks have been instrumental in allowing Mesh Systems to connect thousands of endpoints across many energy-related vertical applications."

Douglas Brune, *Chief Operating Officer*

>> Mesh Systems offers its MeshVista® Hydra Technology on a Platform-as-a-Service (PaaS) basis, thereby providing its OEM customers with truly complete solutions for connecting their devices to a management and/or control application. Two models of the MeshVista gateway hardware are based on the Telit GE864-QUAD V2, which provides cellular connectivity to the cloud where end-user and customer portals, as well as data services, round out customers' solutions. The integration support from Telit was a key deciding factor.

With customers in a wide variety of verticals, including environmental monitoring, consumables monitoring, and asset tracking, it is in the energy sector that Mesh Systems is finding the most active application areas. Customers involved in smart-grid related applications in lighting control, solar, wind, energy storage, and other areas have realized a much more rapid time to market by working with Mesh Systems' MeshVista Hydra Platform. The alternative is an OEM trying to integrate a solution with four or five different vendors across the m2m value chain.

To deliver cellular connectivity for the MeshVista gateways and embedded OEM designs, Mesh Systems partners with all the major North American carriers. By working with Mesh Systems, customers reap the benefits of coverage and quality of service without having to worry about maintaining multiple carrier relationships. In addition to device dashboards, management reports and notifications, provisioning and activations are handled through a customized web-based application built on MeshVista. Two-way communication using the Telit module coupled with a cost effective implementation ensure connectivity for all cost-constrained business models in various customer application areas. <<

MANAGING AND OPTIMIZING ENERGY CONSUMPTION WITH M2M

HE910-D
UMTS | HSPA+
GL865-DUAL
GSM | GPRS

FACTS

ANDRA Sp. z o.o.
www.comander.pl

System

comander – open platform for AMR/AMI systems

Which Telit module do you use and why?

We use the HE910 and GL865-DUAL for their compact size, high performance, low power consumption and the possibility to add new features using Python scripts.

Benefits

- Compact-sized communication modules with broad functionality
- Various serial interfaces
- Programmable I/O input
- Transparent transmission with DLMS and IEC 62056-21 meter protocol support
- Easy local and remote configuration, diagnostics, firmware upgrade
- Internal event log and advanced diagnostics algorithms
- Compatible and tested with Landis+Gyr and other meters

"We provide smart metering solutions to manage and optimize energy consumption. We decided to work with Telit due to their fantastic support system." **Michał Obrębski,** *Director of Mobile Solutions Department*

>> Andra is an ICT system and infrastructure integrator with over 20 years of experience. The company is the leading provider of communication systems for the energy sector in Poland and Eastern Europe. Based on the company's experience and in cooperation with customers and partners, Andra developed the comander system. The resulting solution is an open and scalable platform for Automatic Meter Reading (AMR) and Advanced Metering Infrastructure (AMI).

Challenge

Wireless modems are the core components of the comander system, their performance and reliability being the key element. The company designed the new line of the communication modules, which are based on Telit's products, in order to expand our product offer and in response to customers' needs.

Solution

The GL865-DUAL is employed in comander stand-alone modules as well as in dedicated devices. Its compact size and low power consumption were especially important for the solution designed for Landis+Gyr which involved supplying the modem from the meter's serial interface. The HE910 is used for applications that have high capacity and high-speed requirements. It was chosen because of its performance and stability. System comander was designed to be a flexible and open platform that is easy to configure according to customers' requirements. The embedded Python Script Interpreter, which is available in Telit's modules, allows module functionality to be extended and features to be customized for individual solutions.

Benefits

System comander provides a comprehensive communication solution for metering devices. Users can choose between universal communication modules, with optional ZigBee and PLC concentrator features, and dedicated modems tested and approved by meter vendors. The system includes a management and diagnostic application and full set of application tools. The quality and reliability of the system is confirmed by references from Polish and Eastern European energy utilities. <<

CASE STUDY

GSM ENABLED AMR GATEWAY

GL865-DUAL
GSM | GPRS

FACTS

Eseye Ltd
www.eseye.com

System

Eseye Pelican AMR Gateway

Which Telit module do you use and why?

The Telit GL865-DUAL modem was chosen because the small form factor, low power consumption and the integrated IP stack matched the product design objectives.

Benefits

- Interface to any standard utility meter for electricity, gas and water
- Operates on mobile networks in any location worldwide ensuring maximum availability and reliability (DUAL GSM 900MHz /1800MHz or QUAD band available)
- AnyNet™ multi-network embedded SIM
- Optional Device Management
- External Antenna Options
- Single Channel Pulse Input
- Power Fail Alert
- Configurable Reporting Period
- Web Portal

Eseye Pelican AMR Gateway

"Not only does ESEYE and its customers benefit from Telit's excellent technology and technical support, we were similarly pleased by their flexibility. Stock deliveries were brought forward when volume deployments ramped up much faster than could have been foreseen." **Paul Marshall,** *Chief Operating Officer*

>> As a m2m technology expert with more than 400 customers worldwide, ESEYE offers a complete end-to-end service, so our customers can be sure that we know all about the systems and services we provide. We believe that m2m technology is a true enabler and that solutions are not just about SIM cards and connectivity. For us it's about solving our customers' problems; helping them grow their business and optimizing their opportunities with ESEYE enabled m2m technology.

During the summer of 2011, ESEYE was approached by the UK's main ABB Electricity Meter installation partner, a company with over 100 years' experience in installing electrical equipment. Our client wanted to explore how GSM connectivity could be fitted to existing meters to enable remote pulse readings. In addition, the solution should have support for a Web-based portal designed for use from day one.

After an initial analysis, ESEYE confirmed that the challenges with existing smart meters could be identified as:

- High cost
- Fear of SIM card theft
- SMS based solutions (no guarantee of message delivery)
- Infrequent meter readings – once a month
- GSM coverage issues requiring complex antenna solutions and still not covering all sites.
- Using several mobile networks made installations time consuming
- No ability to retrofit GSM connectivity into existing metering solutions.

So, with all this in mind, ESEYE set to work on designing a solution that captured and dealt with all the connectivity shortfalls and the Pelican GSM Enabled AMR Gateway was created. It was launched in the spring of 2012.

Recording readings every 30 minutes, using an embedded multi-network Anynet™ SIM, the Pelican can operate on mobile networks in any location, thereby ensuring the highest level of availability and reliability, whilst greatly simplifying the metering device installation process. Data is reported over the AnyNet™ multi-network connection to ESEYE's data collection servers and it can be accessed through the easy-to-use web portal. <<

M2M ENABLED METER READING: FASTER AND MORE PRECISE

GL865-DUAL
GSM|GPRS

FACTS

LEO Integrated Technologies Private Limited
www.leoelectronics.com

System

GSM modem-based Intelligent Automatic Meter Reader

Which Telit module do you use and why?

We used Telit's GL865-DUAL module due to its compact profile, its support for Python programming directly, and the programming-over-the air capability.

Benefits

LEO's GSM/GPRS AMR Modem provides an effective, reliable and efficient way to read meters automatically. It reduces operating costs, saves time and improves operational efficiency. It also enables notifications to be sent via SMS or via a call to preprogrammed number, e.g. when there is a power outage.

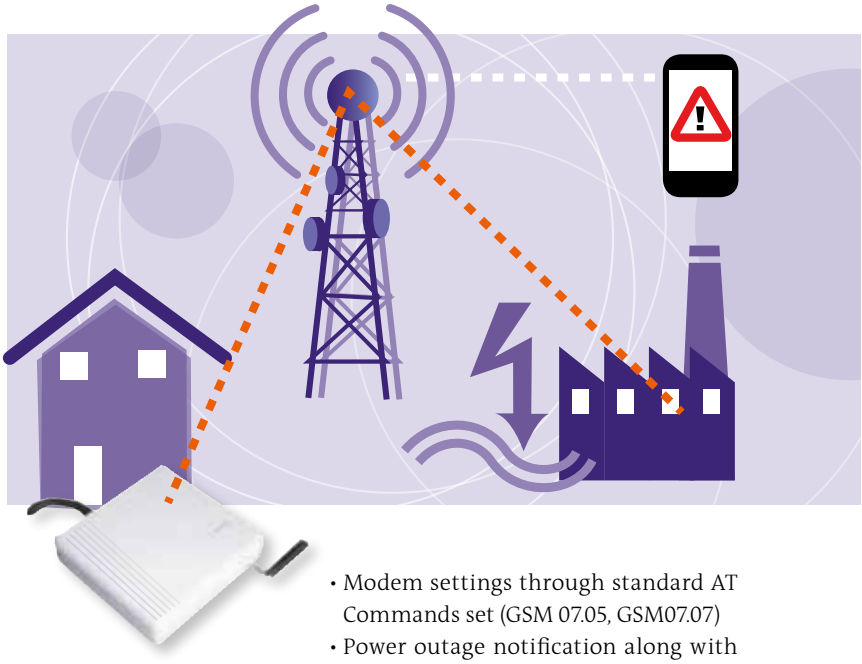
LEO's GSM/GPRS AMR Modem

"LEO designed an innovative Automated Meter Reader device that needed to be launched in the market within the shortest possible time span. We thank Telit's technical team for their constant support and cooperation during the development phase"
Dipak Gade, *Head Embedded Business Unit*

>> LEO Integrated Technologies is a research and development oriented organization. Based out of Navi Mumbai, India, LEO is leader in the development of thermal printers and m2m products. The company offers manufacturing via its sister company LEO Circuit Boards Pvt Ltd and we support the repair of our products for up to seven years.

LEO has developed a variety of m2m products for industrial automation and data communications applications.

The AMR device that the company designed, developed and successfully tested is based on Telit's GL865-DUAL module. AMR is very effective in meter reading and sending data to the specified server for recording and billing. This substantially reduces meter reading errors and the time taken to prepare bills. The recorded data can also be used to establish energy profiles and consumption trends for specified time periods.



We used the GL865-DUAL because it has a small footprint and low power consumption. Due to the embedded python script interpreter we could run our application inside the module. This saved us from using an external microcontroller in order to add more intelligence in the device. Compliance to the GSM/GPRS protocol stack 3GPP release 4 and access to TCP/IP stack via AT Commands made it the ideal choice. It fulfilled the critical requirements specification for our AMR device.

Features

- Supports supply voltage from 65 VAC to 440 VAC, 3 phase, 50 Hz as well as single phase 230 VAC, 50 Hz
- LED indicators for transmitted data, received data, carrier detects and power on
- Standard RS232 interface for meter
- Acts as a fully transparent channel supporting transfer of entire data as per the data update requirement of FRTU/FPI at control center
- Continuous 24x7 working under field conditions
- Supports both data and SMS transmission and includes GSM and GPRS/EDGE interface
- Modem settings through standard AT Commands set (GSM 07.05, GSM07.07)
- Power outage notification along with date and timestamp through Call/SMS to preprogrammed number
- Small size, low weight, portable

We are extremely thankful to Telit's technical team for guiding us in python scripting and for implementing the programming-over-the-air feature in our AMR device. <<

CASE STUDY

PAVING THE FUTURE FOR EV CHARGING STATIONS

CC864-DUAL,
CDMA | 1xRTT,
UC864-G,
UMTS | HSDPA,
DE910-DUAL,
CDMA | 1xEV-DO Rev.A

FACTS

Berkeley Varitronics Systems
www.bvsystems.com

System
Squid-PRO M2M Installation Tool

Which Telit module do you use and why?
CC864-DUAL, UC864-G, DE910-DUAL
The combination of these 3 modules in one Squid-PRO allows for a full listing of all major wireless carriers.

Benefits
The Squid Pro M2M installation tool takes guess work out of trying to determine which carrier has the best coverage at a given installation. There is a single push button track ball simplifying the user interface allowing field technicians to get the measurement information on one screen with a push of a button.

Squid Pro M2M

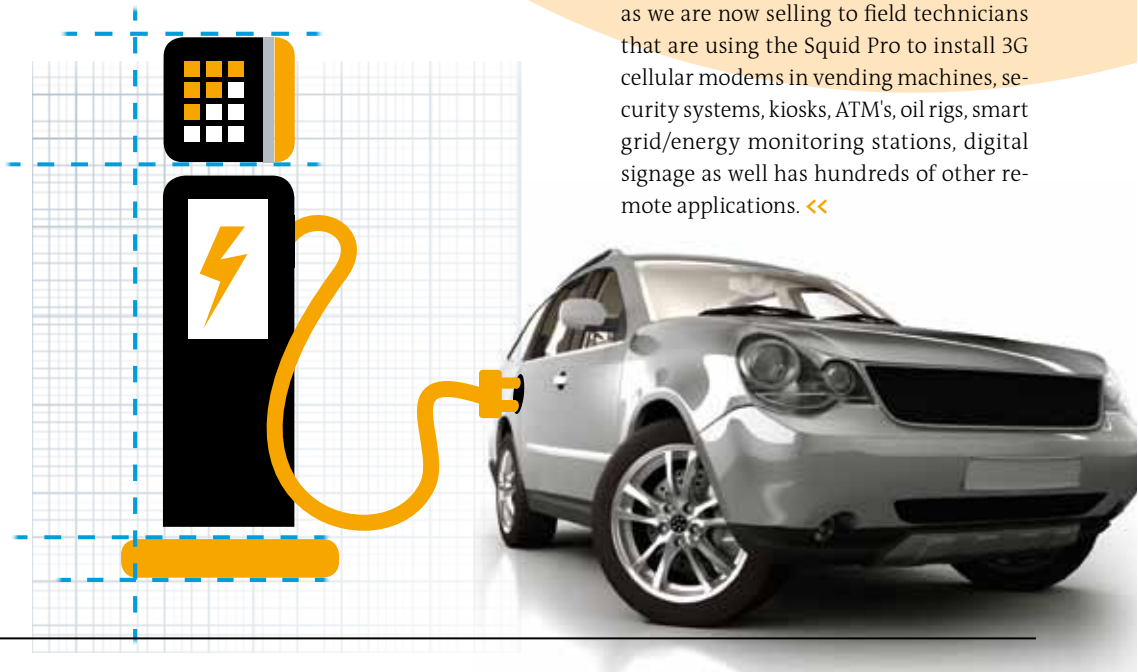
”Telit was helpful in responding to our unique technical requirements throughout the design phase which allowed us to get the product to market quickly.“
Scott Schober, *President and CEO*

>> BVS was approached by several electric vehicle charger companies that were looking for a simple technician tool that could aid in the installation process of the 3G modems in the massive deployment of electric vehicle chargers underway throughout the US. With EV-Electric Vehicle production taking off by all major car companies, the demand for chargers has dramatically increased. Estimates by charger companies are that for every electric vehicle on the road 2.5 chargers will be required. There are several hundred thousand EV chargers slated to be installed over the next year throughout the US.

To accomplish this monumental task and effectively select the best carrier (Verizon, Sprint, AT&T, or T-Mobile) they only had the bars on their phones to give an approximate idea of the best signal coverage at an installation site. Having multiple phones with contracts and trying to decipher the signal strength by counting the number of bars on each phone and comparing the results was not efficient.

The desire for a tool that was simple, cost effective and provided all the information on one screen, putting the carriers in a list so a field tech could make an informed decision on the spot was essential. The Squid Pro M2M installation tool with multiple Telit cellular modem engines answered that challenge. The unit provides GPS latitude/longitude/time for each measurement and has optional reporting software that can be used to document the measurements taken.

Telit provided great technical support throughout the development process, which was key to getting the Squid Pro to market in a timely fashion. BVS was first to market with this tool providing the industry's only tool that tests all the 3G bands in the palm of your hand. The EV Charger market is one of many verticals that we are selling in. The past two quarters we have increased our production volume three-fold as we are now selling to field technicians that are using the Squid Pro to install 3G cellular modems in vending machines, security systems, kiosks, ATM's, oil rigs, smart grid/energy monitoring stations, digital signage as well has hundreds of other remote applications. <<



dynasys

M2M REMOTE METERING DEVICE

GE865-QUAD
GSM | GPRS

FACTS

Dynasys – Engenharia e Telecomunicações, S.A.
www.dynasys.pt

System

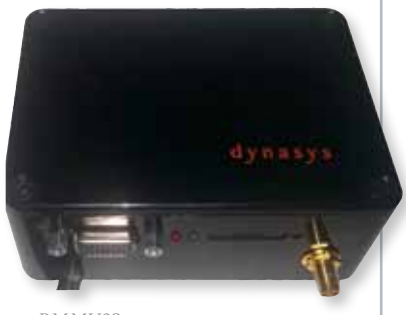
RMMV02 Remote Metering Device

Which Telit module do you use and why?

GE865-QUAD
- Small size
- Low profile
- Numerous GSM and GPRS capabilities

Benefits

RMMV02 Features
- Integrated power supply
- Low power consumption
- Agnostic to meter manufacturers
- Small dimensions: H= 76 mm; L = 100 mm; D = 41 mm



RMMV02

„By combining our design and production management capabilities with the specific expertise of Telit we've started the path to be David in a world of Goliaths."
Domingos Arroteia, *Sales & Marketing Manager*

>> Dynasys – Engenharia e Telecomunicações, S. A. is a small Portuguese company that has more than 20 years experience in developing and manufacturing electronic equipment for the professional market, mainly for the ITS (Intelligent Transport Systems) environment. This is still our principal market segment, the focus being on stationary and dynamic LED information panels, and emergency call systems (SOS) for highways, where we are market leaders in Portugal. The company also has significant projects abroad.

Dynasys' interest in m2m cellular communications started when GSM coverage was 100% along the highways. OTA (Over the Air) communications would significantly reduce the cost of telecommunications' infrastructures within those SOS systems.

Based upon the experience gained with the GSM roadside SOS equipment and central management systems, we looked around and examined various segments. We saw utilities squeezing costs, betting more and more on non-attended facilities, and looking to enable easy reading of users' consumption.

Targeting the incumbent electricity supplier, we faced a big challenge: the usual blue chip suppliers were in entrenched positions. To overcome resistance to diversifying suppliers, Dynasys would have to combine its own design capabilities, both in hardware and software, with that of a flexible supportive manufacturer. The latter would contribute to the development of an outstanding quality GSM modem, available at a worldwide competitive price, in spite of the small quantities that we expected. Telit became that supplier. After two years of perseverance, employing a first modem based on the GE864-QUAD V2, we finally got clearance to submit our product to type approval and that was obtained.

At first the decision to choose Telit was based on price, compliance with the customers' specs and proximity. A failure rate of less then 0,12% for the modem, together with Telit's on-going attention to our needs and expectations, helped Dynasys decision to stay with this relationship.

The Remote Metering Device is now based on the GE865-QUAD module, but we are also proactively preparing ourselves for near-future demands from the customer side, which has benefited by having local, state-of-the-art engineering support. <<

CASE STUDY

M2M BASED POWER MONITORING FOR ENERGY UTILITIES

GL865-QUAD
GSM | GPRS

FACTS

M2M Telemetria
www.m2mtelemetria.com.br

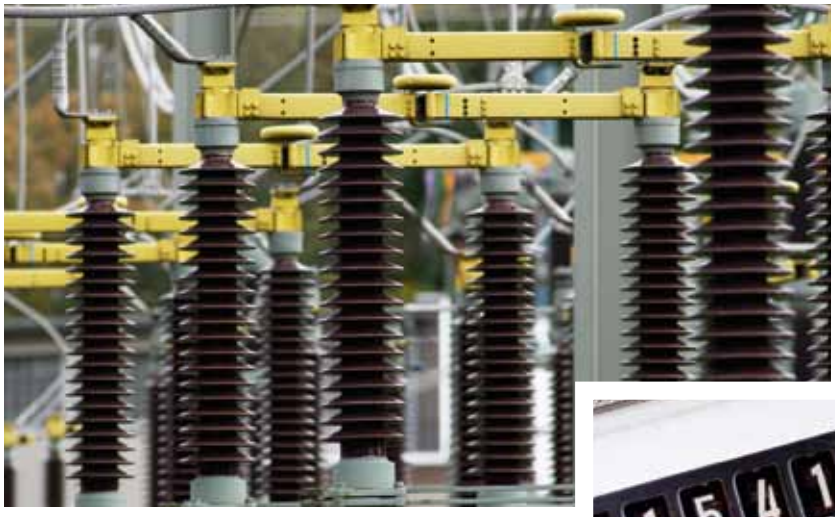
System
RMT5.0 Gateway

Which Telit module do you use and why?
We chose the GL865 because of its quality, size and price.

Benefits
The RMT5.0 is a reliable, safe telemetry product designed to be attached to energy meters. The main benefits are:

- GPRS communication (MP2P, P2P)
- 26 internal alarms
- Open integration interface with MDM software
- Anatel (Brazilian Agency of Telecommunications) approved
- Camera Interface

RMT5.0



”Telit's GL865 module is reliable and has a small footprint. This enables our product, the RMT5.0, to maintain quality at a low cost.“
Felipe Fulgêncio, *CEO M2M Telemetria*

>> M2M Telemetria is a company that provides innovative products and services for the Smart Grid, always aiming to reduce costs and improve security for the customers. Using the most advanced mobile data communication technologies currently available, M2M Telemetria provides AMI solutions that guarantee the total integrity of the transmitted data at the lowest cost on the market.

The RMT5.0 is a reliable, safe telemetry product, designed to be attached to meters and to provide energy readings and power consumption data to the power distributor's central monitoring systems. It employs Telit´s GL865-QUAD, which is one of the world's smallest GPRS modules; it is also very reliable and it delivers amazing performance.

The power distributors use the RMT5.0 to monitor the power consumption of their big clients, e.g. enterprises and other companies, that use a lot of energy. The equipment enables automated reading, which prevents non-technical losses that are common in Brazil. This makes the RMT5.0 a very important device; reducing the NTL – non-technical losses – is the most significant driver in the Brazilian AMI market.

