M2M Now: ISSN 2046-5882

MAY 2013

PROFIT FROM A WORLD OF CONNECTED DEVICES

VOLUME 3 ISSUE 3

m2m now

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TALKING HEADS

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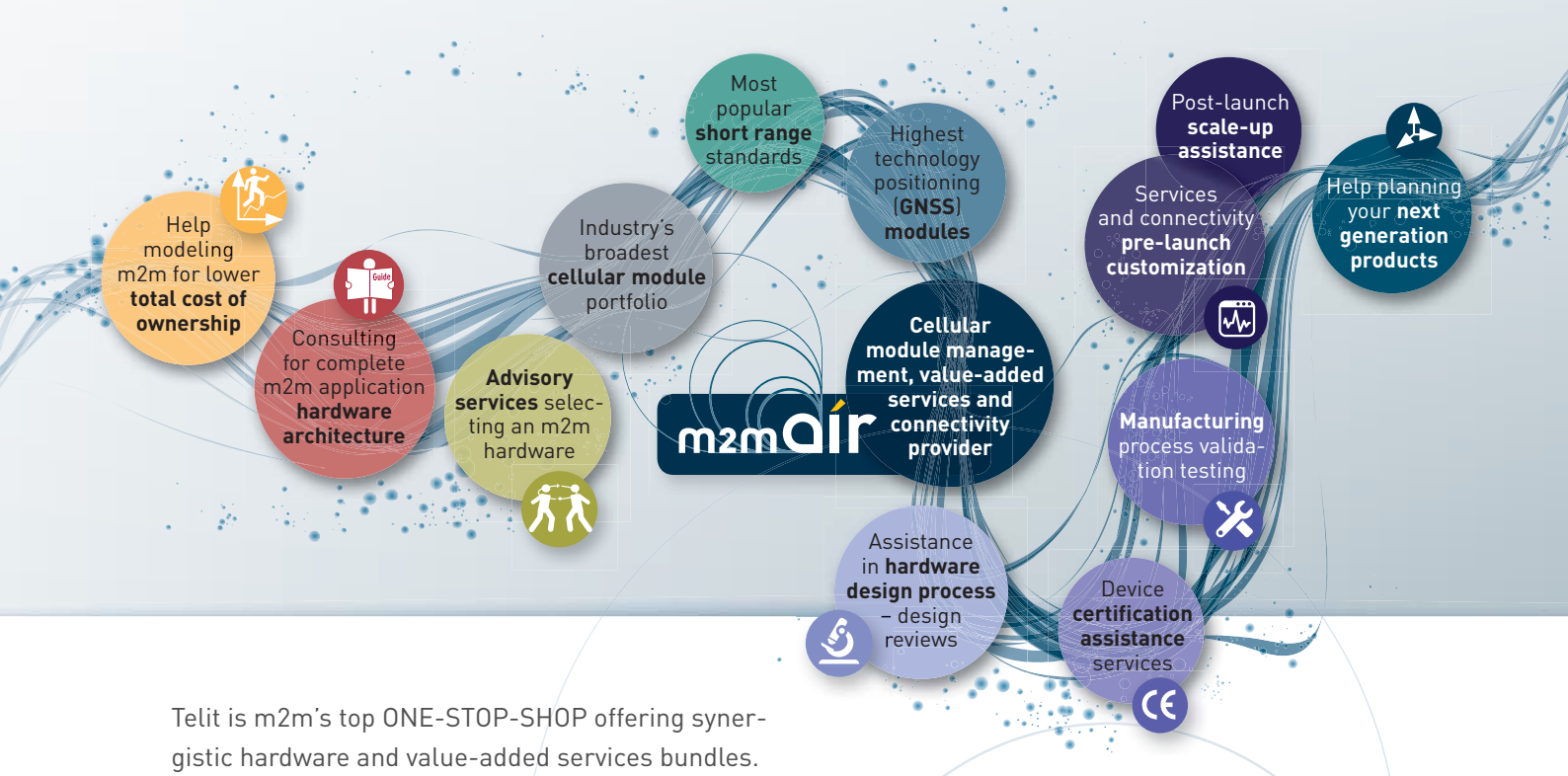

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If all you want is a telecoms job just skip the first paragraph!

telco exec


Jeremy Cowan

It's not every day that we get to launch a new service. So, to get the best out of your career grab a coffee and take two minutes to look at our People News on page 10 where we unveil a brand new Executive Search and Career Advice service, called **Telco Exec** (www.telcoexec.com). At **M2M Now** (and with our sister publication, **VanillaPlus**) we whole-heartedly recommend this new team. There's a quiet admiration here for the range of services our partners at TelcoExec have developed in a short time, mixed with awe at the enormous task ahead for them and for us. In Jason Bandy's lively team we are confident we have found the right partners with whom to offer a supportive and appropriately skilled careers service. Candidates, employers and the mildly curious, can find more information via www.m2mnow.biz. There are no hidden charges, no hype or false claims, just honest advice from top-level recruitment specialists with years of telecom industry expertise. It's M2M, not BS.

Of course, there's much more in this issue. It seems, you couldn't avoid the topic of 'Big Data' these days if you tried. To get past the hype we sent Alun Lewis, one of the communications industry's most respected journalists, out with a large machete and instructions to cut his way through the hype that surrounds 'BD', as it's inevitably now known. The result is our 9-page supplement (starting on page 27) on Big Data Analytics for M2M. If you thought Big Data was boring, think again – this is Life and Death stuff. And it's not just about technology; as Alun reports many of the challenges come from your partners (*you knew it was all their fault, didn't you!*).

Before you go, allow me to welcome the newest member of our Editorial Advisory Board, Gert Pauwels, M2M Marketing Director, International M2M Competence Centre, Orange Business Services (see Contributors at www.m2mnow.biz). We're honoured to have him. Also spare a few moments to find out how M2M is already saving lives in France's cardiac care, plus what's happening at CTIA 2013™ in Vegas this month, and what we can all learn from #MWC2013 in Barcelona. Our thanks to our sponsors and enjoy the magazine.

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PUBLISHED BY
WeKnow Media Ltd. Suite 138, 70 Churchill Square, Kings Hill, West Malling, Kent ME19 4YU, UK
Tel: +44 (0) 1732 807411

DISTRIBUTION
UK Postings Ltd
Tel: +44 (0) 8456 444137

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Printed in the UK by The Magazine Printing Company using only paper from FSC/PEFC suppliers www.magprint.co.uk

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M2M Now: ISSN 2046-5882

Matt Hatton, Machina Research: A clear top tier of four CSPs

Vodafone stays top in Machina Research's latest M2M benchmarking study of CSPs

For the second year running, Vodafone has been named the "CSP best placed to take advantage of the global M2M opportunity". Machina Research announced the results of its annual M2M Communications Service Provider (CSP) Benchmarking Study in April having compared major M2M CSPs in six key areas that will determine their future success: pedigree, platform, place, partnerships, process and people.

The Reading, UK-based research company, has identified a clear top tier of four CSPs that are establishing themselves as global leaders: AT&T, Deutsche Telekom, Telefonica and Vodafone.

The study's author Matt Hatton said: "Vodafone has been very active this year with lots of exciting new M2M developments and thoroughly deserves to retain the top spot. The company has focused on adding value through a diverse set of product offerings and pursuing new approaches to reduce the cost and complexity of M2M offers. Furthermore, Vodafone is structurally better placed to address M2M, courtesy of its C&W Worldwide acquisition and an elevated position for M2M within the new Vodafone Enterprise Division."

Hatton continued: "While Vodafone has taken top spot, it is closely pursued by three CSPs that have all had a good year in M2M in one way or another, particularly in initiatives that allow for better support of global client demands. We believe Deutsche Telekom has resolved its strategic approach to the US market, which was the key question mark in 2012, and has also done much work to build a global alliance in the form of the Global M2M Association (GMA). AT&T has also strengthened its global credentials through its network of operator relationships, as has Telefonica through its leadership of the (still officially un-named) global alliance of operators."

As well as the emergence of a top tier of four global operators, the other notable trend is that other CSPs will need to adopt an appropriate strategy to compete with these players' scale. In the study, this is characterised as: go vertical, go local, or go home.

Matt Hatton elaborated: "There is only room for a handful of broad-based global M2M CSPs. CSPs that cannot achieve scale will best address M2M by providing either highly specialised expertise in particular areas (e.g. Orange in the healthcare sector), or by focusing on their local territories where they have specific differentiators, such as enterprise sales force or field force, and/or can provide a high degree of customisation of solutions. In many cases these, rather than the global CSPs, will be the best choice for a procurer of M2M services, so all is not lost for those outside the top tier."

Qualcomm and DT partner on M2M application development platform for Internet of Everything

An Internet of Everything (IoE) development platform is to be made available by Deutsche Telekom to application developers in Europe and worldwide. The project was announced at Mobile World Congress by Qualcomm Technologies, Inc., a wholly-owned subsidiary of Qualcomm Inc, and incumbent German network operator, Deutsche Telekom (DT).