Telit's support was very important during the design of this solution. Its module has a small footprint that makes it easy and cost-effective to attach to the board. In addition the price and quality of the GL865-QUAD are unbeatable. The fact that Telit provides local engineering support and manufacturing indicates the commitment of the company to the Brazilian market.

Advanced Metering Infrastructure technology is widely used in Brazil by the power distributors to monitor their big clients and prevent non-technical losses. This sector represents a huge market in an economy that is growing at a healthy rate. Brazil is still behind on providing smart reading to the average consumer, but plans are already in place to make this happen. M2M Telemetria has already made a significant impact on the Brazilian Smart Grid sector and we will continue to provide up-to-date technology to this expanding industry.

Visit www.m2mtelemetria.com.br for more information on this and other products. <<

FA-40: THE FUTURE OF REMOTE METERING

GC864-QUAD-V2
GSM | GPRS
ME50-868
Wireless M-Bus

FACTS

CB Svendsen a/s
www.cb-svendsen.dk

System

FA-40 is a remote metering unit employing GPRS/GSM/SMS

Which Telit module do you use and why?

We use the GC864-QUAD-SIM-V2 and the ME50-868. We chose Telit due to the trustworthy support of the local representative and the technical support team.

Benefits

FA-40 is the newest remote metering unit from CB Svendsen of Denmark, created for reading and logging data from heat, electricity, water and gas meters.

FA-40

"Based on our thorough technical evaluation in 2007 of available GSM modules and the companies behind them, the GC864 from Telit was selected. This has been an exceptionally good decision: the GC864 has performed on such a high level that we almost forget its existence, even though it plays a vital role in our AMR-products. All modules have worked from day of delivery and almost none have run into errors – based on statistics from a nice 5-digit number of GC864s deployed in the field."

Peter Schultz, *Head of RMR Department at CB Svendsen A/S*

>> FA-40 is the newest remote metering unit from CB Svendsen of Denmark, created for reading and logging data from heat, electricity, water and gas meters.

FA-40 is the sixth-generation of GSM/GPRS/SMS based remote metering units. They enable a new way of combining easy installation, fast data transmission with the main IT/database system(s), and direct wired and/or wireless communication to a large number of meters. The FA-40 can also provide pulse capturing from pulse-based meters, analogue signals, relay output and flexible data logging to three independent data-loggers.

FA-40 is a complete unit. The basic configuration comprises: a quad-band GSM/GPRS modem; three independent data-loggers; two wired M-bus master ports; one flexible meter interface (supporting both M-Bus and a long line of manufacture defined interfaces); and two inputs for S01 pulses, power supply and antenna.

Collecting data, setting up parameters and even software updates are done through the integrated quad-band GSM/GPRS modem, which allows data to be transferred through GPRS, V110 and SMS. Data logging is done with respect to the EDIEL-standard including EDIEL marking of data. Logging of serial data, pulses and/or analogue signals can be freely mixed.

FA-40 is delivered preprogrammed with a number of serial meter drivers that support the protocols of different manufacturers. Changing drivers is easily done using SMS. The installer can verify the communication between meters and the FA-40 using SMS; no assistance from personnel at the IT center is required. FA-40 contains a unique wired M-Bus driver, which can read M-Bus based meters directly ("plug and play") without the need of encoding any information into the FA-40.

Option: Wireless M-Bus master. FA-40 offers the possibility of mounting an internal option module. It can, for example, be a simple module with two analogue inputs (0(4)) to 20mA), two relay outputs and four inputs (pulse inputs after S01 norm or digital on/off input). Alternatively it can be more advanced, e.g. employ a Wireless M-Bus that creates a powerful Wireless M-Bus master with data logging capacity. <<

ENERGY
Expert's Outlook

ICT ACHIEVES A SMART ENERGY FUTURE

FROST & SULLIVAN

Yiru Zhong, *Frost & Sullivan*

www.frost.com

>> The proportion of ICT spending has traditionally been small compared to that of energy systems in a utility company's assets topology. Prior to 2000, the industry average of ICT spending was no more than 5% of a company's total capital expenditure (capex) and no more than 10% in the last 5 years. The role of ICT, however, becomes more vital as the energy sector operates in a world with scarce raw resources, rising costs and increasing environmental constraints. Adding intelligence and communication links to energy assets is the way forward – ICT is the enabler of this solution, of connecting previously remote assets to the backbone of the grid, of adding intelligence to previously dumb assets, and of facilitating better, proactive or self healing decisions on energy assets. Frost & Sullivan's ICT in Smart Energy Research Practice predicts a growing weight of ICT spending in overall capex, with the share rising to 15-25% by 2030.

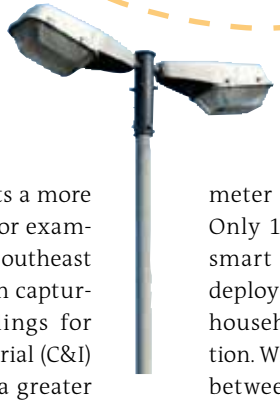
LEGISLATION DRIVES INVESTMENT CERTAINTY

The clearest and strongest driver for increased ICT investment into the energy sector is the need to comply with legislation. This gives a certainty in timings and scope of smart grid projects in North America and Europe, as reflected by smart metering projects. The European Union (EU) requires member countries to deploy smart meters to at least 80% households by 2020, provided it is economically sensible to do so. Looking at the bigger countries in the EU, countries such as the United Kingdom, France and Spain have smart meter deployment trials and plans in place. Both energy and ICT sectors rely on these large-scale roll-outs in the next 2-4 years as their base scenarios.

Larger countries such as Germany and Poland currently have a less certain timescale or scope of these projects, although the former will have a better visibility of timelines and scale by June 2013. When more certain legislation is in place, however, the timings and scope of smart grid projects allow energy companies to prioritize and define their investments. One of EU's 20/20/20 requirements is to increase the share of energy consumed from renewables to 20% by 2020. This pushes Generation Companies (GenCos) to actively investigate ways to fulfill this requirement and influence Transmission and Distribution System Operators (TSOs and DSOs) to consider the implications of integrating this new technology. As such, the flow of smart grid investments can be seen mostly from GenCos, DSOs and TSOs as they explore the first phase of ICT solutions similar to that in any green- or brown- field deployment. Follow on ICT investments are necessary as companies consider adding more intelligence to deeper and wider energy assets until all stakeholders, including the energy customers, are included in the grid.

ACHIEVING INTERNAL OPERATIONAL EFFICIENCIES CAN LEAD TO INTERESTING ICT INVESTMENTS

When energy companies are not compelled to make an investment, their capex is driven by operational efficiencies. This implies different investment



priorities and thus presents a more diverse ICT opportunity. For example, energy companies in Southeast Asia are more interested in capturing accurate meter readings for their Commercial & Industrial (C&I) customers. This suggests a greater emphasis on software and applications that more efficiently read, bill and invoice a valuable C&I customer. While there will be a need for communications services such as unified communications or an integrated customer service management for a customer call center, there is limited scope for new infrastructure rollout as could be required in Europe.

Energy systems in Japan are already highly automated and prior to the Fukushima nuclear disaster, rarely faced generation energy storage issues. The fallout was so significant that it changed investment attitudes completely. For example, TEPCO now has an accelerated plan for smart meter deployment to households. Only 1 million households have a smart meter; TEPCO's target is to deploy 17 million by 2022 to allow households to see their consumption. With a greater risk of imbalance between demand and supply post Fukushima, TEPCO now has a great appetite for wider automation across all functions, but especially at the household level. A pressing need to enable Demand Response will boost ICT investment that processes and utilizes the greater volume of data flows across a wider spectrum of stakeholders. Learning from the disaster, we predict the sector will actively consider a higher density of sensors to further integrate the information flows with the energy grid. In such an event, there will be a strong need for a secure Internet capable of processing large amounts of data from sensors to computing servers.

THE FUTURE ICT ARCHITECTURE IN SMART ENERGY WILL LOOK VERY DIFFERENT

The different patterns of investment reflect the industry's opinion that no one knows what the future of smart energy will look like. We predict the energy sector to be one of the first industries to embrace the concept of the Internet of Things. Any object that can be connected and makes sense to be connected will be connected. This ensures that both energy and information flows are processed to constantly optimize the energy grid and enable all stakeholders to make the best possible decision. In the wider context of Smart Cities, there will be interoperability with such networks as broad as urban transport systems and as small as home area networks that manages a household's energy, entertainment, security and communication needs. Such interoperability implies only one thing – greater adoption of ICT solutions. <<

CASE STUDY

ENABLING FAST AND RELIABLE CONNECTIVITY

HE910-G
UMTS | HSPA+

FACTS

Amper S.A
www.amper.es

System

P3G-ARM; 3G Gateway Network access with voice/data

Which Telit module do you use and why?

Amper uses the HE910-G module because of its reliability and high performance, its small size, low power consumption and advanced connectivity features.

Benefits

- 1 WAN inferface, 4 LAN interfaces
- 1 USB 2.0
- DECT interface: Up to 5 handsets can be registered
- 1 FXS interface
- Wi-Fi interface 802.11 b/g/n with security (WEP, WPA), up to 6 SSIDs
- HSDPA 21 Mbps download and HSUPA 5.7 Mbps upload
- Internal battery

"Good quality, great support and satisfied customers are assured for Amper, who employ Telit's high performance module in our 3G Gateway."
Alfredo González, *Product Manager*

Company profile

Amper is a Spanish multinational group that is committed to innovative engineering and excellence. The company operates in Europe, Africa, Asia and America, the focus being on defense, communications and security activities. The headquarters are in Spain, Brazil and Miami and there are 38 offices in 19 countries. The communications activities include engineering projects such as the integration & maintenance of communications networks for Telecom Operators.

Challenge

The development of the P3G-ARM started with the idea of enabling usage of broadband telecom services for users who don´t have easy access. The idea was to provide the same services as users having ADSL lines.

The project involved the development of a 3G Gateway terminal based on UMTS/HSDPA technologies for homes, small businesses, including farms, and SOHO´s that don't have easy access to broadband services because of their geographical location. In addition the gateway would provide similar Internet connectivity to existing wireline access.

There is an increasing demand for access to broadband services such as email, chat, videoconferencing, surveillance services, IP telephony, etc. Due to the bandwidth requirements of these services only copper pairs, optical fiber or third generation wireless services can provide them.

Solution

After an extensive survey, Amper chose Telit because of its leadership position, its experience, and the large portfolio of modules and services.

The module we selected, the HE910-G, is an integrated solution that includes features like HSDPA 21Mbps (Cat 14), HSUPA 5.7Mbps (Cat 6), EGPRS Class 33, digital voice interface, and circuit switched data transfer. It was ideal for the company's 3G Gateway. It's a penta-band solution (UMTS/HSPA+), so the same module may be used in several different countries.

Other reasons for choosing this module include: small size; compact design that saves space and weight in our device; RoHS compliant; low power consumption; and the support provided by Telit.

After selecting Telit's solution, the development phase went as follows:

- ➜ Analysis of customer´s requirements and technical functionality.
- ➜ Hardware and Software design using Telit development module.

P3G-ARM

- ➜ Mechanical design making a user-friendly housing.
- ➜ PCB fabrication.
- ➜ Prototype assembling and electrical and functional testing.
- ➜ Customer evaluation.

The 3G Gateway was then ready for field trial and mass production. Modules are well documented, so Amper only needed Telit's AT commands.

Benefits

- ✔ A single device for covering all voice and data communications.
- ✔ P3G-ARM is a gateway that allows Internet access via its WAN interface as well as 3G cellular networks. The 3G modem is embedded inside the device.
- ✔ The voice service is based on an analogue phone connection to the FXS interface or a wireless communication based on the DECT/GAP standard.
- ✔ Suitable for environments where mains power is not stable. The gateway supports both the mains as well as an external DC voltage (high-capacity battery, solar panels, etc.). In addition there is an integrated backup battery in case of power failure.
- ✔ An ideal device for situations where Internet access is needed. It can be used as a Wi-Fi access point when there is no cable network and as a mobile office in residences and small businesses.
- ✔ An all-in-one solution for: Internet access; voice calls using cellular network access; Wi-Fi access; and DECT voice communications.
- ✔ It's a small device that is easy to use and only requires the SIM card.

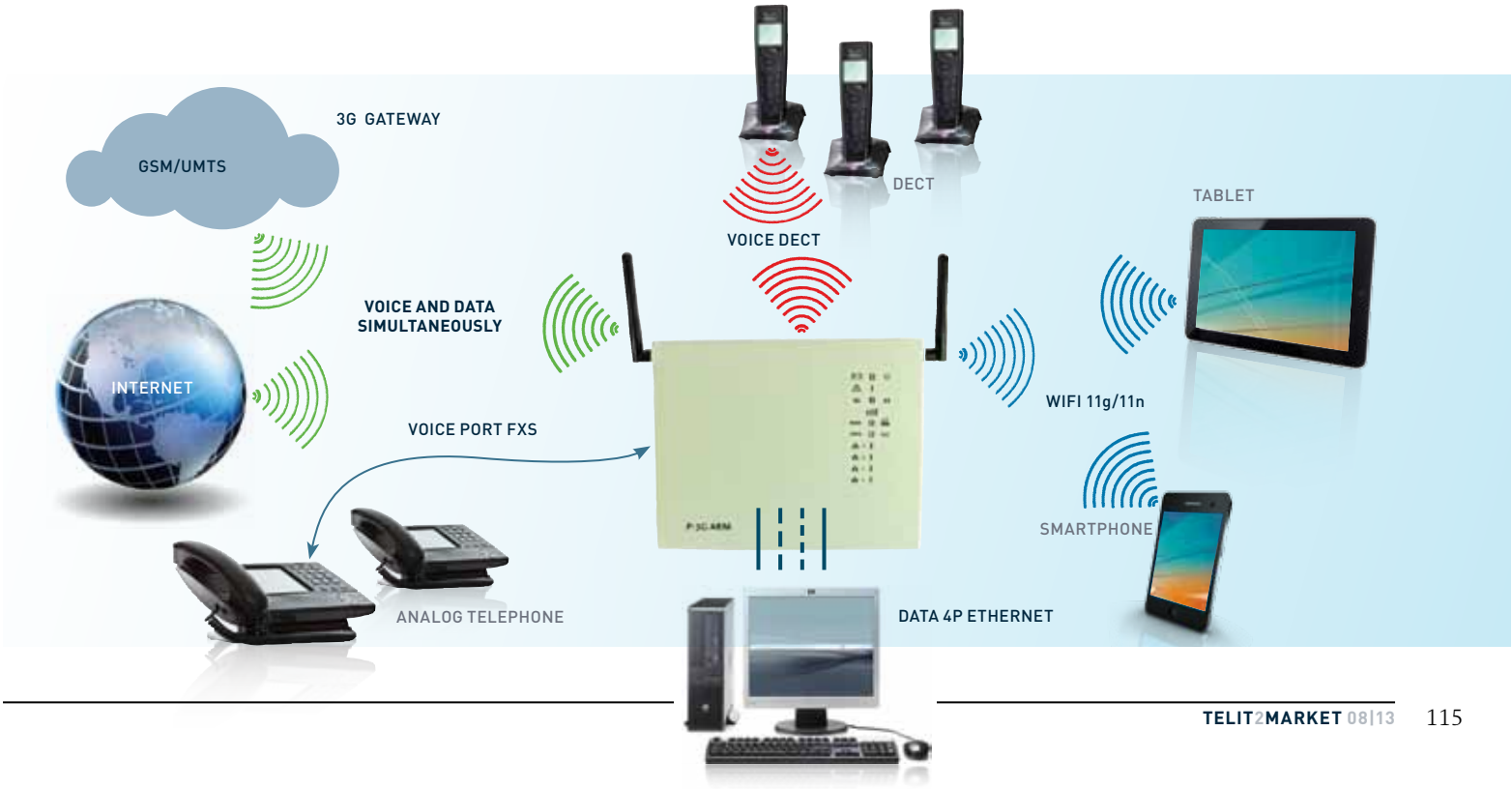
Features

WAN

Cellular network interface:
850/ 900/AWS/1900/2100 MHz.
HSDPA download 21 Mbps and HSUPA upload 5.7 Mbps (HE910G Telit module)
SIM card slot

Voice interfaces:
- FXS for analogue phone connection or
- Base station DECT/GAP

Data interfaces:
- 4 LAN ports
- Access point Wi-Fi 802.11b/g/n
- Interface for printer or memory USB 2.0
- Wi-Fi and DECT internal antenna and SMA connector for 3G
- Internal battery <<



NAYAX

SAFE AND CASHLESS PAYMENT 24/7

GC864-QUAD V2
GSM|GPRS

FACTS

Nayax
www.nayax.com

System

Nayax's Nayaxvend Cashless Payment solution

Which Telit module do you use and why?

We use the Telit GC864-QUAD V2 module due to its ultra-compact design and extended temperature range.

Benefits

The cashless payment system for vending machines eliminates sales barriers, such as the lack of coins and change. The system allows payment with all forms of credit, debit, prepaid and post-paid cards. In addition it provides better control of the machines as alerts are sent to the control center in case of unexpected events.

Nayax Card Reader

Nayax M2M Control Device equipped with a Telit module

> We chose Telit's modules due to their very high performance and reliability, enabling us to provide our customers with best-in-class solutions at the forefront of technology.“ **Yair Nechmad,** *Founder of Nayax*

>> Nayax, a world leader in cashless and telemetry systems, selected Telit's wireless modules to enable cashless services for vending machines operated in Scandinavia by Selecta Nordic.

Nayax's Nayaxvend Cashless Payment solution, which integrates Telit's GC864-QUAD V2 compact module, provides vending machine operators with wireless cashless payment services. A solution that is installed at each vending machine, Nayaxvend is compatible with all forms of credit, debit, prepaid and postpaid cards, and can be used in contact, swipe and contactless transactions. The Nayaxvend Cashless Payment solution provides a wide array of alerts and notifications that can be received by SMS or email.

Selecta Nordic operates numerous vending machines in Sweden, Norway, Denmark and Finland. So far, the combined Nayaxvend-Telit solution has been installed in 200 vending machines in Scandinavia, with additional machines to be equipped with the combined solution in the coming months.

"Using the cashless solution helps us increase revenues and decrease operational costs," said Catherine Sahlgren, Managing Director, Selecta Nordic. "The cashless payment system eliminates sales barriers, such as the lack of coins and change, and provides us with better control of the vending machines."

The Telit GC864 product family is one of the smallest GSM/GPRS quad-band modules with industrial connectors on the market. With its ultra-compact design and extended temperature range, the GC864-QUAD V2 is the perfect platform for medium-volume m2m applications and mobile data devices. Additional features, such as an integrated TCP/IP protocol stack and a serial multiplexer, provide extended application functionality at no additional cost.

According to Nayax, the US vending machines market comprises 5 million machines with annual sales totalling $22 billion. The number of vending machines in Europe is 4 million, generating annual sales of $10 billion.

Nayax solutions have been installed in thousands of vending machines scattered throughout Europe, the US, UK, Africa and Scandinavia. <<

HIGH BANDWIDTH LEASED-LINES WITHOUT CABLING

H24
UMTS|HSPA

FACTS

Dytecna
www.dytecna.co.uk

System

The CELL RiG by Dytecna is a 3G bonded wireless link that provides remote corporate sites, rural business locations and temporary sites with the ability to quickly and cost effectively establish dedicated, secure, high bandwidth leased-lines without the need to install expensive cabling. Using Telit SIMCard modules, CELL RiG combines up to four cellular Internet connections and connects them to a single LAN.

Which Telit module do you use and why?

H24 Advanced. HSPA and GSM features are used in our system. It was selected following technical and commercial discussions between Dytecna and Telit.

Benefits

The CELL RiG 3G Bonding unit offers end users a method of rapidly establishing private leased lines and private networks and is a cost effective alternative to fixed wire leased lines. Customers see an immediate return on investment and improved network reliability.

”Telit provided us with excellent hardware support when integrating their module into our product.“
Stephen Hughes, *Electronics Engineer*

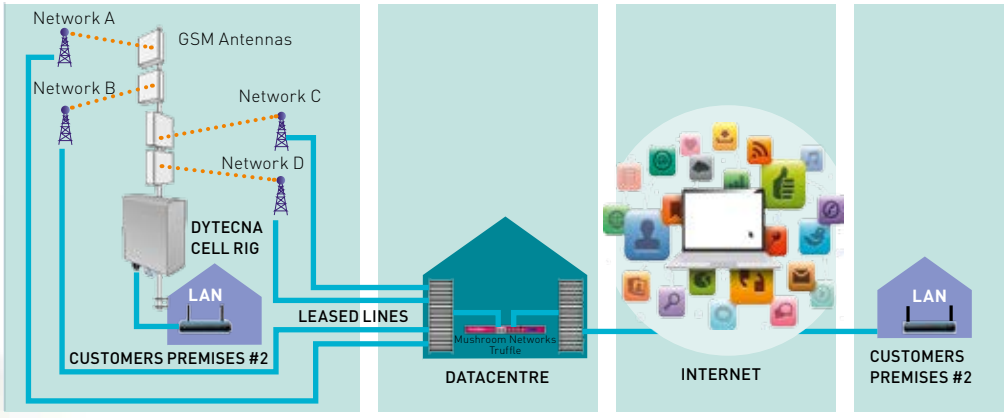
>> The demand for the CELL RiG was highlighted by a number of Dytecna's customers who were experiencing great dissatisfaction from their 'air-time' customers at the lack of available cost-effective, reliable, fixed leased lines. Although these customers were predominantly small to medium sized businesses having a fixed infrastructure, Dytecna also saw the potential for this unit in other market sectors such as disaster recovery and temporary installations such as construction sites, where private wireless networks could be rapidly, easily and cost effectively established.