Based on Qualcomm Technologies' Gobi™ QSC6270-Turbo chipset, and with support available for Oracle Java ME Embedded 3.2 this IoE development platform is intended to target developers looking to create the next generation of machine-to-machine (M2M) and IoE applications.

Deutsche Telekom is already accepting pre-orders for the IoE development platform on its M2M Marketplace, and plans to start shipping these development platforms from the second quarter of 2013.

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Numerex passes 2 million M2M subscription mark

Stratton J. Nicolaides, Numerex: Mostly organic growth

Numerex Corp of Atlanta, Georgia, a provider of on-demand and interactive M2M enterprise solutions, reports that it recently supported its two millionth M2M subscription. These are spread across various vertical markets.

"While it took us several years to reach the one million subscription mark, we have doubled our base in about two years, mostly organically," said Stratton J. Nicolaides, chairman and CEO of Numerex. "The strategic direction of the company will continue to be centered on on-demand, interactive services and customer care."

SIMalliance publishes UICC implementation guidelines for device makers and MNOs

SIMalliance, the global non-profit trade association dedicated to supporting the creation, deployment and management of secure mobile services, has published guidelines and recommendations for manufacturers designing handsets, tablets, modems and other devices that utilise a UICC (Universal Integrated Circuit Card).

The UICC Device Implementation Guidelines document complements existing UICC specifications from ETSI Smart Card Platform and 3GPP by highlighting both the fundamental and optional UICC features that device manufacturers will need to support to optimise UICC interoperability in future devices. The document also references relevant specifications from GSMA, GlobalPlatform and Open Mobile Alliance (OMA).

Battery built into portable 4G/LTE router 'guarantees' uptime for M2M applications

Dovado, a supplier of mobile broadband routers and software to mobile operators and distributors, has launched the Dovado GO, a portable 4G/LTE-capable USB router. The GO is said to be a low-cost, small footprint router for use in M2M applications, maintaining a connection even when power is lost.

The GO is the latest in Dovado's range of routers for use in M2M, offices, homes and vehicles which use USB modems for connectivity. An in-built, changeable battery also allows users to unplug their router and take their connection with them, even where there is no mains power supply.

Designed for M2M, the GO aims to provide a low-cost off-the-shelf option for installations which require external antennas. Reportedly able to work with a full price and speed range of USB modems, it enables M2M installation upgrades on top of a low initial CapEx. The SMS features provide instant connection/power failure notifications and improved control for remote administrators of items such as vending machines, CCTV, and parking meters.

In the event of a power failure the GO can quickly notify the user by SMS, and again when mains power is restored.

Compact, fast solution for machine automation

Advantech of Eindhoven in The Netherlands, a global embedded computing specialist, has released a series of AiMC compact micro-computer systems for machine automation applications. Each self-contained micro computer features a small footprint, either performance computing or low power consumption, intelligent management, security and longevity.

Each comes with Advantech's SUSIAccess software for intelligent monitoring and control. With third generation Intel® Core™ processors, they aim to deliver improved computing and graphics performance. Each intelligent micro-computer offers integrators a no-nonsense, turnkey solution that has already been verified and certified.

The micro-computers' compact, turnkey design not only saves space but means they can be quickly and easily deployed without prohibitive integration costs. AiMC series micro computers are typically 50% smaller than traditional wall-mount systems. Up to now, most production manufacturers have adopted full-size IPC solutions for their machine automation applications. But smaller systems are said to be taking over as it is becoming the norm in machine automation to have fewer add-on cards; a single motion, I/O, or artificial vision card can fulfil most applications.

AiMC series supports the latest, 3rd generation Core™ i7/i5/i3 processors. Compared with previous generation Core™ i7/i5/i3 processors, they have enhanced CPU performance and up to 50% better graphic performance. Customers can also choose low-power-consumption mobile processor options for low thermal design applications. DDR3 memory up to 8GB max is supported on all series and one, two, or four expansion slots are available on AiMC-2100, AiMC-3200, and AiMC-3420 respectively.

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Larry Kraft, Digi: Daunting task

Digi adds mobile carrier subscription management to Device Cloud by Etherios™

Minnesota-based Digi International has announced the addition of carrier subscription management capabilities to the Device Cloud by Etherios™. This means organisations can now create M2M applications, manage remote devices and oversee wireless subscriptions from one interface within the Device Cloud by Etherios™.

"Managing devices, applications and multiple carrier networks can be a daunting task," said Larry Kraft, senior vice president of marketing, Digi International. "By integrating wireless provisioning into the Device Cloud by Etherios™, companies now have real-time insight into their data usage enabling greater control of device networks. And with the most robust suite of device management capabilities, organisations can truly take control of their remote assets."