In developing the system we sought an m2m module partner who could deliver highly reliable, high performance, cost-effective modules in the large quantities required, whilst providing a high degree of technical support. The Telit H24 module was selected for these reasons and the excellent technical support provided by Telit enabled Dytecna to design, develop and test the CELL RiG product to a standard ready for manufacture in only a few months. The availability of the Telit H24 module in production volumes was seen as a major commercial advantage for the Dytecna CELL RiG 3G bonding unit. Systems are now in live trials with customers in a number of geographic areas and Dytecna is starting to receive requests for large volume manufacture. <<

The main benefits

- Rapid deployment and simple installation
- Minimal disruption and no-down-time
- Passively cooled so it has a high degree of reliability
- End customer has control of a flexible and dedicated service
- High level of redundancy due to use of a number of different operators and links
- Uses low cost standard data tariffs from a range of wireless operators
- No long-term operator contracts or agreements
- Offers improved reliability and far lower latency compared to satellite Internet
- CE Marked

CELL RiG Network Diagram



ROUGH ENVIRONMENT – RELIABLE COMMUNICATION

HE910-EUR
UMTS|HSPA+

FACTS

Winmate Communication Inc.
www.winmate.com.tw

System

E430 Series PDA

Which Telit module do you use and why?

In addition to the HE910's size and performance features, Telit provided timely delivery and good back-up services.

Benefits

- Default Android 2.3.4
- Microsoft® Windows Mobile® 6.5 Professional and Windows CE 6.0 (Optional for E430T Series)
- 5 megapixel digital camera with LED auxiliary backlight
- 2 megapixel digital camera at front side
- Light weight for portable
- IP66 Dust & Water Protection
- Compliant with MIL-STD-810G Standard

E430 Series PDA

"We went through a host of potential suppliers before selecting Telit. Their quality modules were used in the development of industrial PDAs that achieve maximum performance in outdoor environments."
Michael Lee, *Product and Marketing Dept. Manager*

>> Founded in 1996, Winmate Communication is a leading industrial solution provider in LCD, embedded computer, and mobile relevant technologies. The headquarters, R&D facility, and production lines are located in Taipei, Taiwan. In addition to the well-known industrial display solutions, Winmate has expanded its product line to digital signage, embedded panel PC, rugged mobile tablet PC, and handheld devices. Everything is marketed worldwide. In addition the company has focused its product design capability on niche markets such as marine, military, logistics, medical, and other industrial mobile applications.

When Winmate went through a host of potential suppliers to develop industrial PDA - E430 Series, Telit's quality modules stood out. The company's E430 Series PDA is an enterprise-class device that performs as a powerful mobile computing solution. This PDA brings a new level of flexibility, functionality, and rugged design to pocket-sized mobile devices, providing task workers and managers with the power to streamline business processes, increase productivity and improve customer service.

To achieve maximum performance in outdoor environments, industrial PDAs need to be compact and rugged enough for applications such as public security, natural resources, agriculture, and GIS. After careful assessment, Winmate selected Telit's HE910 module to be used on its ARM-based motherboards, which form the key part of industrial PDAs.

Good price performance and the requisite certifications, e.g. IMEI numbers, were two additional reasons for our decision. Winmate has replaced the products of earlier suppliers, which is a testament to Telit's competitive edge in terms of product and service.

Winmate places great importance on the component suppliers' time of delivery and back-up services. Aside from HE910's advantages of size and performance, Telit provides comprehensive and responsive in-time support. This was another key element that contributed to Winmate's decision to source from Telit. The company's collaboration with Winmate, which currently centers on ARM-based products, is likely to extend to other product categories in the future. <<

CONNECT REMOTE COIN-VEND AIR COMPRESSORS WITH CUSTOM M2M SOLUTION

CC864-DUAL
CDMA|1xRTT

FACTS

Digi International
www.digi.com

System
Digi Professional Services

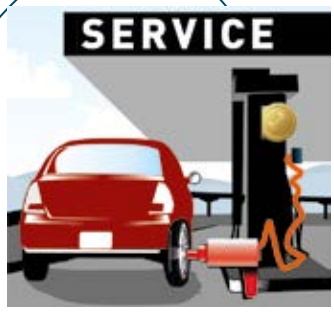
Which Telit module do you use and why?
Digi selected the Telit CC864 for this project. Digi chose this module because it is a mature product that has demonstrated reliability in numerous customer deployments.

Benefits
Digi combines products and services as end-to-end solutions to drive business efficiencies. Digi provides the industry's broadest range of wireless products, a cloud computing platform tailored for devices, and development services to help customers get to market fast. Our entire solution set is tailored to allow any device to communicate with any application, anywhere in the world.

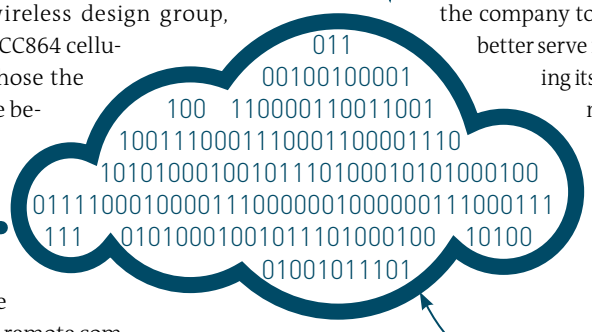
Remote monitoring system helps coin-vend air compressor company improve uptime, reduce shrinkage

"Telit provided outstanding support throughout the entire development process."
Matthew C. Jennings, *Vice President of Digi Solutions Group*

A national coin-vend compressor company maintains tire inflation pumps at more than 50,000 locations throughout the U.S. The broad distribution of its compressors makes maintenance and oversight of coin collection difficult. To overcome these issues, the company turned to Digi International for a remote monitoring solution. Digi worked with the customer to identify its business issues and develop a custom m2m solution. The system includes a board developed by Spectrum Design Solutions, Digi International's wireless design group, featuring the Telit CC864 cellular module. Digi chose the Telit CC864 module because it is a mature product that has demonstrated reliability in numerous customer deployments. The board connects the remote compressors to a Digi designed reporting application hosted on the iDigi Device Cloud. Digi handled every aspect of development including bundling the cellular data plan with application hosting.



The end-to-end solution provides visibility into daily machine revenue and compressor cycles. Air compressors send data daily regarding coins collected and compressor cycles to the custom application. This information allows the company to generate revenue reports by customer, region and service technician with ease. Additionally, if a compressor is not reporting revenue, alerts are generated notifying the company that the machine is down to minimize downtime. Since the application can also track coin collection by technician, accountability is improved. It can also alert the company if customers are using equipment in a non-traditional way. This is done by comparing compressor cycles with coins received and reconciling service with revenue. The remote monitoring system allows the company to increase revenue and better serve its customers by ensuring its machines are properly maintained. It is also increasing visibility of revenue to improve efficiency and limit shrinkage. <<



www.m2mapps.com

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SVANTEK

HIGH SPEED NOISE MONITORING WITH M2M

H24
UMTS|HSPA

FACTS

SVANTEK
www.svantek.com

System

SV 200 Noise Monitoring Station

Which Telit module do you use and why?

We chose the H24 because it is a high-speed 3G modem with a built-in TCP/IP stack and four frequency ranges that enable worldwide usage

Benefits

SV 200 is a fully integrated solution for unattended noise monitoring applications. The system is specially designed for easy installation. It is small, lightweight and easy to install by a single person.
The measurement capabilities of the SV 200 are optimized for noise monitoring applications. It measures and stores results suitable for automatic reports and advanced post-processing.

SV 200 Noise Monitoring Station

”We decided to use the Telit H24 module due to its small size and low energy consumption.“
Krzysztof Kołtyś, *Sales & Marketing Director*

>> Established in 1990, SVANTEK designs and manufactures high-class instruments for professional sound & vibration measurement and analysis. The company's sales office and production site are located in Warsaw, the capital of Poland, the SVANTEK sales network covers all continents and includes more than 40 partners.

In 2005 SVANTEK launched the first noise monitoring system, the SV 210C, which comprises two parts weighing around 17 kg. From that moment it was a challenge to build an integrated system that would be more portable and have lower power consumption. Because remote communication is one of the most important features of unattended monitoring systems there was also a need for a high-speed GSM modem.

The experience gained in recent years in continuous noise monitoring enabled the company to design the SV 200 Noise Monitoring Station, a fully integrated solution for unattended noise monitoring applications.

The SV 200's communication capability is provided by an integrated low-power 3G modem, the Telit H24. The implementation of an advanced and highly reliable data communication protocol gives the user full control of the station, easy to use data transmission, real-time data results and live audio streaming. Remote configuration and data management can be done with Web based tools or server based tools.

Both types of station management tools can be used at the same time, which allows the SV 200 user to:

- use a mobile phone or tablet to watch real-time measurement results, manually download files and reconfigure the station,
- use the SvanPC++_RC application based on MS Windows® for automatic control of the noise monitoring stations, data archiving, automatic web publication, etc.

Measurement capabilities of the SV 200 include multi-profile data logging, real time 1/1- and 1/3-octave logging, audio event recording and statistical analysis. All measurement results are securely stored on the built-in 16 GB memory. The SV 200 is also equipped with an interface for meteorological sensors. <<

CASE STUDY

THE INTELLIGENT RADAR DETECTORS

Jupiter JN3
GPS

FACTS

ESCORT Inc
www.escortinc.com

System

9500i, 9500ix, GX65 & Bluetooth Radar Detectors

Which Telit module do you use and why?

The short answer is that we are using the NavMan Jupiter 30 or Jupiter JN3 in all of our GPS enabled radar detectors.

Benefits

The PASSPORT 9500i's new revolutionary GPS-Powered feature, TrueLock™, solves the number one complaint of detector users – false alerts. Incorporated into its design is a GPS module that allows the detector to know where it is at all times. AutoLearn™ allows the detector to store a false alert in memory by location and specific frequency, thereby eliminating false alerts permanently.

9500i

"Telit has been very supportive of our use of their modules (Navman) in several of our leading mobile electronic products, which include the world's most intelligent Radar Detectors, the ESCORT PASSPORT 9500 series." **Ron Gividen,** *PR Director*

>> ESCORT is recognized as an innovator and leader in its sector. The company developed the world's first Internet-ready GPS based radar detectors – the PASSPORT 9500ix windshield mount model and the PASSPORT 9500ci custom-installed version.

Using Telit products, ESCORT has established a new technology standard by introducing its patented AutoLearn™ feature, which uses GPS technology and artificial intelligence (AI) to analyze all incoming signals and eliminate false alerts by automatically indexing their exact location and frequency, AI makes the PASSPORT 9500 series radar detectors the most accurate and intelligent radar detectors in today's market. <<

SECURE AND FAST VOUCHER TRANSACTIONS

GE865-QUAD
GSM|GPRS

FACTS

Smart.Net
www.smartnet.com.br

System

SmartWave terminal for voucher transactions

Which Telit module do you use and why?

GE865-QUAD, because of previous usage of other module manufactured by Telit.

Benefits

The SmartWave terminal enables card-to-card transactions: secure and fast transactions plus usage of a modem for online transactions. The terminal is portable and powered by a rechargeable battery.
A unique feature of SmartWave terminal is the ability to perform offline transactions with eventual online synchronization with authorization hosts, thereby opening up a new way of rapidly building networks that capture voucher operations

SmartWave

”We appreciated the prompt technical support of Telit professionals.“
Joao Marson, *New Technologies Manager*

>>Smart.Net is part of the VR Investimentos group. It's the technology arm that offers solutions for transaction and information processing. We developed the Smart.Net system in order to meet the needs of low-value, high volume transactions in specific networks in an efficient, distributed way.

Smart.Net is a leader in benefits processing, with about 5 million active cards and more than 700 million transactions annually. In 1998, it was initially built to provide solutions for meal cards and evolved during the years to become the largest provider of benefits cards processing in Brazil.

Smart.Net features an integrated platform with single customer view for: registration, processing of applications, transactional processing plus billing and reimbursement.

The network of accredited merchants for VR vouchers amounts some 125,000 units in Brazil.

A unique solution

Meal vouchers are widespread among Brazilian employees of all grades. The program for these types of vouchers is covered by official tax breaks. Most vouchers are deployed using cards, either magnetic or smartcards.

The online authorization of these in restaurants during lunch hours has introduced the problem of waiting queues.

The offline operation has been pioneered by Smart.Net to make fast transactions.

Traditionally offline transactions are performed between two cards, where some value is debited from the customer card and credited to the merchant card. Eventually the merchant has to remove his card and upload transactions for clearance. This is performed by self-service terminals (kiosks, wall mounted POS or Internet using a smartcard reader). The merchant card contains a SAM module, which provides all cryptography for performing transactions in a secure way.

In order to evolve the offline terminal, SmartNet has engaged in the design of a new device including GPRS communication capability as well as other new features. This terminal is now in production, named SmartWave, and it uses a Telit modem.

With SmartWave the merchant may upload transactions using GPRS, which are stored on an internal SIM card.

Additionally, customer can load pre-paid funds to their card online by employing SmartWave's GPRS capability. <<

CONSUMER PROFESSIONAL

Expert's Outlook

WEARABLE TECHNOLOGY

MARKET SET FOR HIGH GROWTH

IHS has acquired IMSresearch

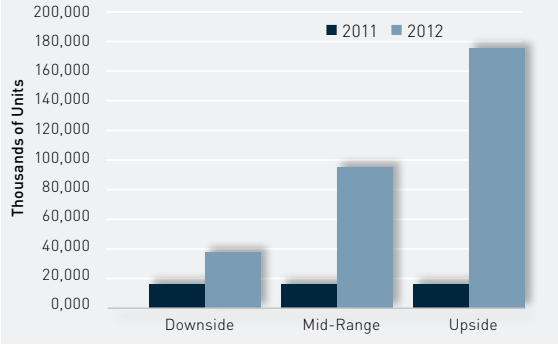
www.imsresearch.com

Theo Ahadome, *IMS Research*

>> The market for wearable technology is on the fast track for growth, with the number of devices shipped set to expand by a factor of 12 by 2016, according to a recent IMS Research report from information and analytics provider IHS.

In 2011, 14 million wearable devices were estimated to have been shipped. However, by 2016, IHS believes the number of wearable devices available will grow to somewhere between 39 million and potentially 171 million, depending upon a number of scenarios, as shown in this figure.

World Market for Wearable Technology Unit Shipments – Forecast Scenarios



Wearable technology products, which are worn on a user's body for an extended period of time, significantly enhance the user experience. They employ advanced circuitry, wireless connectivity and have an independent processing capability. Wearable technology fits into four different categories: fitness and wellness, healthcare and medical, industrial and military and infotainment.

Fitness and wellness wearable technology products are used to monitor activity and emotions, such as a body motion patch that is simple device attached to the body for evaluation of weight management and monitoring calorie burn. The data then can be gathered on a smartphone or computer.

Healthcare and medical devices monitor vital signs and augment senses such as continuous glucose monitors that are devices that are worn on the hip with wires connected to the body in order for users with diabetes to understand the level of their glucose in real-time to determine if it is rising or falling, thereby allowing a person to prevent it from going too high or too low.

Industrial and military technology receives and transmits real-time data in military or industrial environments. The devices can be hand-worn terminals that look similar to smartphones but are used to relay information in real time to a network in another location for vehicle repair, or logistics or warehousing.

Vita

Theo Ahadome is a senior analyst for medical research at IHS. For media inquiries on this article, please contact press@ihs.com. For non-media inquiries, please contact enquiries@imsresearch.com

Infotainment technology is used to receive and transmit real-time information for entertainment and an enhanced lifestyle purposes. Devices such as smart glasses – Google recently released its own brand of smart glasses in order to bring the functions of a smart phone in a glasses format – can allow you to surf the Internet, take and share images, update Facebook profiles and even make phone calls and text.

WEARABLE SCENARIOS

The low-end forecast presumes wearable technology will be limited by factors such as lack of product availability, poor user compliance and a lack of overall enhanced experience. Still, even with these issues, we believe 39 million wearable devices will be shipped by 2016 – a nearly three-fold increase from 2011.

The mid-range scenario presumes there will be limiting factors such as lack of reimbursement in medical applications, lack of product introductions by major suppliers and improved functionality of non-wearable devices. However, this more reasonable adoption scenario means 93 million wearable devices will be shipping in 2016 – a 6.6 times increase from what was shipping in 2011.

The optimistic scenario is one where significant progress and success has been made in wearable technology, including introduction of new products and widespread availability from major brands. In this scenario we believe 171 million devices will shipped – a whopping 12-fold increase from last year.

These scenarios reflect the uncertainty in the long-term future of wearable technology and the varying factors that affect future outcomes.

WEARABLE APPLICATIONS

Last year, the highest revenue generating areas for wearable products were in the healthcare and medical and fitness and wellness segments.

Among these segments, continuous glucose monitors were the highest grossing devices for revenues. The need for continuous data on blood glucose levels, particularly Type I diabetes patients, is becoming critical to treatment of the disease. Medtronic, Abbott and Dexcom are the companies playing heavily in this field.

In the low-end forecast, the healthcare and medical and fitness and wellness areas are expected to continue to account for the highest share of revenues until 2016. In the mid-range forecast, infotainment would overtake fitness and wellness as the second largest application area in terms of revenue, driven by robust growth in the smart watch market. Healthcare and medical will continue to be the largest application area in both forecasts.

However, in the upside forecast, infotainment is projected to account for the largest revenue share – with 38 percent – in 2016, driven by the uptake of smart watches and smart glasses.

Currently, the United States is the leading region for wearable devices. This won't change in any time soon as IHS forecasts the U.S. will continue to be the largest geographic region for wearable technology through 2016. Europe is increasing its share of revenues for wearable devices and will be the second largest region for wearable devices by 2016, most notably in the healthcare and medical application area, as healthcare providers are expected to respond to success cases in the U.S. In the rest of world, Japan is expected to constitute the major market particularly in the infotainment area.

To learn more about this topic, please visit:
www.imsresearch.com <<

SECURITY
Expert's View

SECURITY EVOLVES FROM THE MAN-AT-THE-GATE TO THE INTERNET OF THINGS

Jeremy Cowan, *Editorial Director of M2M Now Magazine*

www.m2mnow.biz

>> For business premises in particular, security and safety services have come a long way in recent years, and the role of machine-to-machine (M2M) communications in that change should not be under-estimated.

According to Machina Research there will be more than 24 million security alarms globally by the year 2020 with a wireless wide area network (WWAN) as their primary connection, compared with fewer than 3 million today.

So it is perhaps no surprise that the GSMA, which represents almost 800 mobile network operators worldwide, is also keen to highlight the impact that wireless services have had on m2m security services. Writing in the global magazine, M2M Now (August/September 2012) Ana Tavares de Lattibeaudiere, the head of Connected Living, said: "The rising demand for mobile connectivity is being driven by a growing awareness that security systems need to have a robust connection to deter thieves and vandals.

Ana Tavares de Lattibeaudiere

"As well as being able to send alerts, a broadband connection can be used for remote video surveillance, supported by wireless sensors directing cameras towards intruders," she points out. "If a burglar spots a 'connected security' sign in a window (and while stopping to look at the sign, a security camera spins around to look at the reader), it is far less likely that a break-in will occur."

The range of m2m security applications is wide and growing. They include remote monitoring, status reporting, error detection, fault resolution, content display, usage-level tracking, workforce management, location and positioning of high value goods and – in safety applications – people, too.

Blake Kozak

Security and safety solution providers are finding customers in businesses as diverse as consumer electronics, utilities, retail, healthcare, financial services, telematics & transportation, industrial monitoring, and remote home automation. These industries are already leveraging wireless connectivity for both enterprise and consumer environments.

It's not just business premises that are benefiting, however. According to a new research report, The Americas and EMEA Markets for Home Fire and Security Equipment: "Telecommunication companies and utilities play an important role within the home, with bundled offerings now becoming the industry norm. Historically, security equipment was standalone from other devices commonly found in the home, requiring a separate installation and a different monthly fee," says Blake Kozak, report author and senior analyst at IMS Research. Now, however, customer needs are changing.

"Increased demand for bundled home services, coupled with the further uptake of smartphones, has created a new platform for vendors of security equipment who are relishing new market opportunities and finding new ways to take the penetration of security equipment well beyond the common adage of 20 percent."

Go to market

So, which other companies are active in this space?

Securitas Direct Spain signed a partnership agreement with wireless network operator Orange in 2011. Orange Spain and Securitas Direct agreed to jointly offer security services and tools for remote monitoring of business premises and homes.

Subscribers to Orange's ADSL internet services also received a free report on a survey of home security needs carried out by Securitas Direct. Customers who took up Securitas Direct's security services received an exclusive discount for a home alarm installation, while Securitas Direct customers who subscribed to Orange's broadband internet services received a 10 percent discount on the first year's charges.

Remote security systems including fixed sensors in remote, dangerous or particularly sensitive areas, are an obvious application of machine-to-machine communications, says UK-based Cellular Solutions. Users who move to a wireless telemetric approach to security negate one of the intruder's favorite techniques, which is cutting the standard phone line attached to the alarm system. A remote m2m security solution allows your premises to remain protected.

Fire and security patrols tasked with protecting large geographic areas such as industrial sites or college campuses can particularly benefit from wireless security telemetry. Alarm locations can be sent directly to personal mobile phones using text messages, and a remote security system can dispatch help immediately instead of relying on a human monitor to relay calls to the security staff.