Wireless subscription, data usage and historical information associated with devices registered on the Device Cloud by Etherios™ are now accessible. It supports wireless subscription management for AT&T, Verizon Wireless, Vodafone, Deutsche Telekom and Jasper Wireless.

'Plug and play' vehicle tracker added to M2M Marketplace

ATrack Technology Inc's AX5 – OBDII Plug & Play Vehicle Tracker is now available on Deutsche Telekom's M2M Marketplace. The marketplace is a dedicated platform providing manufacturers and dealers worldwide with a global distribution channel for their M2M hardware, software, apps and full-package products in addition to their own sales channels.

The AX5 is one of the many telematic solutions available via Deutsche Telekom's M2M Marketplace. Other fleet-focused devices include Maestro Wireless Solutions' micro tracker, V-tron's Advanced Driver Behaviour monitor and TrackJack's On The Move 2.0 Track & Trace system.

RACO in M2M agreement with Canada's Rogers

Arizona's RACO Wireless, a provider of wireless M2M solutions, has entered into a carrier agreement with Rogers Communications, Canada's largest wireless communication services provider.

The agreement allows RACO Wireless customers to deploy M2M solutions in Canada through its Omega Management Suite platform. Customers in a variety of markets (such as fleet management, security, telemedicine and asset management) will, says RACO, experience a turn-key, global solution.

Australia's Optus partners with Jasper to drive M2M

Cindy Patterson: Accelerate market entry

Australia's Optus Business has adopted the Jasper platform to wirelessly connect machine-to-machine (M2M) and consumer electronics devices. The connected devices platform provider's ability extends to a variety of M2M connections including telematics, consumer electronics and m-health.

"M2M communications come into their own in remote or scarcely populated environments," said Cindy Patterson, (pictured), Jasper's chief revenue officer. "The partnership provides Optus Business with the applications and services necessary to accelerate market entry of new categories of connected devices and profitably connect and manage a range of embedded wireless devices."

Orbcomm completes acquisition of GlobalTrack and MobileNet

New Jersey-based Orbcomm Inc., a global satellite data communications company specialising in M2M, has completed the acquisition of most of the assets of the GlobalTrak division of System Planning Corporation, and MobileNet Inc. GlobalTrak uses networks, sensors and proprietary software platforms to provide near-real-time situational awareness and intelligence to improve logistics and security processes globally. The sale gives Orbcomm military, international, government, and commercial customers and greater reach in the Middle East, Asia and South America.

MobileNet provides telematics solutions to the heavy equipment and rail support industries. Orbcomm can now offer MobileNet's complete fleet management solution directly to OEMs, dealers and fleet owners.

China launches first NFC payment service

Digital security specialist, Gemalto's UpTeq NFC SIM card has been selected by China Unicom to secure its mobile wallets. China Unicom is the country's second-largest wireless operator, with more than 220 million subscribers of whom over 60 million are on 3G.

The Unicom Merchants' Bank mobile wallet is the first NFC payment service to launch in China, and a joint venture between China Unicom and China Merchants Bank (CMB) for the mobile wallet itself. The mobile wallet enables consumers to make purchases at food and drink outlets, including 162,000 QuickPass point-of-sale terminals in Shanghai.

For more information go to: **www.m2mnow.biz/news/**

FUTURE WATCH:

Complete spec unveiled for M2M communications over TV 'white space' spectrum

The Weightless SIG (special interest group) met in Cambridge, UK in April and ratified version 1.0 of a communications standard covering machine-to-machine (M2M) use of TV's white space wireless spectrum.

Around the world many TV channels are left vacant in most locations; this 'white space' is the unused or under-used parts of the wireless broadcast spectrum. 'Weightless' technology initially opens up these channels and will also allow under-used frequencies within other UHF licensed and unlicensed bands to be used more efficiently for wireless communication.

The Weightless standard, optimised for machines and in development for more than two years with a group of industry leaders, now runs to over 600 pages and offers transformational competitive advantages over legacy technologies. Low cost terminal hardware and licence-free frequency spectrum provides ground-breaking cost savings comparable with PAN technologies such as Bluetooth.

Low power consumption

Ultra low power consumption allows operation of battery powered terminals utilising single primary cells for periods of more than 10 years and high quality low frequency spectrum exhibits excellent signal propagation characteristics yielding ubiquitous coverage through superior range and in-building penetration.

"We are delighted to have reached this seminal moment for machine communications – a tipping point for the industry," commented Professor William Webb, CEO of the Weightless SIG, adding, "this technology can uniquely enable the tens of billions of connections forecasted over the next decade".