Guarding the guards

It's not just premises and people that need to be secured, of course. There is a challenge in maintaining the security of m2m connections themselves. This is a large subject that will be addressed soon in M2M Now magazine. But among the organizations already involved in this task are ETSI, GSMA, TIA and The Cloud Security Alliance.

There is a role here for businesses as well as industry groups. Mocana, established in 2004, provides what is claimed to be the only device-independent security platform that secures all aspects of mobile and smart connected devices, as well as the apps and services that run on them. Security Detail Suites are based on the Mocana Smart Device Security Platform™ (SDSP), an extensible software and services framework that secures all aspects of data and communications for any connected device.

Millions of people today use products sold by the more than 200 companies that deploy Mocana's solutions, including Cisco, Honeywell, Dell, GE and General Dynamics, as well as four of the top five Android handset makers.

Ignoring security can increase costs, reduce reliability, and pose safety hazards. So solutions to enhance security will help to design, manufacture, and market secure m2m applications with greater confidence. <<

Vita

The author, Jeremy Cowan, is Editorial Director of M2M Now magazine and Co-Founder of WeKnow Media Ltd (WKM), its parent company. As 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 print and online machine-to-machine communications (M2M), embedded devices, connected consumer devices, smart grids & metering, and the Internet of Things.

SECURITY
Expert's View

AN EVOLVING SECURITY ARCHITECTURE FOR M2M NETWORKS

Michela Menting, *Senior Analyst, Cyber Security, ABI Research*

www.abiresearch.com

>> Next-generation m2m networks are already here. IP-based broadband wireless networks are the big driver for next-generation m2m communications. Having held back from fully adopting 3G due to high data costs, the build-up of innovative ideas is exploding into a flood of next-gen applications. This change is prompted by the deployment of 4G networks, open-access platforms, sensors, RFID, smart mobile devices, cloud computing, etc. m2m is evolving into a more intelligent form of networking where scalability and flexibility are fast becoming the mots d'ordre.

From Network to Application Security

This NGN evolution will impact security in m2m networks. My discussions with experts in the field reveal that there are a number of underlying issues that are coming to light. As the number of devices grows, so will the number of networks. The problem is with the need for additional dedicated gateways. One interesting solution is forming around the idea of shared gateways for m2m APIs. An invitingly cost-efficient idea, it poses the larger issue of how to secure the different APIs from each other; sandboxing and virtualization come to mind, but as costly solutions that may not even guarantee total impregnability. The challenge will be to balance the security risks against cost considerations.

Further down the value chain, the use of cloud providers can offer another economical and flexible solution. The security question here will focus on ownership of the data residing in the cloud and attribution of liability and risk in case of breach or corruption: Is the provider liable, or is the owner of contaminated data? How can the information be effectively isolated from infection while still remaining available? It seems unavoidable therefore that future security considerations for m2m will focus increasingly on the application level. Encryption will become much more important, especially with the enhanced hardware capabilities of m2m devices.

New Models for Tiered and Multi-point Security

With a greater agglomeration of data in contained virtual spaces, and an increasing amount of connected m2m nodes scattered around the globe, new security challenges are coming into play. While data can be encrypted and firewalls can protect from external attacks, what about the transit networks? The issue is further compounded

ABI Research, established in 1990, is a market intelligence company specializing in global technology markets. Our unique blend of quantitative forecasting and trend analysis, coupled with in-depth analysis of the markets and companies that are both important today, and will be key players tomorrow, helps us to provide our clients with an unrivaled 360 degree perspective.

Our clients rely on our services to uncover key market metrics and trends that are compiled through a combination of hundreds of comprehensive stakeholder interviews per year, technical intelligence from teardowns, hundreds of years of collective market experience, vendor contributed data and end user research.

by the increasing number of different networks that can be used for m2m, meaning a similar increase in the number of security protocols. Some form of organization, most likely enabled through standardization, will be necessary to keep security from becoming a messy barrier to innovation.

Multi-point security appears to be a safe bet when considering the protection of next-gen m2m, with strong support for a tiered security system for data transmission. At the moment, however, a multi-layered security network remains costly. Few m2m providers offer such security by default, although growing demand is precipitating the offer of security services at an added premium. For organizations planning on using m2m, the data costs will form their business case for security, until such time as m2m security is mandated by regulation or becomes a de facto industry standard. <<

Vita

Michela Menting is a senior analyst working on analysis and forecasts in the Cyber Security and Mobile Security Research Services.

CASE STUDY

M2M ENABLES REAL-TIME GPS COVERT TRACKING

blacklinegps

Jupter JN3
GPS

FACTS

Blackline GPS Corp.
www.blacklinegps.com

System

Dart covert tracker

Which Telit module do you use and why?

The Jupiter module was selected for its small footprint and ability to detect even extremely weak GPS signals.

Benefits

Dart is a compact top-tier covert tracking device designed and built to exceed the expectations of even the most demanding tracking professional or private consumer. Like all Blackline solutions, Dart provides real-time GPS tracking on a map-based Web interface. Using Blackline's intuitive Business Portal, users can monitor the location and status of the device, set geo-fences, and view & download device history.

Dart Covert Tracker

"Using one of Telit's Jupiter GPS modules, Blackline has managed to secure a world-wide competitive advantage over its competition."
Brendon Cook, *CTO & Co-Founder*

Blackline provides GPS and cellular-enabled devices to a variety of industries in the form of covert/asset tracking devices and safety monitoring devices. The markets targeted by Blackline are numerous and include the energy, construction, manufacturing, security guard, policing, corrections and surveillance sectors.

Every market targeted by Blackline has specific needs in regard to device capability and as a leader in these arenas, Blackline is working towards providing tailored solutions to each industry. With end-to-end technological ownership, Blackline leads the safety monitoring and covert tracking industries in product robustness and service quality.

Challenge

With the success of the Javelin covert tracker, Blackline decided to revisit the products that it offered to private users and investigators. Dart was conceived as the answer to the need for top-tier tracking in a smaller device without the additional features offered by Blackline's professional-grade trackers.

To achieve the ideal balance of product and service, Blackline examined the needs and usage of its large covert-tracking client base. The findings showed that many device users would benefit from a broader selection of service plans as well as a product that could provide unbeatable tracking without unnecessary features such as removal detection and the large batteries like those contained in many tracking units. By combining a small device profile with premium-grade, real-time GPS tracking and offering two new service plans, Blackline's Dart will exceed the needs of both professionals and consumers worldwide.

Solution

Blackline has been a long-time user of Navman, now Telit, modules thanks to its small footprint, low power consumption, and competitive pricing. Blackline uses the Jupiter modules because of the fluid product evolution paths that are provided, as well as the competitive advantages in quality and performance offered by using such small modules.

Integration with the Jupiter modules was extremely straightforward thanks to Blackline's continued use of these products. By building on and improving previously developed firmware and hardware, development of new products is routine and nearly problem-free. Dart's development process in general was trouble-free with all subsystems (including the GPS subsystem) functioning as expected.

Product development is initiated with a product requirement assessment to determine if the needs of customers and clients can be well met. Following this, the basic hardware architecture is designed to meet these requirements. Once completed, previously designed subsystems are assembled and optimized using our ever-growing knowledge base of applications, needs, and technical opportunities.

Once the systems and subsystems have been completed, device firmware is built by modifying previous versions, allowing it to match the unique aspects of the hardware's design. After these steps have been completed, testing begins and the system is tuned, refined and optimized to attain peak performance capabilities.

The result of this fusion of technology and experience is Dart. Designed and built to meet the needs of a large and very demanding tracking market segment, Dart is ready to exceed all expectations through it's cutting-edge technological make-up, as well as with the superior service that is at the heart of the device itself.

CASE STUDY

WH Electronics Inc.

Innovative Solutions Designed for the Automotive Industry

HE910-NAG
UMTS/HSPA+

KNOWING ONE'S LOCATION THANKS TO PERSONAL GPS

"Telit helped us to take our product further by contributing new aspects and features that make the AirLoom rise above other GPS products."
Waldek Hupa, *CEO*

FACTS

WH Electronics Inc.
www.whelectronics.com

System

AirLoom – A versatile & accurate personal GPS device.

Which Telit module do you use and why?

We choose the HE910 module because of it's accuracy and reliability. We also wanted a module with assisted-GPS capabilities.

Benefits

The AirLoom Personal Monitor was developed to be a versatile and easy-to-use real-time GPS device that consumers could afford, easily understand, and make regular use of in order to assist them in their daily aspects of life.

- Advanced logic and user-friendly setup to customize the functionality
- Accurate positioning, cellular, and assisted-GPS capabilities
- Long-lasting battery
- Online alerts

Air-Loom

>> The AirLoom is the essential tool to monitor activity constantly or just receive alerts when certain events occur.

With the variety of modes and configuration options the AirLoom offers, it can be used for many applications from monitoring the movement of assets and valuables, to the whereabouts of children and pets, to the emergency notification of a worker's status due to the AirLoom's Emergency Man-Down capabilities.

Telit was the perfect partner to assist in the development of this device as they were easy to communicate with when we needed their support. Our number-one priority was that we make the unit as accurate and reliable as possible by taking advantage of the Assisted-GPS capabilities. Telit provided us with the perfect module and we implemented it into our design. WH Electronics Inc. likes to continually develop and improve-upon it's products to update them with the latest features. We enjoy working with Telit as they tend to enjoy doing the same thing.

By having already developed many solutions with Telit modules and having experience in the vehicle-tracking sector, we had a very good idea as to how to develop the AirLoom to be more user-friendly on the server software side, easy to handle on the hardware-side, and be more attractive with the cost element.

As there are many miniature personal GPS devices available on the marketplace the AirLoom is quite a nice surprise that will show you new capabilities and uses you did not know existed. We find that businesses, organizations, and individuals will be able to make great use out of this product globally. <<

INTEGRATED ALARM SYSTEM

GE865-QUAD
GSM|GPRS

FACTS

Combi-Sec GmbH
www.combi-sec.com

System

Integrated alarm system – smart home ready

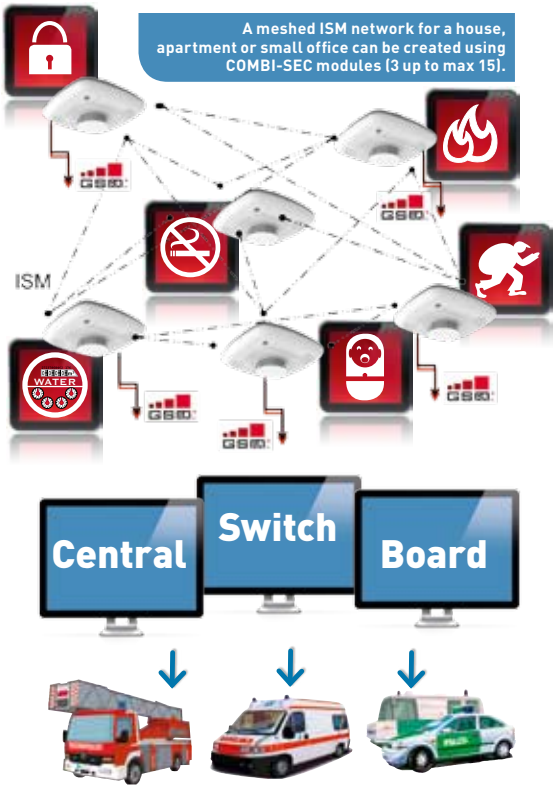
Which Telit module do you use and why?

Combi-Sec modules are equipped with the Telit GE865-QUAD module – a proven and cost-efficient component for GSM communication.

Benefits

- Device distinguishes vapor from smoke and can therefore be installed in kitchens and bathrooms.
- Essential risk detection and alarm functions are integrated in one device.
- Integrated camera and hands-free communication.
- Professional switchboard 24 hours/365 days.
- Easy, wire free installation.
- Low investment and operating cost.
- Future proof – smart home ready.

Integrated alarm system



A meshed ISM network for a house, apartment or small office can be created using COMBI-SEC modules (3 up to max 15).

"Telit provided us with a key component for our system, one that enables us to offer our customers peace of mind @home. This is an integrated solution that combines smoke detection, intruder alarm and personal emergency call 24h/365 days, connected to a professional switch board where effective help (e.g. police, fire brigade, ambulance) is called and, if required, it's coordinated according to the support profile as defined by the customer."

Dr. *Ralf-Peter Simon*, *Managing Director*, *Combi-Sec GmbH*

>> Combi-Sec GmbH is a start-up company, run and supported by senior professionals of the telco, CE and security industries. Market launch is scheduled for end Q1 2013.

Target segments: Young families; professional nomads; silver surfers; elderly people willing to live independently in their flats or houses, but keen to have direct access to effective support; technically and ecologically interested early adaptors of smart metering and connected home; real estate and property owners, seeking effective means of (a) complying with local regulations, (b) providing additional value added services to their tenants, and (c) reducing operating costs (e.g. 3rd party measuring services).

Challenges

Smoke detection systems are becoming mandatory. Regular devices just sound an alarm in case of smoke/fire. If nobody's at home, no action will be triggered. The risk of burglary to private homes and to SOHO offices is increasing. Regular alarm devices require material investments and incur a non-negligible operating cost. Our population structure is shifting towards an increasingly older society and to single households. At a certain age individuals feel more comfortable when having help at hand whilst still living on their own.

Technological development is driving smart home and smart metering plus remote control and ambient assisted living devices and services. Normally these devices and services require their own, proprietary infrastructure.

Solution

Combi-Sec combines life saving and smart home features such as smoke detection, intruder alarm and personal emergency call in one device. Once installed and registered, the system provides a flexible communication infrastructure for numerous additional services such as: smart metering, home automation and ambient assisted living. All CS-modules are GSM-equipped and report their specific operating and emergency data to the central switchboard. Inside our customers' homes or offices, our modules connect to a meshed network via ISM and provide full redundancy by acting as relay modules to the outside world when there is no GSM-connection (e.g. modules in the basement). Up to 255 external sensors can be integrated into one meshed network of max. 15 CS modules. <<

CASE STUDY

LIMMEX
The Swiss Emergency Watch.

GE865-QUAD
GSM|GPRS

ASSISTANCE AT THE PUSH OF A BUTTON

FACTS

Limmex AG
www.limmex.com

System
Limmex Emergency Watch

Which Telit module do you use and why?
We are using the GE856-QUAD because it is the smallest GSM module on the market

Benefits
The Limmex Emergency Watch is simple to use, works wherever there is a GSM-connection, and above all, as an elegant Swiss wristwatch it is not stigmatizing. Therefore, it is not exclusively a personal security system for elderly people but also for professionals working in the security area, children going out alone, athletes practicing individual sports outdoors and persons with health problems.

Limmex Emergency Watch

”In order to create an elegant watch we had to integrate the smallest GSM module and it came from Telit. Equally important were the professional support and the quick response time during the development phase.“ **Pascal Koenig,** *CEO Limmex*

>> Limmex develops, produces and markets solutions for personal safety. By developing the Limmex Emergency Watch the company launched a revolutionary world debut because Limmex combines the finest tradition of Swiss watchmakers' art with innovative communication and security technology.

There have been diverse challenges, most importantly miniaturization, antenna development, power management, and setting-up a highly redundant cloud-based backend which is needed to make the product work around the world.

We chose Telit because it provides the smallest GSM modules on the market. As our emergency watches are very small, the size of the module chosen is a very important criterion. When developing the Limmex Emergency Watches, which have a diameter of 41mm and a height of 14mm, the small size of the watch influenced of course the size of the battery. Therefore, a small battery with a high capacity had to be found and an efficient antenna had to be created. To find a solution, prototypes have been made at CSEM which have been verified at Telit. As a next step, the antenna setup has been improved and finally the shielding.

A Swiss city councilor informed the founders of Limmex that 2-3 persons are found dead every week in their apartment in the city of Zurich. Most of them are elderly persons living alone. It was suggested to develop a solution to provide persons fast help in case of an emergency. This is how Limmex was born. Research showed that approx. one third of all people over the age of 65 fall every year. Emergency systems do exist, but only 2-3% of elderly persons use one today. There are three reasons for this low market acceptance: first, conventional solutions only work at home. Second, they usually must be installed by a technician and trigger a lot of false alarms. Third and most importantly, they are stigmatizing.

The target of Limmex was to come up with a new product that is significantly better than traditional emergency systems. The big market success in Switzerland proves that the company succeeded in doing this. And during project development we realized that the Limmex Emergency Watch is not only valuable for elderly persons, but also for a much broader target segment: security is concerning everyone. <<

SECURITY APPLICATIONS FROM ANYWHERE IN THE WORLD

GL865-DUAL
GSM|GPRS

FACTS

Martin Electronics (CC)
www.martin-electronics.co.za

System

Sentry GSM Link, SMS/GPRS switching and monitoring

Which Telit module do you use and why?

The GL865 provides reliable Class 10 GPRS performance in a highly price-sensitive market. The LCC package offers an ideal mounting solution.

Benefits

The GSM Link provides a stable and versatile platform for customers wishing to add remote switching and monitoring functionality to a wide variety of applications. The unit supports multiple wireless communication options and offers input, as well as output peripherals. The GSM Link is ideally suited to battery-powered applications where effective power management is critical.

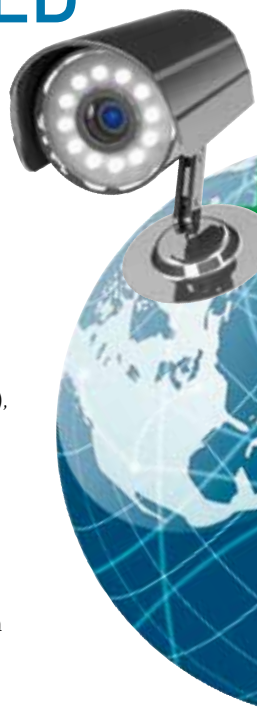
Sentry GSM Link

> Telit was an obvious choice for us due to their competitive price structures and the exceptional performance of their m2m modules. Telit's local engineering support has been proven in the past, and continues to be a powerful driving force behind our decision to use their products." **Stephen Martin,** *CEO*

>> Martin Electronics has over 20 years experience in the security industry and is behind the trusted Sentry brand. Specializing in wireless systems, our company has expanded its product portfolio over the years, earning numerous industry awards. Sentry remains the product of choice in a market segment that cannot compromise on quality.

Technological convergence within the security industry is inevitable. The future success of companies in this market hinges on their ability to offer a holistic solution. This includes the centralization of captured data, as well as providing real-time remote access to systems in the field. Our challenge was to create a reliable and cost-effect platform.

Telit's local technical support is world-class and their modules have proven to be reliable over time. The GL865 offers a cost-effective GSM/GPRS solution, and the LCC package is ideally suited to our in-house SMT manufacturing processes. Development of the GSM Link took place in consultation with leading industry professionals. The main challenge was to develop a versatile and reliable platform for a highly cost-sensitive market. The product was designed with ease-of-use in mind. Setup of the unit is simple and GPRS connection to the host server is automatically established on activation. The GSM Link was designed to act as a stand-alone unit, or to facilitate the addition of SMS/GPRS functionality to legacy systems.



Main features

- 2 relay outputs (220V, 5A), 1 TTL output, 2 inputs (1 isolated), RS-232
- ISM band RF transceiver (KeeLoq, proprietary)
- Firmware upgradeable over-the-air
- Timer functionality with power back-up
- Application server (GPRS, SMS-to-TCP/IP)
- Intuitive user application software
- Dual-SIM
- Low-power standby
- Supports multiple authorized users

The Sentry GSM Link allows the user to control and monitor a multitude of applications from anywhere in the world. Use of the product is simple and intuitive, bringing the power of Cloud control within reach of anyone. The platform has been optimized to work with a wide variety of Sentry as well as competing security peripherals. <<

CASE STUDY

M2M ALLOWS VERSATILE HOME SECURITY

UC864-E
UMTS|HSDPA

> "Achieving both remote security and a smart home with m2m communication." **Jeonghwan Eom,** *Manager*

>> As demand for personal security increases, security companies are focusing more on service diversification. With the diversification of residential environments, home security system became a must-have. In particular, security is one of the top priorities for working parents with children, single women, and elderly people. However, many face difficulty deploying security system due to cost burden and system management.

Secom Homz: S1 recently introduced a security service for apartment housings at an affordable monthly fee. It works on a wireless-Internet base, does not only provide basic security service, but also may provide other convenient services upon request. Using the Secom Homz application, users can remotely control home devices, such as turning off lights and gas valves. The service is particularly useful during the vacation season when people leave their houses empty for a long time. Users can set up their own customized security solution chosen from variety of services, such as gas valve lockdown function, alarm service for gas leakage, fire alarm service, standby power lockdown function, and video service that enables users to check crime prevention status through video.

To provide a speedy and accurate security service based on real-time data communication and analysis, Secom Homz adopted the UC864-E, Telit's UMTS/HDSPA+ module. UC864-E is a 3.5G wireless data module that has a compact form factor, designed to be compatible with Telit's GSM/GPRS and CDMA product line. The Telit m2m module employed on Secom Homz is the optimum remote control and management support solution for both users and managers. It enables users to check crime prevention status (such as trespassing and fire) at home through security camera deployed on the system using smart phones and tablets. Security information data is sent to the S1 Integrated Control Center through a wire-wireless communication network. Based on the control standard, S1 provides a dispatch service or remote control service.