At the terminal level data rates from 1kbit/s to 10Mbit/s are possible depending on link budget and data packet sizes from 10 bytes and no upper limit with an extremely low overhead are possible – for example, 50 byte packets have less than 20% overhead. Acknowledged and unacknowledged message transmission modes are supported and multicast call capability allows messages to be sent to multiple devices.

Power outage and other alarms

Interrupt capability allows devices to raise alarms for specific events such as power outage. Service provision layering enables worldwide contracts and automated change of network provider capabilities. Terminals can run multiple applications and mobility is fully supported. A secure 128-bit encryption and authentication model based on a shared secret key is provided. Extremely low complexity terminal architecture enables low cost implementation using minimal memory and processor power to further extend battery life.

At the network level, careful scheduling enables transmissions to be planned in advance resulting in high loading efficiency and both frequency-hopping and intelligent frequency planning maximise throughput on congested networks. An extremely wide range of modulation schemes and spreading factors provides flexibility in network design enabling 5km coverage to indoor terminals.

Cloud hosting

The entire core network is run as a software service and can be cloud-hosted. Ultra low out-of-band emissions through waveform shaping maximises white space bandwidth availability and licence-free spectrum significantly reduces network costs.

Modulation methods from 16-QAM to differential BPSK coupled with spreading codes up to 1024 enable an extremely wide range of link budgets to be configured. Downlink single carrier modulation of 6MHz bandwidth and uplink FDMA channels using 16 interweaved channels for the Americas and 8MHz bandwidth downlink and uplink narrowband FDMA channels using 24 parallel 128kbit/s channels for rest of the world enables truly global operation.

Time Division Duplex (TDD) is used with flexible uplink/downlink boundaries on a frame-by-frame and per base station basis enabling dynamic balancing of uplink and downlink traffic. Error detection and correction with packet re-transmission capability is built in and terminal sleep modes are fully integrated into the system design.

"Licence-free spectrum significantly reduces network costs."

The Weightless SIG's industry members aim to foster development of a revolutionary communications standard ("Weightless") to enable efficient M2M communications in white space.

Telco Exec launches new careers service with a 'human face' backed by leading telecom titles

M2M Now and VanillaPlus magazines to support the new global telecoms recruitment service 'with a human touch'

A new recruitment and careers advice service for telecommunication industry executives is being unveiled, and will be formally launched at Management World in Nice, France. The new **Telco Exec** service (www.telcoexec.com) is designed for the busy telecoms executive who expects a personal service.

Telco Exec operates as a Recruitment Club. Once approved, candidates can search the Telco Exec jobs database and apply for positions worldwide. Candidates can also receive personalised job alerts. Membership of Telco Exec offers significant additional benefits, among them the opportunity to talk with Telco Exec's independent support team and a panel of third party recruitment experts and coaches. By joining the select community you will be kept up to date with telecoms jobs, and Telco Exec's support team will provide insight, advice and key introductions to allow you to accelerate your career.

The Benefits of Paid Membership of Telco Exec include:

- Telephone and email access to Telco Exec's Independent Experts who can provide key personal introductions, information and career advice.
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- Receive a 1-Year Free Subscription to *VanillaPlus* and *M2M Now* digital editions.
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The new Telco Exec service is the brainchild of Jason Bandy, who brings 20 years' experience of executive search and selection in the Business & Operations Support Service (BSS & OSS) and Machine-to-Machine (M2M) communication sectors. He has previously held leadership posts with Glotel PLC, Kineticom and Identify Group.

Managing director, Jason Bandy said: "Telco Exec's simple concept to combine the best job board technology with impartial recruitment advisors is unique, powerful and extremely valuable to both Candidate and Employer. Our ability to match candidates to the ideal job and to introduce the best talent to employers by listening, understanding and supporting both parties is helped enormously by our independence. Our employees are not rewarded by commissions or bonuses; they are there to help and provide impartial advice."

"Employers are looking for quick and economical access to the best talent. Our understanding of the candidate pool, our unique service offering and personal touch will reduce costs, save time and improve the likelihood of successful long-term matches being made. The VanillaPlus and M2M Now audience is the ideal forum for us to operate within," Bandy added.

Cathryn Barnard, Telco Exec's head of Candidate Services, said: "An individual's knowledge, uniqueness and personal motivations can't be understood fully by machine. While existing job boards and social media giants target the masses, Telco Exec serves a select group of dedicated, high-achieving telecom professionals who require something extra when it comes to finding and securing exciting career opportunities."

Speaking at the launch, Jeremy Cowan, Editorial Director and Publisher of *VanillaPlus* and *M2M Now* said: "We quickly saw that in Telco Exec we have partners who understand the needs of our tens of thousands of readers worldwide. We look forward to adding the support of our two leading global telecoms publications to a radically different range of recruitment services. Telco Exec's in-depth experience of BSS, OSS and M2M are now allied to a determination to bring personal service to telecoms recruitment."

For more details on becoming part of this Elite Community of high achievers and rising stars or to market your Telecom Job Vacancies to our audience, please contact:

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Enterprises get ready for the Internet of Things (IoT) with Wyless Connect primary back-up

Readers will be familiar with Wyless but may not know its subsidiary Wyless Connect. M2M Now's editor, Jeremy Cowan asked Bennett Alpert about its work in digital signage, telemedicine and the Internet of Things.

M2M Now: Bennett, can you tell us about this business division of Wyless that you run, called Wyless Connect?

Bennett Alpert: Wyless Connect is a fast growing, creative infrastructure play that builds upon the hardware, connectivity, and management platform resources that Wyless has developed over the past 10 years.

With the rapid proliferation of higher-bandwidth consuming applications and the deployment of 4G/LTE starting to happen worldwide, the wireless landscape is quickly evolving. Even the name of the industry has changed to adapt to the ever-expanding market – from M2M to the 'Internet of Things'.

No longer is the space defined by just kilobytes of data and small ARPUs, there is a rapidly growing demand for back-up for internet continuity, primary and load balanced wireless-based networks, and even voice over LTE. Additionally, applications such as digital signage, telemedicine and WiFi networks require a higher level of reliability and throughput than ever before.

Cellular connectivity is playing an ever larger and more important role in enterprise connectivity, and it is enabling some impressive new applications, but ones that demand secure private networks that are difficult for the mobile operators to easily and cost-effectively deploy.

Wyless Connect leverages Wyless's 15 carrier partnerships, allowing us to service our clients and partners in many parts of the world, with a host of fully managed applications and hardware, ensuring maximum coverage wherever applications are deployed.

A key differantiator is that Wyless Connect reduces the time, cost, and complexity of deploying secure, private, broadband cellular networks of any size. As an end-to-end solution, Wyless Connect can also manage and deploy hardware, installation and support services. The result is a 'one stop shop' ➜

Photos courtesy of Susan Welch

Bennett Alpert is VP Enterprise Data Products at Wyless Connect

"Cellular service, once touted as just for mobility or as a back-up or remote monitoring technology will be used as primary connectivity."
Bennett Alpert, Wyless Connect

providing a quicker time-to-market and a speedier RoI.

M2M Now: Where did the idea of Wyless Connect come from?

BA: I met Dan McDuffie, the CEO of Wyless, a few years ago when I was trying to put together an enterprise class business continuity and wireless kiosk product with a reseller of Verizon.

The problem I encountered as a smaller reseller was putting the right pieces together, at the right price points, while offering world class service and support that would qualify as a truly 'high end' solution. I learned, partly through trial and error, and partly through collaboration with Wyless, that the market was craving a comprehensive solution to secure enterprise connectivity. If we built and supported it properly, we knew the market was ready to explode – I'm sure we've all seen the statistics on expected M2M/IoT growth!

However, just finding the right equipment and the right carrier was not enough. The solutions needed to be supported by a great team. That is Wyless and that great team allowed us to get our foot in the door and begin building the powerhouse that is Wyless today.

M2M Now: What else was needed to make Wyless Connect a success?

BA: A comprehensive approach. One that matches the client requirements, not just what is available from most providers. The Wyless philosophy as a whole is to take a project-oriented approach to our customer solutions, not force them down a specific path, and that's never more prevalent than in the enterprise verticals as there are so many choices.