Unlike other security systems, Secom Homz has an integrated intrusion sensor and emergency button, and therefore, does not require a separate construction. Also, it is in the form of small desk lamp, and may be installed anywhere. <<

FACTS

S1
www.s1.co.kr

System
Secom HomZ: security service for apartment housing

Which Telit module do you use and why?
UC864-E – chosen for its compact design and wide range of temperature

Benefits
- Security camera deployed to show on smart phones and tablets
- Integrated intrusion sensor and emergency button
- Practical design: form factor is that of a small desk lamp

Secom HomZ

StarLine®

CAR SECURITY BASED ON M2M

GL868-DUAL
GSM|GPRS

FACTS

SPA StarLine
www.starline.ru

System

StarLine M15/17 – security and monitoring device

Which Telit module do you use and why?

We employ the Telit GL868 GSM module, which has the SMT footprint, is energy efficient, compact, and provides robust communication.

Benefits

32-bit MCU with Cortex-M3 core
Ceramic patch antenna and A-GPS processing to define exact position
Online monitoring
Off-line battery operation capability is up to 2 years
Compact sizes 85×52×23 mm, waterproof housing
Wide range of operation temperatures is from -40 to + 60°C

StarLine M15/17

„Providing a high level of security to the citizens of Russia and the CIS, based on the progressive technologies of the world community."
Alexander Borisov, *Head of R&D Department*

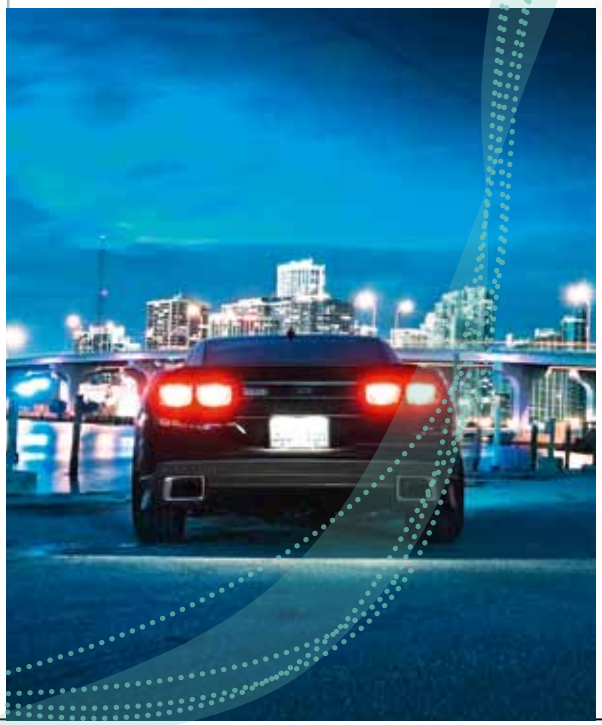
>> StarLine is the leading developer and manufacturer of car security systems in the Russian market. Since 1988 we follow our mission: "Providing a high level of security to the citizens of Russia and the CIS, based on the progressive technologies of the world community." Our products are acknowledged by both professionals in the field of vehicle security and car owners, that's why we have 42% of the market for car security systems in Russia. In 2012 StarLine sales will be ≈1 million car security systems sets.

One of the most current problems for car owners is to know the exact location of their vehicle. This can help in the case of car theft; it is also used for monitoring for commercial and other purposes.

A key objective was the development of a device designed for determining the exact position of the vehicle using GPS in difficult conditions. To implement the monitoring process, data about the vehicle location is required to be continuously transmitted to a cloud server via GPRS. Therefore, we chose the GSM module because it provides a stable and reliable connection.

Telit's GL-868 is energy efficient and can be remotely updated (FOTA). In addition our decision was influenced by factors such as reasonable price and compact size.

GSM signals are received using a ceramic chip antenna to be mounted on the unit board. One of the most important development stages was matching the antenna and the GSM modem. This problem was successfully solved thanks to the technical support of Telit.



StarLine M17 is a device designed for online monitoring. The device is connected to the car battery and it tracks movements using GPS satellites. The information about the current location is transmitted via GPRS to monitoring server www.starline-online.ru.

StarLine M15 is the independent security and searching module powered by internal batteries; it is designed for flush mounting in the car, boat, truck, inside the high-value cargo, etc. M15 determines its location using GPS satellites and sends SMS with the coordinates to the cell phone owner.

Users of StarLine products need not fear for their property – StarLine and Telit technologies provide them with protection and allow our units to be effective even in the most difficult conditions. <<

M2M-ENABLED INMATE MONITORING DEVICES

AN EXPANDING PROGRAM TO SAFEGUARD SECURITY AND HUMAN RIGHTS IN BRAZIL

www.spacecom.com.br

Savio Bloomberg, *Spacecom Monitoramente S/A*

>> Societies around the world grapple with the issue of fairly and humanely punishing criminals. Justice systems in modern, non-authoritarian governments are constantly seeking ways to improve the process and the application of punishment, remove more criminals from the streets, and reduce overcrowding of prisons and correctional facilities. Adding to the complexity of tackling this daunting task is the issue of ever shrinking budgets that governments have to work with.

In a Position to Set a World Example

Finding itself under the proverbial microscope resulting from the unique situation of playing host to the 2014 FIFA World Cup and the 2016 Summer Olympic Games, Brazil is very keen on projecting an image of an evolving society that respects human rights under the rule of law. In June of 2010, after nearly five years of intense legislative debate, Brazilian president at the time, Luiz Inácio "Lula" da Silva, signed into law a bill passed by congress approving and guiding the use of electronic monitoring and tracking devices for prison inmates.

The text of the law provided for the use of "electronic handcuffs" – tamper-proof GPS-cellular m2m personal tracking devices – for inmates serving semi-open sentences during temporary releases for Christmas, Mothers' Day, etc., and for prisoners under house arrest. The law also created obligations for these eligible inmates, prescribing loss of benefits, along with possible sentence progression from house arrest to prison and release suspension, should the equipment be removed or tampered with.

The new era of electronic inmate surveillance started with thorough testing in a few Brazilian states. The state of São Paulo, the country's most populous, had been using the results as a reference case for the debates in society and the legislative assembly, and for framing the resulting law. Starting in 2007, one hundred inmates were fitted with different tracking bracelets and anklets using various technologies and designs. With the passing of the law, the state tendered and contracted for the delivery of 4,800 units, making it the first large-scale deployment in the country.

In March 2011, newly elected President Dilma Rousseff vowed to push forward an expansion of the scope of use of the m2m enabled surveillance anklets, stating that the expanded use of electronic monitoring anklets for low-risk inmates with semi-open sentences should relieve the overcrowding of prisons in Brazil.

She argued that while responsibility for running correction facilities relied on state governments, it remains the federal government's duty to seek solutions to overcrowding in the prison system "because this is a very important issue, in terms of security and human rights." According to the President, one of the goals is to create the conditions for the removal of prisoners from police station jails "to enable a more dignified serving of the prison sentence" while freeing up police officers to focus on fighting and investigating crime.

Starting July 2011, a new law expanded the scope of eligible, electronically monitored offenders to include those awaiting trial, allowing them to be fitted with monitoring devices instead being sent to jail. States have started to move to employ monitoring services and devices countrywide, totaling approximately ten thousand units in

2012 and 2013. With the current scope as defined by the laws currently in place, the total number of offenders eligible for electronic tracking and monitoring is about 250,000. The government expects that the states will employ approximately 50,000 devices for their prison systems over the next five years.

Evolution of the Monitoring Devices

Early on in this process, because the power consumption of the electronics was too high, monitoring devices comprised two pieces. There was a separate battery pack fitted around the prisoner's waist, mounted on a belt. The lighter m2m-cellular-GPS part of the device itself was assembled into a tamper-proof bracelet or anklet. This solution was prone to problems because the power wire running from the waist to ankle or wrist regions made the system vulnerable to power cuts due to snagging of the power cord or battery pack.

A new generation of devices based on leading technology GPS and cellular m2m modules has allowed one-piece designs to meet the battery-life requirements and being low-weight makes them comfortable to wear around the ankle. Spacecom, a Brazilian company in this segment, and South America's largest, has led the evolution of these devices from two-piece to one-piece, while meeting the stringent requirements of the judiciary authorities: tamper-proof, GPS sensitivity, battery-charge duration as well as the ability to transmit in harsh environments.

Spacecom Monitoramente S/A Creates Solutions for the Brazilian Reality

Spacecom started in 2005 and played an important role collaborating with the government's test programs and serving as expert counsel to the various law enforcement organizations that helped draft the law. The company is the country's only one to have fully developed the two-piece and now one-piece devices for the exacting requirements of the Brazilian market. The second-generation devices have been designed using Telit's GE865-QUAD GSM/GPRS module because its low-power operating modes and diminutive dimensions are ideally suited for wearable technology devices such as monitoring bracelets and anklets.

With the signing of the latest monitoring devices and services contract with the state of Minas Gerais in September 2012, Spacecom reached the milestone of 9,182 monitored individuals by the various state governments. Starting with the groundbreaking contract with the state of São Paulo for 4,800 offenders, signed in 2010, the company saw a steady rise in orders in 2012, reaching volumes that make the 100%-Brazilian Spacecom the largest electronic inmate monitoring service company in South America. <<

SAC24

TOWARDS NEW BUSINESS MODELS IN HEALTHCARE

Robin Duke-Woolley, *CEO Beecham Research*

www.beechamresearch.com

>> Aldous Huxley (1894-1963) is quoted as saying "Medical research has made such progress, that there are practically no healthy people any more."

I was reminded of this while visiting the recent Medica trade show in Dusseldorf, Germany – the world's largest event for the medical sector. Seventeen halls of equipment designed to find out ever more quickly than now just what is wrong with you, together with new high-tech ways to put it right. Among the huge variety of exhibits, though, I could find very little space given over to self-diagnosis and self-care. Especially puzzling perhaps since we are now in the self-service Internet age. High quality network connectivity now enables a wide range of remote care capabilities, and modern mobile connectivity in particular makes it possible to provide highly personalized health services almost anywhere at low cost. So why is it not already more mainstream?

According to PWC (Healthcare Unwired), it is because "the payment wires are crossed". Providers get paid based on volume of services delivered, and mobile healthcare has been shown to reduce the need for hospital admissions and physician office visits. Why would providers adopt technologies that gouge their incomes? An industry that is paid based on volume will not adopt technologies that reduce volume. In other words, the way business is currently conducted in healthcare – the business models used – largely predicates against its introduction.

In all countries around the world healthcare expenditure is high as a percentage of GDP and is rising sharply towards unaffordable levels. There is an urgent need for new, sustainable business models that help to curb expenditure while promoting more targeted healthcare service delivery. This gets to the nub of what m2m really offers – the means for developing new business models that can radically change the way things are currently done. In doing so, it creates the opportunity for new services and new revenue streams.

THREE MAIN CATEGORIES

There are three main categories of business models within the healthcare sector where m2m can have a real impact – Clinical care, Wellness/Prevention care and Healthcare IT. The first of these – Clinical care – includes the traditional physician and hospital-based activities and the opportunities for remote clinical monitoring. This is a slower area to develop as it involves changes to well-established procedures that are life-sustaining, but specific areas of growth include remote home monitoring of patients with dementia, diabetes and congestive heart diseases.

The third – Healthcare IT – covers the ready availability of relevant healthcare data for rapid diagnosis and treatment. Centralized healthcare IT projects have



often not only broken budgets but also failed to deliver. In a new environment where remote healthcare data is transmitted in real time from multiple sources, current systems are unlikely to cope. This offers the opportunity for new players to create, aggregate and distribute this data, but it also raises questions like – how would they inter-operate and who is best placed to provide such services?

PREVENTATIVE CARE

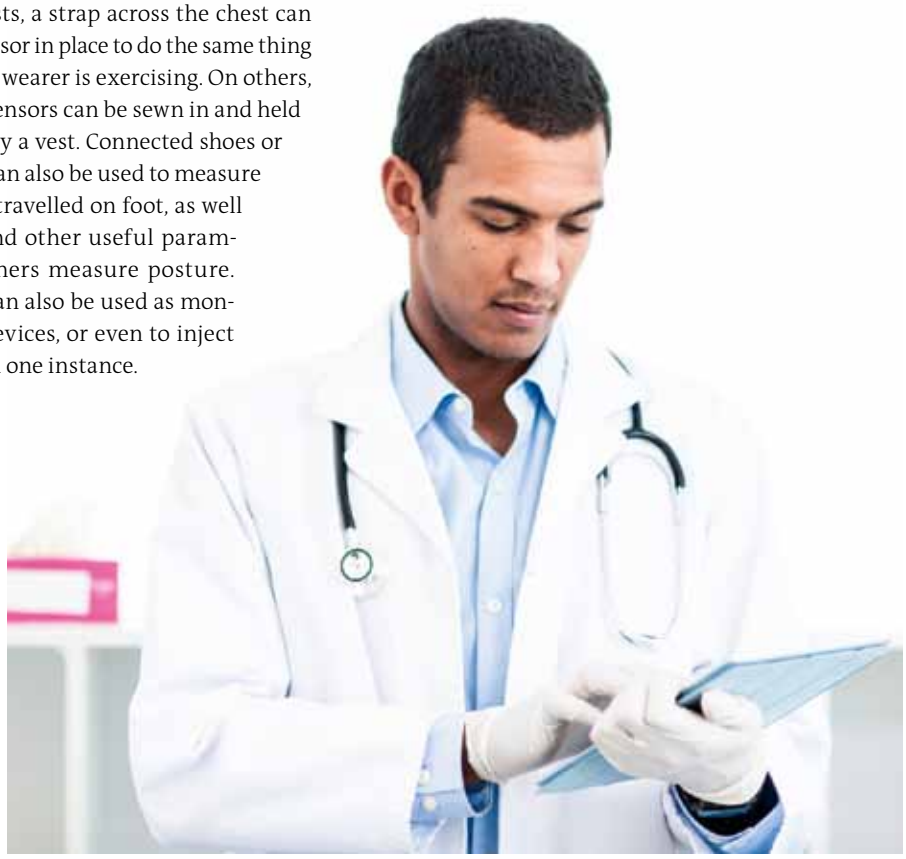
The second category – Wellness/ Prevention – is particularly interesting right now. The adage "prevention is better than cure" applies directly to healthcare costs. At the same time, the huge increase in smartphone apps and mobile wellness devices has introduced new possibilities for linking consumer-driven interests with preventive care programs. This leads directly back to my comment above about Medica – the very little space at the show given over to self-diagnosis and self-care, with potential input to clinical systems.

We are seeing an upsurge in interest among consumers to monitor themselves, either for fitness or general wellness, in a way that provides an opportunity of sharing data collected with a professional service that may then be able to identify any underlying, more serious ailments that may be arising. This 'peace of mind' activity is something that consumers are prepared to pay for. The question is – how do you make it easier for people to monitor themselves? Studies have shown that near-continuous monitoring is much more effective than sporadic monitoring but that means wearing the sensors involved almost all the time. That means they have to be pretty well invisible.

Some answers to this are now beginning to appear in the market, all associated with new wearable technologies. There are now patches complete with Bluetooth connectivity which, applied to the skin, can monitor vital signs for a week or so before the patch is thrown away. For sports enthusiasts, a strap across the chest can hold a sensor in place to do the same thing while the wearer is exercising. On others, flexible sensors can be sewn in and held in place by a vest. Connected shoes or in-soles can also be used to measure distance travelled on foot, as well as gait and other useful parameters. Others measure posture. Jewelry can also be used as monitoring devices, or even to inject insulin in one instance.

WHERE ARE WE HEADING?

Over the next few years, we can expect the capabilities of wearable technologies and connected clothes to improve dramatically – and to look stylish at the same time so that people want to wear them. With that will come the opportunity for consumers to monitor an ever-wider range of health-related vital signs and other parameters more effectively and continuously themselves than is currently possible. These will be considerably less obtrusive than is the case right now. New smart apps – in smartphones for ready display, but more likely also in the cloud for deeper analysis – should then have a bigger part to play in the growing area of prevention as part of a wider healthcare model. <<



BATTERY POWER FOR 20 YEARS

Tadiran batteries provide stand-alone power for the lifetime of your equipment.

The *PulsesPlus* ™ battery series eliminates the voltage delay, increases the pulse current capability and minimizes the impedance loss of the battery. A proprietary Hybrid Layer Capacitor (HLC) was developed for this purpose.

by Dr. Thomas Dittrich

>> A ***PulsesPlus*** ™ battery is formed by connecting one or more primary lithium thionyl chloride batteries in parallel with one or more HLCs. This HLC is a secondary element. Its electrodes comprise Lithium Intercalated Compounds and are spirally wound. The HLC has been optimized with respect to self discharge, temperature range and durability by carefully selecting the material properties of the electrodes and the hermetical glass to metal seal.

As a result, the ***PulsesPlus*** ™ battery outperforms conventional high rate lithium batteries such as lithium sulphur dioxide (Li/SO_2) batteries, lithium manganese dioxide (Li/MnO_2) batteries as well as spirally wound lithium thionyl chloride ($Li/SOCl_2$) batteries. Compared to these battery systems, ***PulsesPlus*** ™ batteries deliver higher voltage and higher capacity. These batteries also offer unmatched service life due to their extremely low self-discharge.

Advantages

The performance advantages of the ***PulsesPlus*** ™ battery include:

- Higher voltage – 3.6 V versus 3.0 V
- Higher capacity – e.g. 19 Ah for D size cell (versus 7 Ah for other Lithium batteries)
- Lower self discharge – less than 1 % per year (versus 5 % per year with spiral wound)
- Lower impedance (internal resistance)
- High pulse current capability
- No passivation effect
- High reliability (hermetic laser sealing, glass-to-metal seal)
- Widest operating temperature – –40 °C to +85 °C (versus 0 °C to +60 °C)
- Greater safety, UL registration of the component cells
- Variable design with variety of combinations

No impedance loss

The ***PulsesPlus*** ™ battery overcomes the impedance loss which occurs when an LTC battery is used to deliver high pulse currents over a long time. This effect is demonstrated in figure 1 where a D-size cell was discharged under a continuous load of ~50 µA and short pulses of 150 mA.

Application in GSM modules

One major application for ***PulsesPlus*** ™ batteries is in GSM communication modules for data exchange. A typical current profile requires a basic current of 150 mA and a pulse current of 2 A for 577 µs every 4.615 ms. Figure 2 shows the voltage behaviour of a ***PulsesPlus*** ™ battery with one HLC-1550A under these conditions at various temperature levels.

Fit for 20 years of life

The ***PulsesPlus*** ™ battery can be used where 20 years of continuous power are required for applications including GSM and radio modules. Figure 3 shows the maximum average current draw of a TLP-93111/A ***PulsesPlus*** ™ battery as a function of the design life of the battery. This battery will typically deliver 20 years operation life when the average current is not more than 87.5 µA at +25 °C. Under these conditions, the accumulated self discharge loss of the battery is less than 15 % during its operating life. As a result it is fair to say that Tadiran's ***PulsesPlus*** ™ battery is the smallest and most cost effective battery for a 20 year stand alone power supply. <<

Ideal for metering, security, tracking and automotive applications

Figure 1: Impedance Loss and how to Overcome it

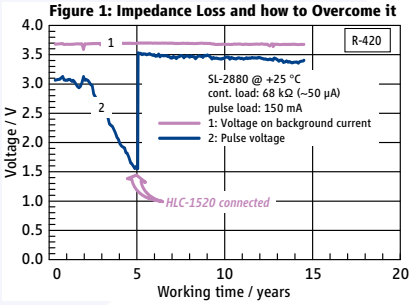


Figure 2: GSM Discharge Curves

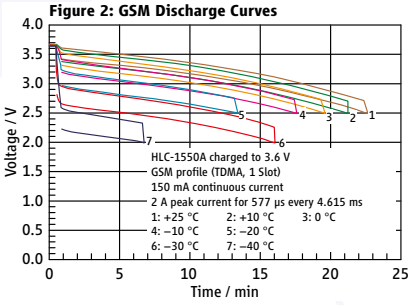
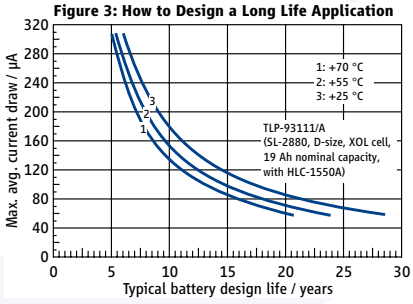


Figure 3: How to Design a Long Life Application



TADIRAN BATTERIES

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TURKCELL REMOTE PATIENT MONITORING WITH M2M „HEALTH METER“

GL865-DUAL
GSM|GPRS

FACTS

Turkcell
www.turkcell.com.tr

System

Turkcell Communication Module – m2m base solution

Which Telit module do you use and why?

Turkcell's Communication Module uses the Telit GL865-DUAL GSM module, which was chosen because of its extremely low power consumption, low cost and small dimensions.

Benefits

TCM incorporates the communication hardware and open source software needed for a m2m device, so it reduces the design complexity of the application boards. TCM gives the developer a GSM/GPRS library as well as a 802.15.4 protocol library to build local area networks for m2m devices. TCM collects all the application data (GPS, Bluetooth, sensor etc.) of the LAN and transmits it over GSM/GPRS.

Turkcell Communication Module – M2M base solution

„Turkcell offers groundbreaking m2m solutions featuring Telit GSM Module.“
Mehmet Emin Özgül, *Applied Research Manager*

>> Turkcell is Turkey's leading GSM network operator with its 34.7 million subscribers (June 2012). Turkcell is not only providing mobile audio and data services, but it also sells Turkcell branded smart phones and offers many m2m communication solutions through its partnerships with technology companies.

The vision of Turkcell is to enhance the m2m communication market through innovation. The estimation of the market potential in Turkey is 150 million devices, Turkcell reached 1 million of this potential which corresponds to 85% of the current market penetration. Developing m2m devices can be costly and may require longer time to market. These factors render m2m devices and services expensive and limit innovation. Offering an open source m2m development hardware and software platform greatly reduces these two barriers.