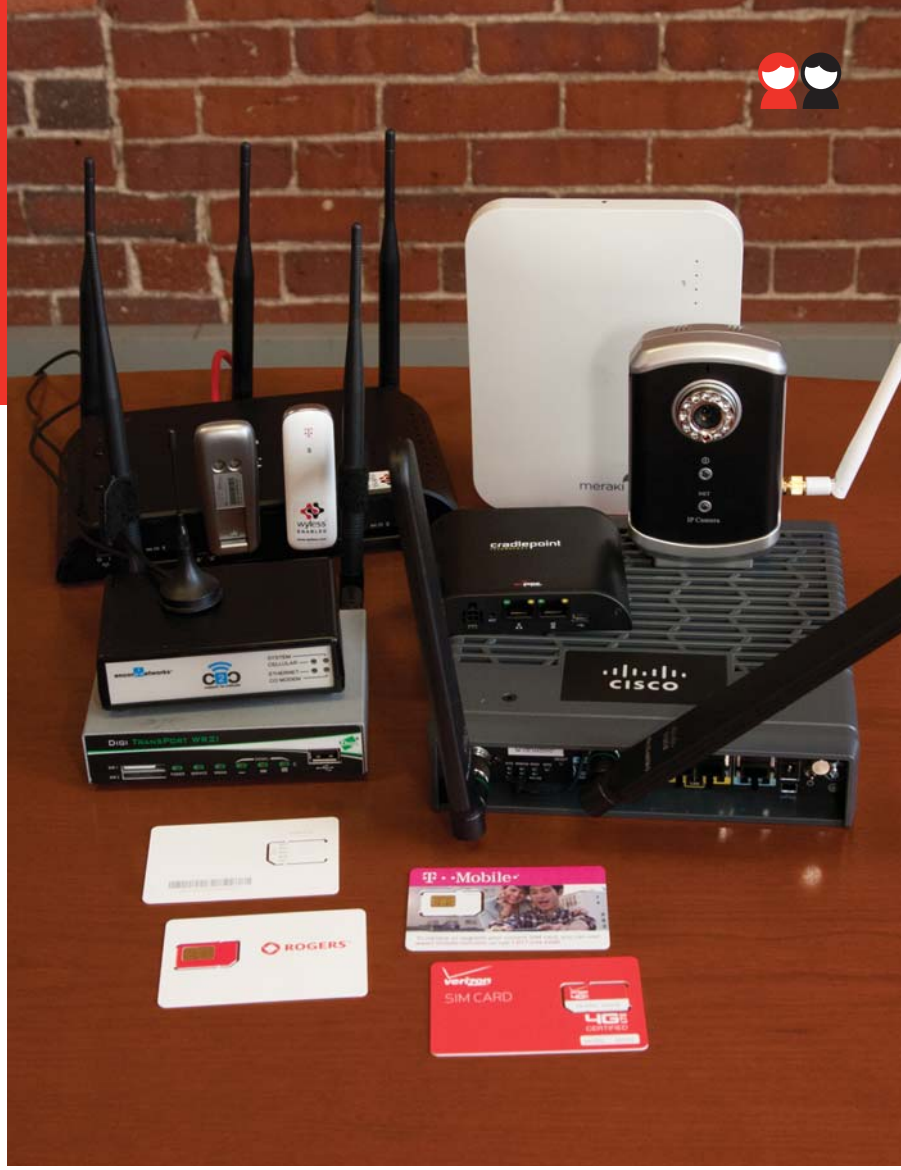
So we offer choice: Choice of equipment, service provider, rate plan, and business model. With that and the connectivity and private network solutions, you're well on your way.

With all that in place the only thing we needed was someone to sell it, and it made sense that what we really needed were the cellular carriers themselves as the channel. That's what led us to working with T-Mobile and Verizon in the USA, which in both cases drive our products down through their B2B sales channels.

With these mobile operator partnerships, not just for coverage but as a co-sale partner, along with our partnerships with Cisco, Cradlepoint, Digi, Encore Networks and Meraki, we truly have the best end-to-end solutions with best-in-class partners.

M2M Now: Is that a comprehensive service?

BA: It is with the multi-carrier private network and all that quality gear, but that's not everything ...



We still needed to have the processes in place to support, configure, ship, test and install devices quickly and efficiently. We've done this by developing a national installation team, by partnering with world class installers, hiring more internal project managers, as well as adding more Tier Two and Tier Three support engineers.

This means, that we now have a full end-to-end solution from equipment and application selection to IT infrastructure planning, right down to installation and maintenance.

M2M Now: So, what's next?

BA: Well, we feel the sky's really the limit with Wyless Connect. The final step was making it simple to distribute and buy the products, especially when launching a new business line during these difficult economic times, a time when some equipment manufacturers were barely hanging on and the global business market was literally shrinking.

The final piece of the pie was simply making it affordable. Quality, full service and low prices are literally a game changer. So, it was a logical next step to offer the whole package as a service. I guess you can say EaaS or equipment-as-a-service, not just SaaS or software as a service.

Or more simply stated, it's a bundle. One low monthly rate for equipment and wireless services customised to a customer's requirement with managed services, professional services, installation and our Porthos platform to manage all the connectivity and billing. Wyless removes the CapEx from the equation and makes our products and services easy to procure.

M2M Now: So, it's a 'one-stop-shop'?