Turkcell has chosen Telit in order to offer standards compliant, highly available, reachable and robust m2m communications!

Turkcell, which is a technology leading company, has developed a base communication module, called Turkcell Communication Module (TCM) which is useable for almost every m2m application that needs to transport data over GSM/GPRS. TCM is offered to both entrepreneurs and technology companies. TCM uses Telit GL865-DUAL GSM module which was chosen because of its extremely low power consumption, low cost and small dimensions.

The criteria to choose a GSM module for TCM was the reliability, continuous support and worldwide reference of the manufacturer, which met Turkcell's quality standards. Telit offers trustworthy products and also supports its customers during the development process through its local representatives and its R&D center.

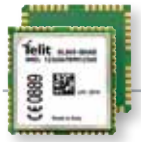
The pioneer application of TCM is the wireless mobile healthcare device-called “Health Meter” which was also developed by Turkcell. The aim of the “Health Meter” is to get patients with chronic diseases to regularly measure blood sugar/pressure, heart rate and other vital signs. Data is sent using short-range communication from the measurement device and then it is transmitted over GSM/GPRS to a medical center. This solution is highly appreciated by many medical institutes and is widely used by patients.

There are definitely many m2m solution possibilities using TCM in smart home, industry, vehicles, energy and health areas that rely GSM connection technology of Telit and wide GSM network coverage of Turkcell. <<

CASE STUDY

InfoSCAN telemetry systems

GUARANTEE FOR A SAFE AND HEALTHY SLEEP



GL865-QUAD
GSM|GPRS

FACTS

InfoSCAN Sp. z o.o.
www.infoscan.pl

System

Telemedical Sleep Apnea Syndrome Diagnostic System

Which Telit module do you use and why?

The GL865 module was used because of its small size, compact design and low energy consumption.

Benefits

- Small dimensions and weight of the device.
- On-line data transfer with GPRS
- Large flash memory allows a 24-hour examination to be recorded.
- Graphical, color OLED display.
- Monitoring saturation, pulse, ECG, airflow, body movements.

Telemedical Sleep Apnea Syndrome Diagnostic System

"With the Telit module, we were able to create one of the smallest mobile Respiratory Sleep Disorders devices in the world. Telit's Multiband Technology enables this product to be marketed worldwide!"

Jerzy K. Kowalski *Ph.D.*, *Chief Information Officer*

>> Diagnostics of Sleep Respiratory Disorders (SRDs) is a relatively new field of medical science that is experiencing dynamic progress. The characteristic feature of these disorders, that are sometimes called unrecognized dyspnea, is significant impediment or even lack of airflow through the upper respiratory tract while the patient sleeps. A direct consequence of these abnormalities is hypoxia of the organism, which is clearly noticeable in the results of blood saturation measurements. Due to obturation of the upper respiratory tract or inactivity of the respiratory drive, each nightly breath of the patient becomes shallow or, in the case of Sleep Apnea Syndrome (SAS), the patient totally stops breathing for short periods of time.

MED-300 is an advanced physiological parameters recorder that connects to a GPRS network. It enables data registration and the transmission of seven physiological parameters in 13 measurement channels. It allows diagnostics SAS to be performed in the patient's home, without the participation of qualified medical personnel. GPRS transmission enables data to be transferred directly to the main server system, regardless of the patient's location.

A key feature of the device is the large memory of the recorder. It allows a 12-hour long examination to be recorded. The small dimensions and weight of the device enables comfortably sleeping with the recorder attached to the body. A graphic display allows direct monitoring of all measured parameters, including the pulse wave, airflow and ECG curves. All data is sent online, using GPRS, to the server, where data analysis is performed. The software on the server allows reviewing of entire records and determining desaturation coefficients and changes of the measured parameters in time. Results of the examination may also be printed and included into the medical dossier of a patient.

We chose Telit because of the perfect support delivered by the Telit technical support team and the local distributor. Unique technology, small size and mobile GSM features provide specialized care for patients who need continuous SAS monitoring. Due to implementation of GPRS transmission, we anticipate serving a much larger group of customers. In addition, different levels of accessibility and mobility services allow us to begin work on a new device for the U.S. <<

M2M ENABLED CONTINUOUS HEART MONITORING

CORCAM

GE863-PRO³
GSM|GPRS

FACTS

Corcam Tecnologia
www.nexcor.com.br

System

Nexcor – Continuous Heart Monitoring System

Which Telit module do you use and why?

GE863-PRO³. Integrates many features in a single component. It's backed by Telit's support in Brazil and the company's history of success.

Benefits

Nexcor also has several features that have been integrated into the solution. They include: the voice system, panic button, AGPS that enables medical professionals to locate patients and alert local healthcare providers and an accelerometer to detect falls. Complementing the Nexcor solution there is a portal for physicians, where doctors can access and monitor all data on their patients.

Nexcor

”We appreciate the development capacity of Telit's innovative solutions. The GE863-PRO3 module integrates multiple features in a single device.“
Marcelo Roriz, *CFO*

>> Corcam Technology is a Brazil-based tele-cardiology company that develops and markets Nexcor, an innovative, next-generation continuous heart monitoring system. Employing embedded intelligence, the system can monitor electrocardiogram tracing continuously. If the software identifies any ECG anomaly it generates an examination automatically and sends it to a monitoring center to be evaluated by a cardiologist. Based on established protocols, the center can provide prompt assistance for patients because time is a key factor in the treatment of heart problems.

The idea of the monitor was came as the result of family problem of the inventor, the software engineer Cesar Margarida, who lost a brother early on. After that event he decided to create innovative software and a device with the capability to recognize cardiac events such as acute ischemias and arrhythmias, which in most cases are asymptomatic in their early stages.

Telit integrated solution, the GE863-PRO³, was ideal for the project because the module is small yet it provides many features like GSM/GPRS, memory and processing capability. We are now in the process of making technology updates but the device will continue to use Telit's 3G modules.

The device has been approved in Clinical Trials - Phase II in a Heart Hospital (HCor), which is of the most renowned cardiological centers in Latin America. The study evaluated 152 patients with known heart problems. The monitor was evaluated on its capability to detect ECG alterations and transmit the results automatically. The study concluded that the Nexcor has high potential as a screening tool for cardiovascular events, especially for its capacity to auto-detect electrocardiographic alterations.

"The interactivity of the device can change the relationship between doctors and patients. It will help improve the daily life of patients and enhance treatment possibilities" says Marcelo Roriz, a Corcam partner. <<

INTEROPERABILITY

FOR PERSONAL CONNECTED HEALTH PRODUCTS AND SERVICES

Chuck Parker, *Executive Director, Continua Health Alliance*

www.continuaalliance.org.

Continua® HEALTH ALLIANCE

>> In the past decade, the use of technology has changed how we live. Smartphones, computers and remote health monitoring tools empower individuals, facilitate better patient-doctor communication and deliver care where the individuals live, when they need it. Personal connected health technologies empower information-driven health self-management by incorporating health and wellness into the day-to-day lives of consumers.

Chronic conditions are dramatically on the rise, while healthcare personnel shortages and an aging population are placing even greater stress on the healthcare system. And trends such as accountable care and pay-for-performance reimbursement models are creating the perfect storm for personal connected health solutions.

We are already seeing significant growth in the personal connected health market. For example, Technavio expects that the global mobile health applications market will grow at a compound annual growth rate of 24 percent between 2010 and 2014. MarketsandMarkets research predicts the global healthcare IT market will reach $162.2 billion in 2015, up from the $99.6 billion in 2010.

The Case for Interoperability

In order to maximize the potential of technology-enabled products and services, we must establish a rich and varied ecosystem of interoperable personal connected healthcare devices, integrating devices with health and wellness services and, ultimately, with electronic health record systems. All personal health management tools – from mobile apps to remote blood pressure cuffs, pedometers and computer networking systems that relay and store patient information – must have the ability to work interchangeably, to ensure ease-of-use for patients and providers. Connected home healthcare solutions must become part of the overall healthcare delivery system. Personal connected health devices and services must be compatible, and offer consistent, easy-to-use connectivity and functionality in order to plug into the global healthcare system.

Interoperability is the prerequisite to create and develop a market of technologies made for "plug and play" integration of consumer health self-management with healthcare delivery.

Since 2006, Continua Health Alliance has been working to establish interoperability of personal connected health technologies. Continua's standards-based guidelines enable connectivity of devices and services, as well as secure, convenient sharing of personal health data. Collaborating with existing Standards Developing Organizations, such as the IEEE and HL7, Continua's guidelines facilitate interoperability between the different components of a personal telehealth system and integration into electronic health records.

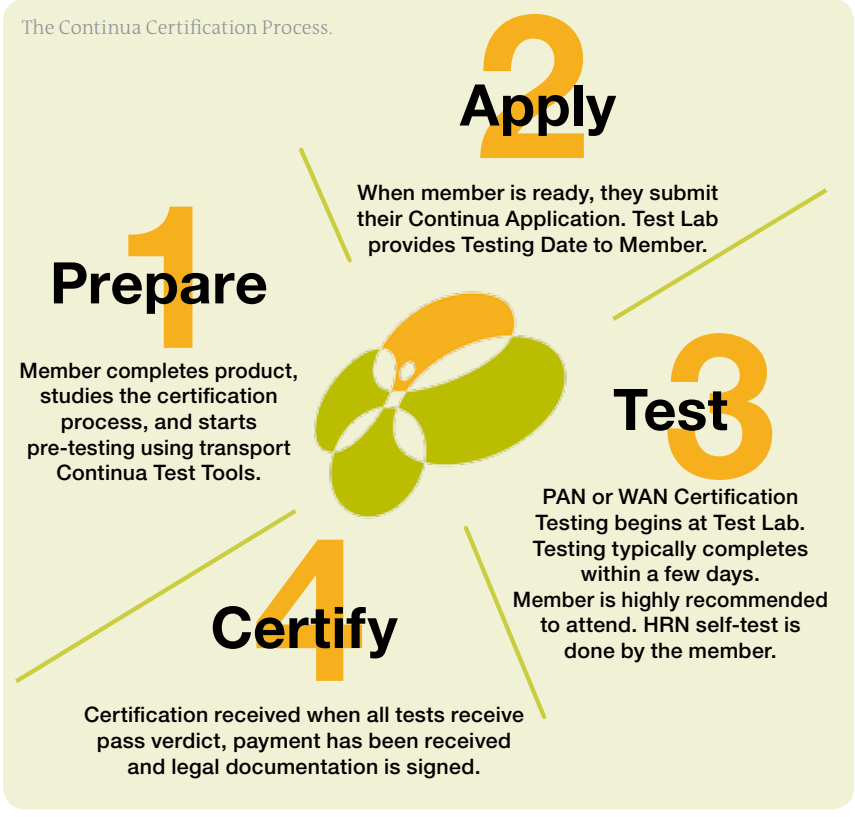
Continua's unique testing and certification program ensures interoperability and enables more efficient, standards-based development, creating new market opportunities for differentiated, interoperable products that are used to collect and relay vital health information for clinical decision making and consumer education.




Over 70 personal health devices and services have completed Continua's certification testing, covering the whole ecosystem, from sensors to hubs, to back-end services and electronic health records. Currently, Continua guidelines-based connectivity between a sensor and hub is supported for Bluetooth, Bluetooth Low Energy, ZigBee or USB (with Near Field Communication (NFC) coming soon); while data between hub, telehealth service centers and back-end services can be shared over any IP connection (i.e., Cable, ADSL, Wi-Fi and Cellular).

Continua recently conducted a series of interviews with member companies that have certified a product for interoperability. Respondents cited two strong reasons to build for interoperability: time and money. For example, decreased design costs saved an estimated USD $40,000 to $80,000 per device. Respondents also reported that integration time was reduced from 12 to three weeks, clearing the way for a faster product launch. Companies also perceived a smoother regulatory approval process due to improved product reliability and security. Across the board, survey respondents believe that interoperability will foster competition, lower prices and encourage innovation, driving more rapid adoption of personal health devices and services. <<

The Continua Certification Process.



ABOUT CONTINUA HEALTH ALLIANCE

Continua is an international not-for-profit industry organization enabling end-to-end, plug-and-play connectivity of personal health devices and services. These services will empower information-driven health self-management and facilitate the incorporation of health and wellness into the day-to-day lives of consumers. Continua facilitates more effective health management and better outcomes by enabling connectivity of personal health devices and services, as well as secure, convenient sharing of personal health data.

Continua is a pioneer in establishing industry standards and security for connected health technologies such as smartphones, gateways and remote monitoring devices that can be used to collect and relay vital health information and education. Its activities include a certification and brand support program, events and collaborations to support technology and clinical innovation, and outreach to employers, payers, governments and care providers. With nearly 220 member companies reaching across the globe, Continua is comprised of technology, medical device and healthcare industry leaders and service providers dedicated to making personal connected health a reality. For more information visit: www.continuaalliance.org.

MAKING M2M SIMPLIFIED FOR HEALTHCARE

Jim Cairns, *Vice President of Business Development*

www.multitech.com

>> It is reassuring to be reminded that the products we work so hard to create deliver real value on a daily basis. Although our modems, gateways and routers enable communications in many vertical markets all over the world, nothing compares to the value this technology brings to the healthcare industry. I opened my email one day to find this message from an RN in a Texas ER, "This morning we had a local EMS utilizing your modem in a portable defibrillator. It gave us enough pre-warning that we had the invasive cardiologist standing at the door waiting to start the procedure. All went well and we gave a 58-year-old man back to his family."

This portable monitor/defibrillator allows responders to gather and send critical patient care information over the cellular network to its web-based data management platform. This system routes real-time patient data to hospital personnel allowing care teams to prepare for the patient ahead of their arrival so that the patient can receive appropriate treatment as quickly as possible.

The manufacturer of this medical device was able to deliver one of the most robust mobile healthcare solutions on the market because they are able to focus on what they do best and rely on us for the communications piece. The fact is, it's rare for companies to have all the internal resources and expertise to handle all the complexities of bringing an m2m communications solution to market – let alone the critical piece of managing its entire life cycle. With an experienced partner, medical OEMs can successfully manage through the risk.

Making the Connection

Medical devices that monitor patients from their homes need to take into account the various communication options in residential deployments, including analog phone lines or Ethernet, as well as the quality and availability of these elements.

Sometimes analog isn't an option, like in rural areas. The trend in newer housing developments and senior living campuses is not to invest in analog. If analog is an option, many of today's homeowners are using a cell phone as their main number. Quality can be an issue too, as the support of PSTN infrastructure declines. Medical OEMs are finding that cellular connectivity can be a better option.

Our intelligent wireless routers offer Ethernet connectivity, which allows OEMs to use an existing product design without having to change the application. This helps speed up time to market and realize the benefits of cellular connectivity without being subject to additional carrier approvals, regulatory certifications and everything associated with designing in m2m.

Cellular Selection

So, if cellular connectivity is the appropriate solution, the next challenge lies in the fact that cellular infrastructure varies from city to city and country to country around the globe. Companies also have to consider the migration to 3G and 4G.

Case in point is the portable defibrillator application. Each new cellular technology forced an upgrade in software to accommodate faster, more reliable mobile connectivity while preserving the usability of the units already deployed. Plus, initially, the company tried to go it alone and quickly realized they did not want to be saddled with the complexity of adding m2m communications when

MultiConnect™ rCell
intelligent wireless router

their expertise lies in the solution itself. By partnering with us they minimized the risks.

To align with their long-term wireless strategies, this company adopted our Open Communications Gateway, which combines a Linux-based development environment with a complete industrial hardware solution, including on-board processing and memory coupled with a cellular modem. The open development environment allows them to manage their software engineering internally, while ensuring continued interoperability with countless global wireless technologies. The Multi-Tech technology enables this company to migrate field units to the fastest technology available in a given location quickly and cost-effectively.

Long Life Cycle

In this highly regulated environment, where the solution has to be affordable, a long life cycle is critical. Longevity was top of mind when deciding to embed the Telit module into our cellular solutions. We both have a long history of standing behind our products so our customers won't have to redesign as often. This makes life much simpler for the healthcare industry, especially, where any change in a product would require recertification and the time and costs associated with it.

Lower Cost Options Without the Sacrifice

The medical field is one of the most cost-sensitive industries. Take into account the elderly on fixed incomes or people with chronic illnesses who cannot work. Multi-Tech's broad selection of products with Telit components, allows medical OEMs to purchase the most cost-effective solution with exactly the right feature set for their device, making it more cost competitive and affordable.

The penta-band frequency of Multi-Tech's products with Telit modules allows for true global connectivity and reduces the number of SKUs needed. For applications where video is required for patients to communicate with their physicians, or large patient files with scans need to be transmitted, a higher speed is required. The performance of HSPA+ or EV-DO models is the solution here. However, many applications require a more conservative bandwidth, and so a 2G solution can help minimize costs.

m2m Simplified

As I write this article, 2012's patient monitoring revenues are expected to reach $7.7 billion in North America and Europe, with an expected growth rate of 7% through 2015 [1]. A major driver is the aging population. In 2007 there were 500 million people around the world who were 65 or older [2]; by 2030, that number is expected to reach 1 billion.

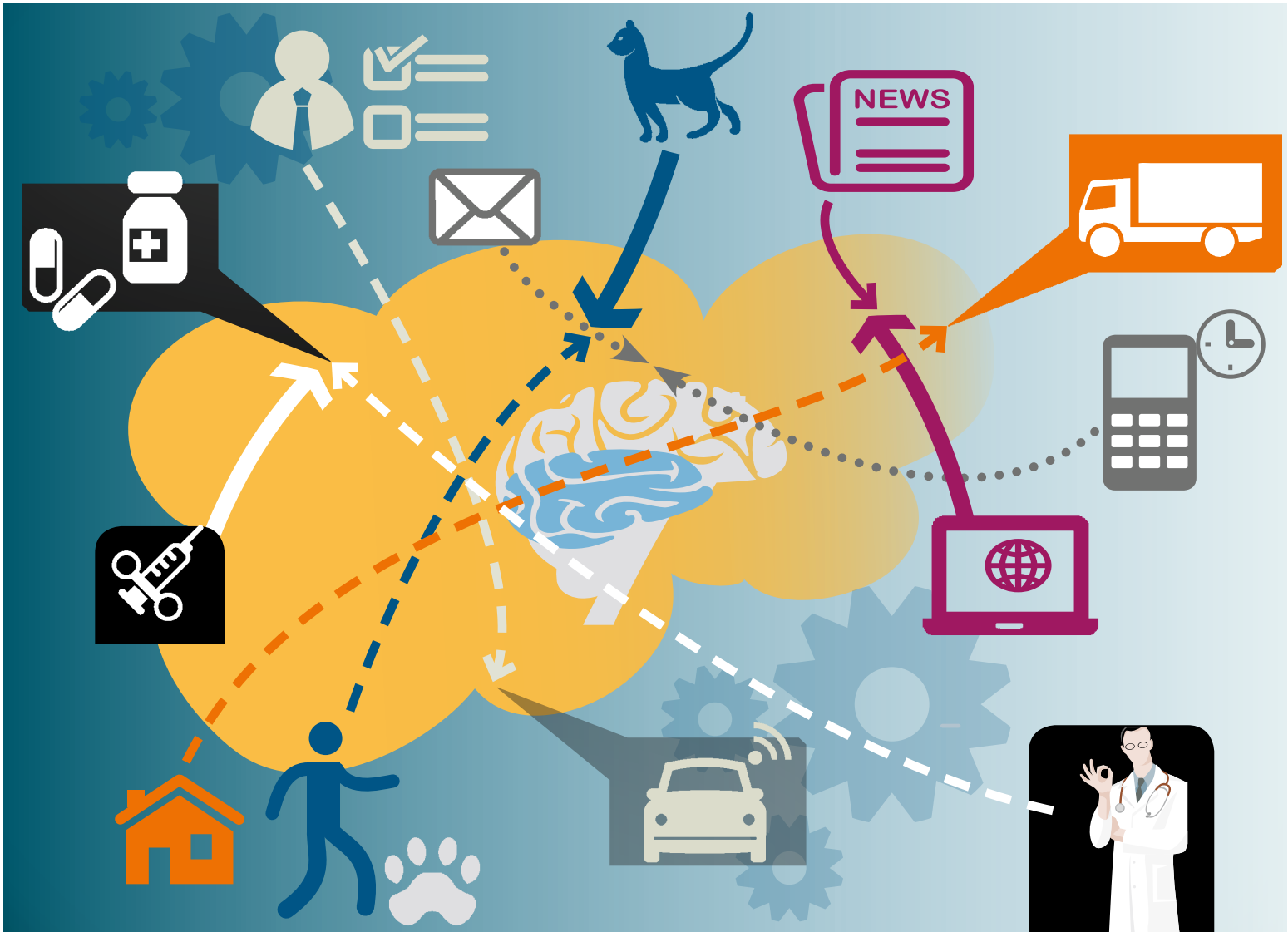
The explosion of increased healthcare needs, a demand to improve care and a strong push to control costs, have caused industry leaders to look to m2m as the solution. For companies to achieve successful cellular m2m deployments, it is critical that OEMs have the ability to work with one point of contact. Together with its partners, Multi-Tech significantly simplifies the m2m process. The Multi-Tech team has come to truly appreciate the healthcare industry's distinct challenges and is ready to help. <<

1) Frost & Sullivan, "North American Patient Monitoring Industry – Investment Analysis, May 2008
2) Frost & Sullivan, "Preparing for an Aging Society: Challenges faced by the Healthcare System," June 2009

SHARING AND AGGREGATING DATA IN THE CLOUD

Bob Emmerson, *Freelance Writer & Industry Observer*

www.electric-words.org



>> When servers are collocated in private or public clouds there are significant business and performance benefits. Adopting the cloud-computing model will take the m2m industry to the next level. Solutions will be able to share real-time data and employ it in different ways. And as data volumes grow, it can be aggregated and analyzed, thereby providing new, insightful information.

The ability to advance the state-of-the-art through sharing and aggregating m2m data has revolutionary implications but it is founded on two proven Information and Communications Technology (ICT) developments: virtualization and a service-orientated architecture (SOA).

Virtualization breaks applications down into components and SOA puts them back in another way. Why do that? Because it enables the rapid creation of applications that interpret real-world data in different ways, which is the way we work, both as consumers and business professionals.

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 ICT for various technical and business publications. He has produced market reports for the Financial Times, numerous white papers and three books.

Let's take a hypothetical example. A company has a large fleet of lorries and it employs a telematics solution to provide data on locations and driver behavior. At regular intervals they go to the garage for maintenance. The interval will typically be based on the mileage. However, driver behavior impacts on tires and brake pads, so in some cases the interval might need to be shorter for safety reasons.

If the company authorizes this information to be shared via an API then a spin-off application could allow the garage to offer a customized, proactive service. And in turn, the manufacturer of the tires and brake pads could get useful, real-world information on their usage.

Sharing versus integration

Earlier attempts to provide similar functionality were based on complex technologies that integrated suppliers and other third parties. Huge investments were made in ambitious projects and all too often they were late, overran the budget, and ultimately they failed. And during the Internet bubble there was a lot of hype about consumer devices in the home communicating with each other and outside services.

The difference this time around is that solutions are not based on direct communications between systems and devices. Instead they simply communicate to the cloud: nothing changes. Information is shared by virtualizing the applications and then reconstituting the relevant components.

Aggregation in Enterprises

The Mobile Enterprise is a cloud-centric development that is being driven by the functionality enabled by smart phones. Front-line, mobile employees can access the information they need when communicating with customers: they can also update databases with real-time information and transaction data. And when m2m applications become part of the ICT environment databases are automatically updated with real-time, actionable information coming from devices, thereby complementing the manual process and leveraging investments.

The Internet of Things

According to Om Malik, a respected blogger, right now there are 9 billion connected devices and this figure will rise to 24 billion by 2020. Cisco and Ericsson put the figure at 50 billion, which shows that nobody really knows but it will be huge.

So, how are we going to be able to store all that data and how are we going to enable data to be shared between different devices and across different sectors. These are not trivial tasks, but they do tend to get overlooked in the plethora of IoT hype.

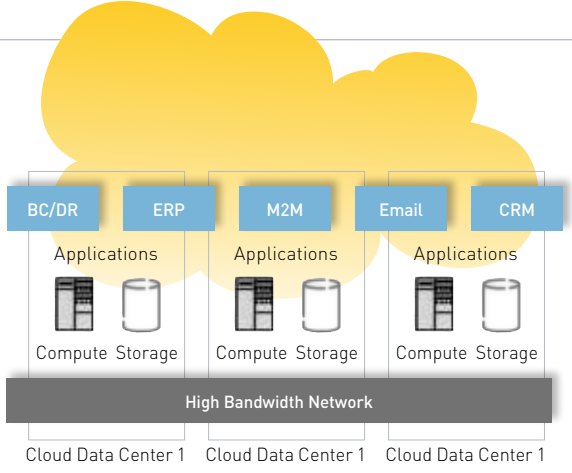
m2m data is intrinsically dynamic and the applications that leverage that data need to provide real-time information as well as the results of predictive analytics, e.g. trends in the many different marketplaces. When those 24 or 50 billion devices are online there will be a deluge of real-time data and the cloud is the only place where it can be stored, shared and aggregated. Moreover, the requisite resources – storage, processing and memory – can be on a demand basis.

The cloud will grow and scale in line with market requirements, which in turn will grow as a result of brand-new solutions and the new possibilities that will be enabled by predictive modeling.

M2M IN THE CLOUD

Today mainstream business processes run in data centers, which can be located in private or public "clouds". The processes are distributed across multiple physical servers, but a technique known as virtualization allows the facility to be used as a single, large resource.

Virtualization involves the decomposition of applications into components and a service-oriented architecture (SOA) that allows developers to combine and reuse them to create and modify applications. This concept makes more efficient use of computing resources. It's the direction ICT is going and m2m is set to follow.



The cloud can function as service delivery platform for m2m applications. A key feature of this "Platform as a Service" model is the ability to aggregate and subsequently analyze data coming from different sources.

Decomposition and SOA combine to enable the rapid creation and deployment of new services and processes. Sharing component means that wheels don't have to be reinvented in order to enable real-time m2m data to become an integral part of enhanced enterprise processes.

NEW ITU STANDARDS FOR THE IOT AND M2M

www.itu.int

Bilel Jamoussi, *Chief of Study Groups, Telecommunication Standardization Bureau*

>> Since its inception in 1865, the ITU (International Telecommunication Union) has been facilitating industry consensus on communications technologies and services. Standardization runs in parallel with innovation, albeit with an inevitable lag. Standards, however, provide the common platforms needed to enable continued innovation and market development.

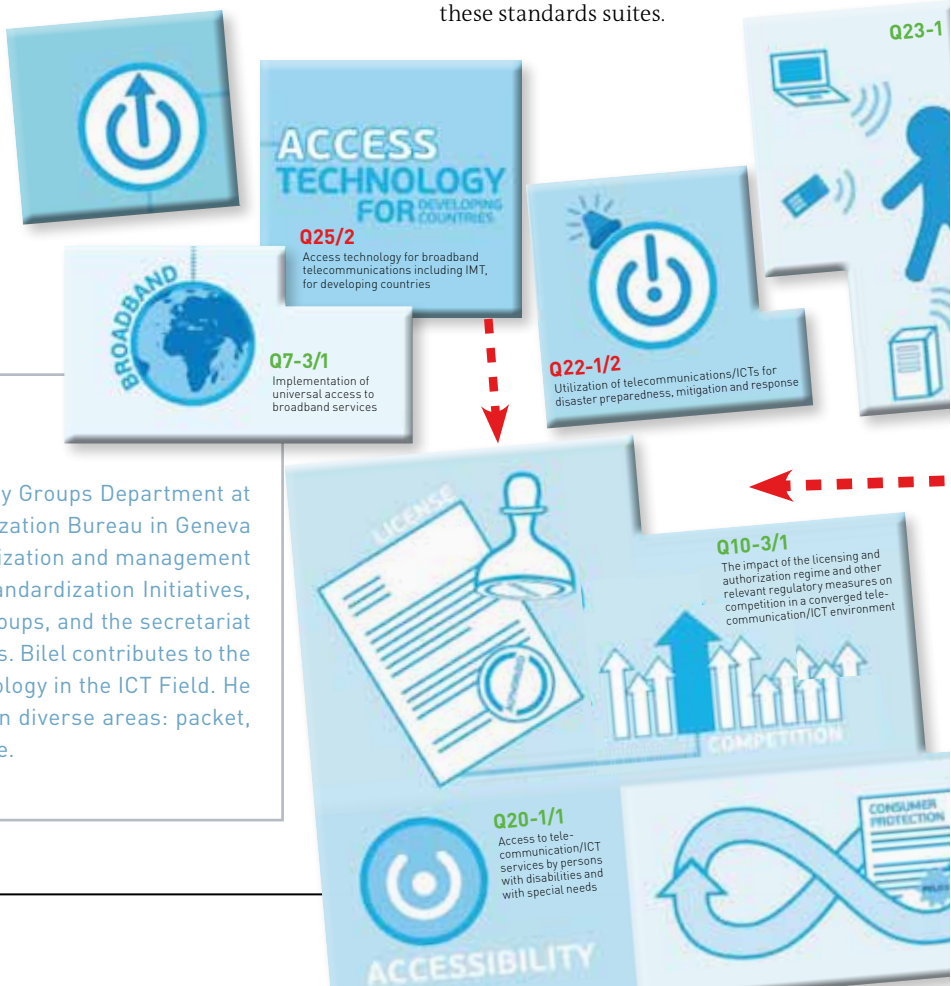
Two Internet of Things (IoT) stats are widely quoted: 10B Internet-connected devices by 2016 (Cisco) and 50B by 2020 (Ericsson). If all those devices are to be connected to the Internet by 2020 global standards will have a central role to play. They will stipulate the common communication protocols and functional frameworks required to enable such ubiquitous ICT networking.

Time will tell how the IoT works out and what it will deliver, but it is clear that machine to machine (m2m) and the other network technologies that form the broad IoT ecosystem will increasingly rely on the interoperability that's enabled by international standards. Without them the full potential of these twin, innovative developments cannot be realized. Moreover, today's fragmented markets would continue to experience interoperability issues, a lack of scalability, and costs too high to achieve significant growth.

m2m brings a whole new set of industry verticals into play, from utilities to banking, intelligent transportation systems, healthcare and more. Many players in these fields were not part of the ITU's regular telecoms/ICT ecosystem, so it was key to involve them from an early stage, i.e. get them to become a member of the ITU, where they join our traditional industry members from the ICT sphere, governmental representatives and researchers from academia. This activity has been very successful, e.g. the Continua Health Alliance, the Bank of America, the Open Geospatial Consortium, EDRF and many more are on board.

STARTING ON THE SAME PAGE

Setting standards can be tricky, but in the case of m2m there are different regulatory requirements in the different verticals and there are also geographic variations. Coordination is a huge task but there is a well-trodden path with clear steps towards a fully functioning standards suite. Given its unique membership model and vast experience in this definition of the landscape and publication of the requisite protocols, ITU is the ideal place to forge these standards suites.



Vita

Dr. Bilel Jamoussi is Chief of the Study Groups Department at the ITU Telecommunication Standardization Bureau in Geneva where he is responsible for the organization and management of the ITU-T Study Groups, Global Standardization Initiatives, Joint Coordination Activities, Focus Groups, and the secretariat comprising Counsellors and Assistants. Bilel contributes to the innovation and advancement of technology in the ICT Field. He has 22 granted and filed US patents in diverse areas: packet, optical, wireless, and quality of service.

We now have consensus in two key areas. Recommendation ITU-T Y.2060 provides an overview of the IoT; it clarifies the concept and scope of IoT, identifies its fundamental characteristics and high-level requirements, and offers a detailed description of the IoT reference model.

Recommendation ITU-T Y.2061 provides an overview of machine-oriented communication (MOC) applications in next-generation network (NGN) environments; it covers the NGN extensions, additions and device capabilities required to support MOC applications. In addition ITU Y.2026 defines the functional requirements and architecture of the NGN for support of ubiquitous sensor network applications and services.

These first steps may seem to be modest, but they are critically important. They allow all the global players in the broad spectrum of activities and requirements to agree on the terminology and the basic requirements and that is no small feat. Moreover these and other Recommendations are needed before reference documentation can be created. This material can then be employed to start internal dialogs in the various countries and enable an m2m environment that operates within the relevant regulator frameworks.

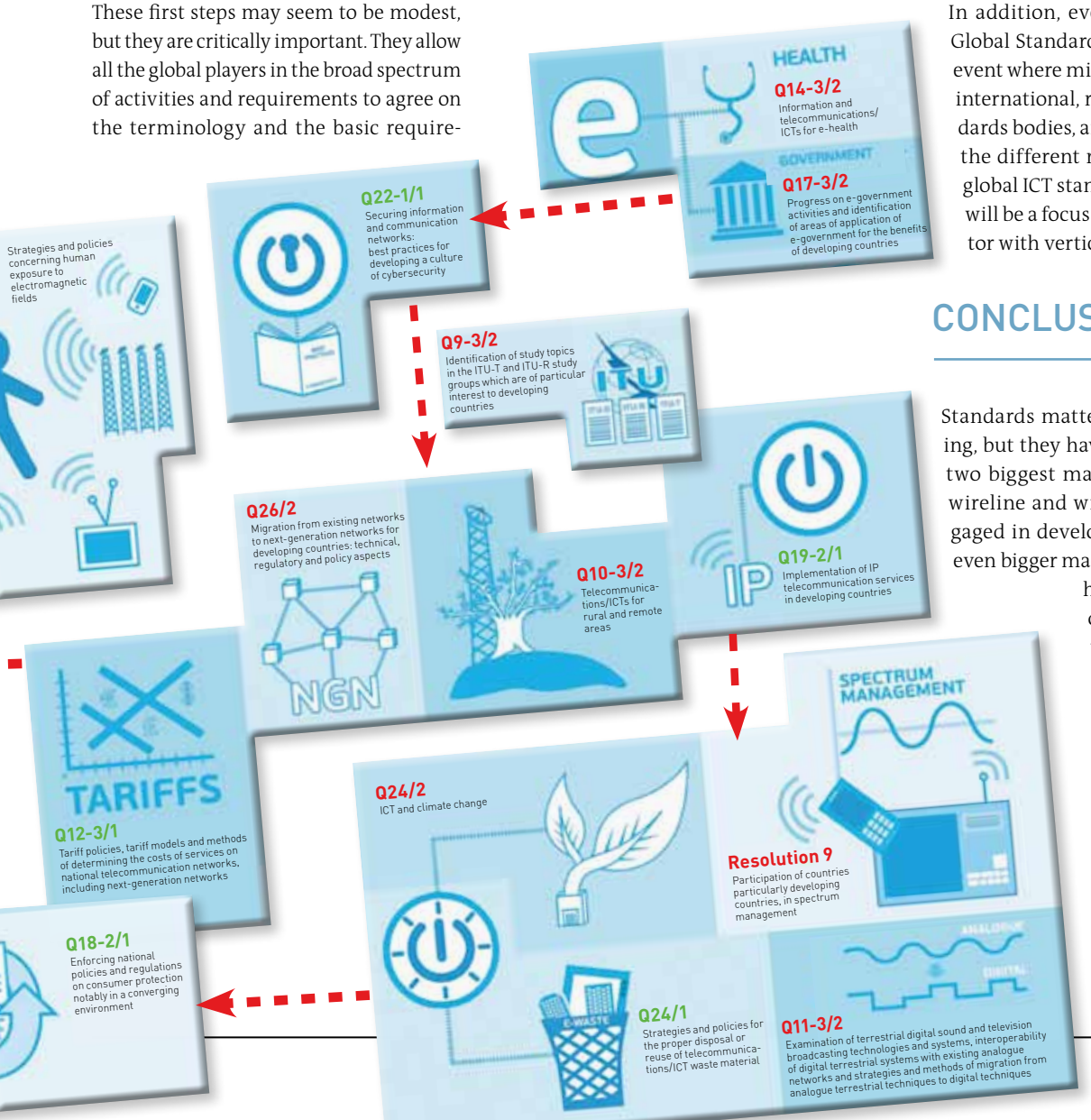
THE LIFE-ENHANCING POTENTIAL OF M2M

The challenges confronting increased development and widespread deployment of e-health solutions in many ways mirror those of the ICT industry as a whole in the age of convergence and cross-sector collaboration afforded by next-generation networks. Universal accessibility is fundamental to enabling the world's population to benefit from the full potential of e-health.

With a growing ageing population, who may need more frequent check-ups, m2m can be used for example to monitor blood sugar levels and transmit them to the healthcare provider, enabling patients to stay at home unless there is an active problem. RFID tags can be used in hospitals, enabling vital equipment to be located in an emergency. Not only does m2m have the potential to enhance or even save lives, it can also help to better manage and govern healthcare institutions.

As indicated earlier, ITU is deeply involved in this sector and has close links to the World Health Organization (WHO), which is a sister UN organization, as well as organizations such as eDevice and the Continua Health Alliance.

In addition, every four years, the ITU hosts a Global Standards Symposium. This is a one-day event where ministers, regulators, heads of other international, regional and major national standards bodies, and industry representatives from the different regions of the world will discuss global ICT standards challenges. This year there will be a focus on the intersection of the ICT sector with vertical sectors such as e-health.



CONCLUSIONS

Standards matter. They may not get pulses racing, but they have enabled and underpinned the two biggest machines in the world: the public wireline and wireless networks. ITU is now engaged in developing enabling standards for an even bigger machine: the Internet of Things. It is hard to overstate the importance of m2m communications and the IoT. These closely related developments are already playing a significant role in both our professional and business lives. <<

www.itu.int/itu-d/study_groups

- Enabling environment, cybersecurity, ICT applications and internet-related issues
- Information and communication infrastructure and technology development, emergency telecommunications and climate-change adaption

POLICIES FOR M2M COMMUNICATION IN TODAY'S SMART ERA

KOREA COMMUNICATIONS COMMISSION

Jung-tae Kim, *Leader of Information Communication Network Team, Korea Communications Commission*

www.kcc.go.kr

>> The most common word you hear in IT nowadays is 'Smart'. With intelligent smart devices, such as Smart Phone, Smart TV, Smart Car and Smart Meter, we get to enjoy a more convenient lifestyle. m2m means automated telecommunication technology and infrastructure in these smart devices, and it contributes to the provision of the various convenient services that we employ. There are services that are already available – Smart appliances that provide convenient services at home; Smart cars that automatically diagnose and inform users of the car's condition; a healthcare service that collects and sends health-related information such as blood pressure and blood sugar level to hospitals; and Smart measuring systems that measure gas or electricity usage.

m2m communication does not only add convenience to our daily lives, but it is also very important in finding new growth opportunities. Since the high-speed Internet and voice telecommunication market is already saturated, IT business companies are looking for new profit generators. The world's leading market research companies have also selected m2m communication as the promising next-generation Internet technology. m2m communication is composed of markets selling many different products in small quantities and it is therefore ideal for small- to medium-sized companies. However, because it involves quite complex value chains, including chipset, device, platform, network and applications, and due to lack of standards, m2m still is in the beginning stage.

Market developments

In order to take a position in the market, many countries are investing in R&D centers and industrial complexes, especially for Telematics and the Smart Grid. By enacting a law, Europe made it compulsory for all vehicles to install an e-call system by 2015. E-call sends out a request for emergency service to the police together with information on location, impact strength and airbag condition. Last year, the Korea Communications Commission also selected 'm2m communication' as one of the 7 leading new

industries related to Smart technology. And in order to secure leadership in this future technology, the Korea Communications Commission is working on R&D, providing support for SMBs for commercialization of the technology, standardization in and outside the country, and revising m2m related legislation.

To boost the competitive power of m2m technology, an ultra-low power communication modem that can be used for healthcare has being developed. Also, a standard platform that may be used regardless of the telecommunication service provider, and a direct communication module for adjacent devices are also being developed. In order to develop a service model that would lead the development of the technology in the public sector, the Korea Communications Commission is putting efforts in many different pilot projects, such as an Intelligent Bus Stop that provides information regarding bus lines and arrival times, Automated Weather-related Information Gathering, Smart City Security Service to prevent crime against children and women, and a Smart Farm that remotely monitors a farm's condition.

Targeting SMBs

The Korea Communications Commission is also putting efforts in creating a collaborative ecosystem by supporting small- to medium-sized ventures. Although m2m communication is more suitable for SMBs, in order for these ventures to become independent they need policies that support the creation of a horizontal ecosystem. The Korea Communications Commission operates an m2m communication support center for ventures to test their technology and service. The center also provides technology consulting, and support for the commercialization of new ideas. In addition it has encouraged SMBs and telecommunication service providers to hold regular meetings to create more collaborative environments for both large enterprises and SMBs. And it also supports training of professionals to solve chronic manpower shortage problem.

So far, m2m communication services face some issues in commercializing the technology and achieving economy of scale due to the fact that the devices and service platforms vary for different sectors such as vehicles, healthcare, home appliance and electricity. Therefore, standardization of platforms is an urgent requirement. A global m2m communication standardization committee was established in July 2012, it is therefore expected that with a global standard interoperability of m2m devices would increase, leading to a decrease in product development cost, therefore contributing to the growth of the m2m communication industry.

The Korea Communications Commission is aggressively putting efforts into the standardization of m2m communication. It supports global standardization activities through one m2m, 3GPP and the ITU and is collaborating with professional research institutes, forums and local standard development institutes. In addition it has created a standardization consortium composed of companies from vehicle communication, smart home, healthcare and the smart grid in order to develop technological standard for each sector. If a common platform can be applied on all m2m communication services and products, interoperability would increase, decreasing product development cost, and would ultimately contribute in expanding the m2m communication industry.

Modifying legislation

Also, the Korea Communications Commission is putting efforts to modify legislation to prevent current legislation hindering growth of this future Internet service technology. Until now, m2m communication devices were charged the same amount of electromagnetic usage fee because they also use mobile communication network. However, related legislation has been revised, and the fee was lowered to support those companies facing difficulty due to low profitability. As the number of devices dramatically increases, the address structure for m2m communication will need to be redefined. Also, through collaboration among different government departments, regulations that hinder commercialization of the service would be modified.

m2m communication may sound unfamiliar to you. However, all devices surrounding us employ intelligence that can automatically exchange data. A smart era, where all objects are connected through intelligent networks to provide more convenient and secure services for society is what m2m communication will bring to us in the near future. <<

CERTIFICATION REQUIREMENTS AND BEYOND

www.7Layers.com

INTERVIEW *with* **David Trevayne-Smith,** *Test and Market Access Services, 7Layers*

telit2market: Who provides support for integrators buying modules from a distributor?

Trevayne-Smith: The test laboratory can access the documentation covering FCC grant information, AT commands and the process for integration. They have access to the module manufacturers' technical support teams and the carriers' requirements. You just need to ask.

t2m: With all the talk about the sun-setting of 2G networks, what should integrators relying on 2G do?

Trevayne-Smith: Closure of 2G will happen in phases, so develop your product using modules supporting multi-band and multi-mode 2G, 3G and even LTE. Although at the moment the cost is higher, the long term ROI is good since you will have a device for the next 10+ years. Extending your product's lifespan and the subsequent savings in R&D and certification costs must be considered.

t2m: I have this great device! What do I need to do to get it to market?

Trevayne-Smith: First, we review how it was created and the requisite module. Using a pre-certified module is a shortcut and can potentially save 90% in costs. But it still isn't as easy as simply soldering or screwing on an antenna, adding power and a SIM card.

We review the original FCC grant notice for the module; your device may be a simple single module, or complex with Wi-Fi, short-range radio and Bluetooth. Do you see something on the grant like "The antenna(s) used for this modular transmitter cannot have a gain of more than 3 dBi and must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter"? To meet the regulatory requirement if you change from the original grant authorization, you will need additional FCC testing to obtain a permissive change on the grant with cooperation from the module manufacturer. We also review, dependent on the proposed usage, if Specific Absorption Rate (SAR) testing is applicable in order to ensure Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields.

PART 1: NORTH AMERICA

In North America the PTCRB is the main certification for many carriers, the savings in time/cost using a PTCRB certified module will ensure this is awarded. Check also the carrier's requirements; many have additional listings of approved modules that have been through carrier certification. I have seen some great ideas fail due to a poor choice in purchasing modules that were not pre-certified and effectively unusable due to increased certification costs.

PART 2: EUROPE

In Europe the R&TTE directive governs regulatory approvals. Your Declaration of Conformity (DoC) will be required and networks often need GCF (Global Certification Forum) certification. Like the PTCRB, they have a module integration process. Again the consideration of EMC, Safety and SAR is required if applicable.

PART 3: REST OF THE WORLD

We can write a book on this, but with the FCC, R&TTE, PTCRB and GCF you are covered for 90%; the other 10% may require in-country testing. Your type approval specialist can advise you how to get approvals for your product from Afghanistan to Zimbabwe.

t2m: Which cellular module is best?

Trevayne-Smith: No laboratory can tell you which is best. We can assist you in making the decision based on our knowledge of certification and of working with module manufacturers, but the choice is yours.

Key factors determine choice: where is the module to be used? Not all carriers use the same bands or even the same technology. A CDMA module without multimode 2G/3G or LTE isn't going to work worldwide. Saving $5 on the cost of a module isn't always part of the equation in the big picture.

t2m: What is the most common failure found in testing?

Trevayne-Smith: Antenna, Antenna, Antenna! To solve this we advise pre-testing. A series of scans in a reduced mode and engineering assistance from your laboratory should give you the information to make necessary changes.

t2m: How does LTE change time and cost for these certification and compliance processes?

CTIA OTA chamber for RF Performance Measurements

Trevayne-Smith: Several modules already support LTE. Their certification and compliance lead to difficulties for integrators mainly due to the number of LTE bands required to cover current and future LTE networks worldwide. Previously a 2G/3G module would support perhaps 90% of the world and carrier configurations. With LTE there is no easy way to create one module to fit all, so the effective cost of certification will be higher, needing 2 or 3 modules to cover North American carriers and potentially 5 for global coverage.

This cost may create the need for rationalization of certification effort on particular carriers or regions. Integrators will need to develop better carrier relationships and select smart module configuration for their market plan. Carriers are offering programs to assist with LTE module integration certification and carrier approvals. Certification costs and time can be three times higher than in 2G/3G depending on carrier but the capabilities and devices will have a longer life in the market without the need for recertification. The wider bandwidth allows use in applications that previously could not even be considered.

Let's look forward into the world being the Internet of things, rather than expecting a piece of machinery to just connect and send short data bursts to each other.

Vita

Originally from the UK and now in Irvine, California, David has been in telecoms since the 1990's. He worked for one of the world's largest network operators, a tier one cellular handset manufacturer, and two independent ISO/IEC 17025 Test Laboratories. His knowledge of certification requirements for modules and m2m devices comes from involvement in technical forums and bodies including the PTCRB, CTIA, GCF and GSMA.

M2M COMMUNICATIONS TECHNOLOGY TRENDS

www.ctvr.ie

Keith Nolan, *CTVR / The Telecommunications Research Centre, Trinity College Dublin*

>> In Europe, the dominant technologies used for smart metering are power line carrier (PLC) and general packet radio service (GPRS). In the US RF mesh solutions are used in almost 90% of smart metering deployments with GPRS and PLC accounting for the majority of the remaining share.

PLC using the older X10, CEBus, and LonWorks protocols are among the lowest cost solution options for smart grid deployments, however scalability is severely hampered by the need for frequent aggregation points, hostile power line RF environment, the need to own the grid infrastructure, and applicability for one m2m market sector only. The latest PLC standards are PRIME; a multicarrier-based PLC standard that offers increased robustness and data rates for smart meter deployments and G3-PLC™; also a multicarrier-based PLC technology that was developed by Maxim to meet the requirements of Electricité Réseau Distribution France (ERDF). G3-PLC has now gained worldwide interest and is under consideration by the ITU, IEEE, IEC and ISO standards committees. PRIME is also only suitable for mainly smart meter deployments.

GPRS is a second generation (2G/2.5G) cellular network technology that was introduced in 2000 as part of 3G upgrade plan for GSM. GPRS uses the spare timeslots in unused time division multiple access (TDMA) GSM channels. EDGE is a data system built on GSM networks and is referred to as a 2.5G cellular network technology or 'pre-3G'. EDGE offers up to four times greater data rate than GPRS. 3G arrived with the introduction of high speed packet access (HSPA) which can support downlink speeds of between 1.8 to 14Mbit/s.

LTE: an emerging technology option

LTE is the latest in the commercially deployable cellular network technologies and the standard provides for peak downlink rates of 300Mbit/s and peak uplink rates of 75Mbit/s. LTE is referred to as 4G and it is emerging as a communications technology option for smart metering. LTE is seen as the natural upgrade path for carriers with GSM/UMTS networks and deployments are currently underway worldwide. The key features of LTE also include low-latency operation (in the order of milliseconds in ideal environments) and an all-IP network. The data capacity and low-latency features of LTE are essentially an overkill for the actual data requirements of m2m applications. The power demands associated with LTE in particular are expected to prove challenging for a large scale m2m deployment in a power constrained environment. However, it is likely that LTE will win out as the technology of choice quite simply because it is being adopted by most operators worldwide as their preferred technology for the next 20-30 years, it's an all-IP technology, and they can upgrade their existing infrastructure to support LTE rather than start from scratch.

In the U.S., where RF mesh solutions are more predominant, solutions include IEEE 802.15.4 ZigBee and proprietary standards namely, Z-Wave and FlexNet. Scalability is restricted due to the need for specific frequency bands in the case of Z-Wave and FlexNet. The short distances (up to 10 meters) involved in a ZigBee mesh solution and the need for frequent backhaul limits the scalability of this option. In-building solutions also include WirelessHART, a wireless sensor networking protocol, and ISA-100, an international standard for wireless systems for industrial automation. The main reason why RF mesh technologies are more widely used in the

U.S. is due to a more favorable spectrum regulatory environment that allows devices to use license-exempt spectrum in the 902-928MHz range with a 1W maximum transmitted power capability for systems employing at least 50 channels. This is unique to ITU Region 2 (Americas, Greenland, some eastern Pacific islands). In contrast, RF mesh devices in Europe are currently limited to the use of a single channel in 868MHz with a 25mW power limitation for short range devices. This severe power restriction significantly restricts the communications range of the devices to in-room/in-home operation.

WiFi and WiMAX

The typical WiFi communications range extends to approximately tens of meters indoors for 2.4GHz and it can be less for 5GHz. Building penetration abilities are severely hampered by the frequency range characteristics, operation is limited to line of sight, and the ISM frequency bands can feature multiple other services and interference sources that can adversely affect the performance of WiFi.

The IEEE 802.16 family of worldwide interoperability for microwave access (WiMAX) is designed for wireless connectivity across larger geographical areas than is possible with WiFi. The advent of LTE has reduced the worldwide interest in WiMAX however.

Weightless is an emerging proto-standard for m2m that takes advantage of unused frequency spectrum in the UHF band referred to as TV whitespaces. Weightless is being developed primarily by UK-based company Neul through the Cambridge Wireless Standards Special Interest Group (SIG). It is specifically designed for scalable wireless m2m applications where the chip cost for high volume deployments is less than US$1.

In the figure below, the range of technology choices considered for m2m are mapped in terms of cost and ability to scale for high volume m2m deployments. In this figure, the evolution of cellular technologies from 2G e.g. GSM/GPRS/EDGE, 3G e.g. HSPA, and on to 4G e.g. LTE, allows for an increase in the number of devices to be supported. But there is the significant drawback of increased chipset prices and operator-related costs. PLC, GPRS, and LTE are not sufficient for power-constrained and high-volume, low-cost applications in market sectors beyond the smart grid. However, in the case of PLC and cellular standards (predominately GPRS), these technologies are currently accounting for almost all early deployments of smart meter wireless communications market in Europe.

No single solution

There is no single solution that will suit all m2m requirements, on-the-ground business environments, existing operators, and spectrum regulatory policies. The future trend is likely to be the continuance of PLC and RF mesh for smart meter/smart grid applications and the increasing dominance of LTE as older technologies like GSM/GPRS are phased out over the coming years. <<

TELIT HOSTS SECOND ANNUAL DEVCON CONFERENCE IN SAN DIEGO

Telit® wireless solutions | DevCon 2013

Leslie Hart, *Director of Marketing, North America, Telit*

>> Preceding CTIA MobileCON in San Diego, nearly 200 people joined us on October 8, 2012 for our second Telit developer's conference, Telit DevCon 2012. It was as successful as the inaugural conference last year. We hosted the event at the Hard Rock Hotel in San Diego near the convention center and had a great turnout!

Telit DevCon is a one-day, two-track event, designed for both engineers and executives. The event allowed attendees to gain the technical tools and business insights necessary to launch m2m applications and to bring value to their customers. Oozi Cats, Chief Executive Officer, of Telit Communications PLC, delivered the keynote at the start of the day. He updated attendees on Telit's progress and plans for the future. Rick Lisa, Intel Mobile Communications' Director, Worldwide, m2m Business Development, Embedded Sales Group, gave the second keynote and discussed how "useful" data is critical to increasing m2m deployments. The conference included a customer panel and a carrier panel, the latter featuring Eric Krauss of AT&T, Christian Solomine of Rogers, and Mike Finegan of Sprint as well as instructional sessions.

We had analysts, media reporters, industry experts, business leaders and engineers in attendance sharing their knowledge, insights and ideas regarding Telit Wireless Solutions and the ever-changing m2m market. Based on what we heard from presenters, attendees and sponsors, it was an engaging and valuable experience. At this point in the m2m market's maturity, we believe a developer's conference is critical to enable sharing of knowledge and insights about the different opportunities available as we move closer to an increasingly connected world.

We want to thank all of the Telit DevCon sponsors and attendees for making the event a success. Their contributions made the conference a great opportunity to share information related to m2m.

Telit's goal is to support our customers from the beginning of their design and development process, through their product launch and beyond. Telit DevCon helps accomplish this goal.

For more information about this year's conference, email us at marcom-northamerica@telit.com, and follow Telit on Facebook and Twitter for Telit DevCon 2013 updates. <<

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TELIT AFFIRMS ITS ROLE AS A PROMOTER OF INNOVATION BY SPONSORING THE M2M CHALLENGE

Alessia Borrett, *Telit*

>> With the current, incredible rate of technology and solution development, how does a company like Telit manage to keep an eye on the future and go on to support and foster innovation? One way is to sponsor bright and creative concepts that bring ideas and innovation out into the open. So in March 2012 Telit Wireless Solutions decided to sponsor the "M2M Challenge" (www.m2m-challenge.com), a new m2m competition concept by m2mapps. m2mapps is an online platform where companies can register free of charge, create a company profile, and upload product and service information. As the first platform of its kind, m2mapps serves as central point of contact for companies around the world wishing to market products and services professionally to the broad and growing m2m marketplace.

A year on after a successful initial event, Telit decided to sponsor the M2M Challenge competition in order to encourage more players to step out and highlight their latest innovations. The Challenge opened in July 2012 and took contestant submissions for six months.

By creating a profile on m2mapps.com, Challenge participants were further able to extend their networking programs, making it easier for potential customers to become aware of their services and/or products.

From large companies to individuals, the M2M Challenge saw a rich range of contestants joining in. The Challenge was designed to seek out and showcase new solutions in many different application areas, thereby enhancing the development environment for m2m solutions and accelerating growth in the market.

Other well-known industry leaders such as Ericsson, Swisscom, and VARTA Microbattery decided to become sponsors because of the future value-add brought by this award. They were also interested in fostering the development of the m2m market and in identifying and getting in touch with potential partners and customers at an early stage of development.

The M2M Challenge allowed the best competing solutions for each category to be recognized through marketing channels and promotional activities of sponsoring members. In fact, from the time the competition opened in July, special sessions were created in several road shows and exhibitions throughout Europe, Asia, and the US. This was all made possible thanks to the support from the main sponsors, along with involvement from M2M Challenge partners including Beecham Research, Cluster 55, team Côte d'Azur, and Wearable Technologies.

Telit has always been in tune with the evolution of major m2m verticals such as Mobility, Healthcare, Security, Energy and Consumer Electronics. We saw how the M2M Challenge could be an important source of start-up solutions having a clear value-add in these segments. For Telit, the future on the m2m market lies in innovation, and the concept behind the M2M Challenge could not have been a better vehicle for inviting innovators to come forward and introduce themselves. <<

© M2M Challenge

A DAY IN THE LIFE OF A WEARABLE TECH ENTHUSIAST

WEARABLE TECHNOLOGIES

Wearable Technologies www.wearable-technologies.com

>> The first prototypes of portable and wearable electronics have been inspiring leading research institutes as well as tech enthusiasts for over two decades – maybe longer. But over the last two years consumer friendly wearable technology products have begun to appear in the shops. As CEO of Wearable Technologies Service and founder of the world's leading B2B market place, Christian Stammel naturally lives the life of a Wearable Tech enthusiast:

6 a.m.

A soft vibration on my right arm wakes me every day at the usual time. It's my sleep sensor that has softly woken me from my dreams. It diligently transfers my sleep data in real time to the cloud and my smartphone app confirms what I already feel:

My daughters kept me awake for quite some time at night and I feel whacked. My mood does not improve after stepping on my Wi-Fi scale in the bathroom: my weight curve states unmistakably that Christmas is coming closer and that the candy is already paying its tribute. I save myself the sneering comments of my friends and turn off the automatic Facebook posting function of my weight data.

7 a.m.

Gorgeous weather drags me outside on my usual running trail. I put on my sensor-enhanced running shoes so that the kilometers aren't run for nothing, i.e. to collect credits for my online running community. Of course I am running with my fully integrated sensor insole that additionally analyzes if pressure distribution, loading and acceleration of my feet are okay. For safety reasons I am wearing my running jacket with integrated LED lights. I found it in my daughter's dressing up box: she likes to play Katy Perry on stage.

From my neighbor I have learned that boars have been sighted in our neighborhood lately and I put my safety alert sensor on. It's in my pocket and it lets me alert my wife at home in case of an emergency. Maybe I should also save the number of our local hunter on the device?

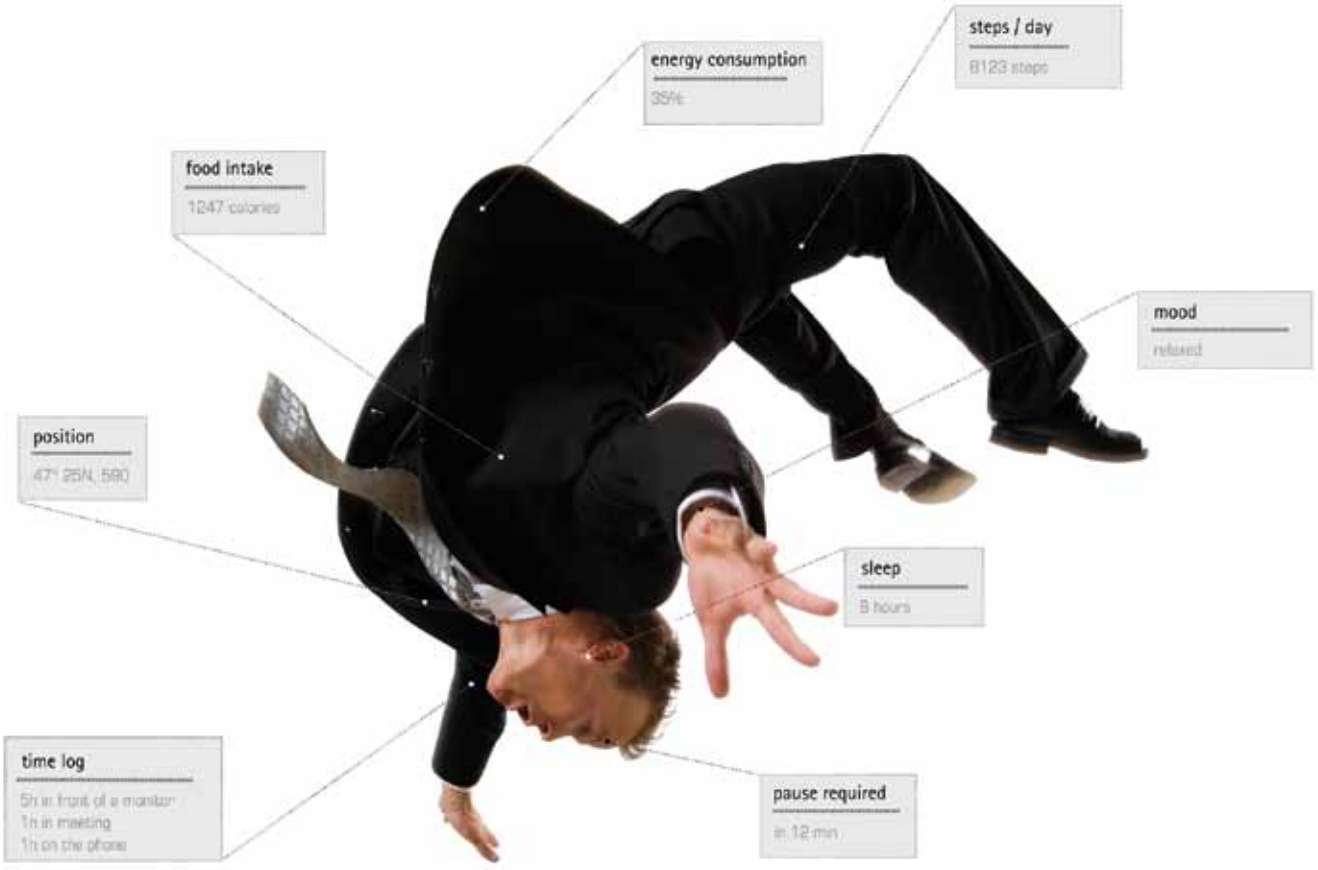
8 a.m.

Back home, safe and sound and freshly showered, I am standing in front of my dresser. I have an important business meeting scheduled for today and therefore I am putting on my new suit that has an integrated charger for my mobile phone. In addition it protects me from radiation.

9 a.m.

Just arrived at the office and even before having my first espresso I put on my most important device for long days at the office: my back sensor, which reminds me to sit in a healthy position. The sensor vibrates

FIND OUT MORE ABOUT YOUR BEHAVIOUR



if I do not sit straight and I can also view an avatar on my smartphone to check my back alignment. With my special headset I can control my coffee machine as well as my laptop with my thoughts. Which is great because I have my hands free, but this also doubles my caffeine intake.

Only my staff does not seem to get used to my vibrating tactile wristband task delegation. We need to come across something better here!

3 p.m.

Due to the lack of sleep, I am suffering from an energy slump and tension. Luckily I am the proud owner of a head massage helmet that relaxes my head within a few minutes and makes me smile again. A special LED patch relaxes my aching muscles while I am doing my second round of phone calls of the day.

7 p.m.

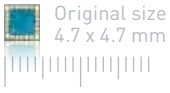
I have to get going. I just have to finish this last email. Dinner will be ready within the next half hour. How do I know this? My fridge at home has an unobtrusive sensor attached that informs me via my smartphone that the door has been opened a couple of times over the last five minutes. I really have to finish this last email first, but that's it for today – also my concentration level sensor tells me that it's time to go home.

This has been, of course, a fictional day in the life of Christian Stammel. However, most of the products mentioned above have been tested by Christian or his team. If you share our vision or would like to learn more please contact the WT team. We are happy to help and to inform you about our upcoming events or to provide you with in-depth knowledge in a dedicated WT workshop. www.wearable-technologies.com <<

Vita

Christian Stammel is the founder of Wearable Technologies (WT) – the leading international B2B marketing platform for technologies worn close to or on the body. With more than 20 years of marketing experience and an excellent international network Christian has supported companies of all sizes in terms of business development, technology marketing and increase of sales activities.

WHEN A SMALL PART OPENS GREAT NEW WAYS.



>> The best things in life come in small packages – as the Telit GNSS module Jupiter SE880. With 4.7 mm x 4.7 mm and at an almost weightless 0.08 grams, it is the smallest, ultra-sensitive and most advanced GPS module worldwide, making it the perfect base for pioneering wearable technologies. It is very battery friendly, has an extremely low TTFF and is designed on the latest 3-D embedded technology. Best in class combined with Telit's tradition of leading the industry in miniaturization. <<

Telit – one of the fastest growing m2m companies worldwide.

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