BA: Yes, Jeremy, with a disruptive low monthly investment. And because of this strategy, our distribution and partner collaboration is rapidly expanding from just providing business continuity to CLECs and carrier partners to our recently announced global partnership with Cisco, and distribution agreements with companies like Avnet Memec, Arrow Electronics, TD Mobility and many more to come. This, coupled with our highly valued carrier partners, offers an unprecedented speed to market that is needed for innovative solutions, private wireless data networks and comprehensive service. It is truly unmatched.

M2M Now: Though it's not traditional M2M, I can see how the cellular M2M industry is converging with mobile broadband to the enterprise as there are a lot of similar requirements. Where do you see this all going, Bennett?

BA: Well, we feel with our infrastructure and terrific team, there is literally an endless stream of product bundles in a variety of verticle markets that we can help our partners bring to market. To name just one, the Wyless 'office in a box'.

With the quality and speed of LTE and the VoLTE voice over IP standards, we feel that the next few years will bring a major shift. Cellular service, once touted as just for mobility or as a back-up or remote monitoring technology will fully rise to the forefront and be used as primary connectivity.

This will begin in the early days in the SMB market. Why not have a PoS system, an IP security camera, your guest WiFi and your IP phones all with redundant carriers, fully supported, all on one bill for a price as low as $99 a month. That is a game changer! That's Wyless Connect!

M2M Now Jargon Buster

4G/LTE = Long-Term Evolution to 4th Generation networks

ARPU = Average Revenue Per User

B2B = Business-to-Business

CapEx = Capital Expenditure

CLEC = Competitive Local Exchange Carrier

EaaS = Equipment as a Service

IoT = Internet of Things

IP = Internet Protocol

MPLS = Multi-Protocol Label Switching

PoS = Point of Sale

RoI = Return on Investment

SaaS = Software-as-a-Service

SLA = Service Level Agreement

SMB = Small and Medium-sized Businesses

VoLTE = Voice over LTE

How to bring new clients on board quickly

As the number of M2M roll-outs increases, service providers are under growing pressure to achieve a rapid time to market. Steve Rogerson reports on a recent M2M Now webinar in which Tulsi Zeidman from NetCracker Technology looked at the difficulties in bringing clients on line.

Though in theory the formula for launching an M2M customer in 30 days is straightforward, the reality involves a lot of work behind the scenes in making sure the organisational and operational structures are in place. This was the view of Tulsi Zeidman, director of engineering at **NetCracker Technology**, expressed during a recent *M2M Now* webinar.

The importance of this can be shown from a survey late in 2012 by **Beecham Research.** It found that, while enabling new services was the primary driver for M2M projects, creating operational efficiency and reducing costs were almost as important, illustrating well the need to roll out these services quickly as delays can rapidly increase costs.

"Any delay pushes back new revenue opportunities," said Robin Duke-Woolley, Beecham Research's CEO. "The need for speed to market is paramount in introducing the new solutions to the M2M market."

The process of introducing a service in 30 days involves a week of setting up followed by a couple of weeks of test and development, and then one to two weeks for the production launch. But before any of that can take place, operators have to decide how to implement M2M services, and it comes down to three real choices. First is to use an external software-as-a-service (SaaS) provider. The second option is to use the existing operating and business support system (OSS and BSS) stacks. Or the final option is to use a dedicated M2M stack.

"You can't have an army of customer support people servicing the M2M business"

Is a dedicated stack necessary?

"Do you need a separate stack for M2M?" asked Zeidman. "Well, it really depends. Many operators are limiting their ability to compete in this space because M2M hasn't been a focus for them."

He described using an external SaaS provider as a "latency approach" with limited investment.

It is low cost but as a result there are constraints and it should be seen as a temporary situation until the business takes off. The second option, he said, suited smaller operators better. For large operators serious about M2M, having their own M2M platform is the way forward. They can support their services in-house but do so in expectation of high revenue growth. They realise that sharing M2M resources with other parts of the business would be too much of a constraint.

"M2M is a fundamentally different business model," he said. "There are organisational and operational considerations. With all the talk about machines, ironically it can be the human factors that produce the biggest challenges."

Another problem with M2M is the sheer volume of transactions, he said, with hundreds of millions of devices generating different types of revenue. The flip side was that legacy systems can often process these volumes. M2M though will involve multiple partners creating a very complex value chain, so you have to allow for future inclusion of third parties into the order flow. Yet operators do not want to have to undertake a major IT project every time they want to make a change. What also needs to be included is self-service by the customer.

"You can't have an army of customer support people servicing the M2M business," Zeidman said. "You can't support the cost."

He said he believed BSS had to be at the centre of the architecture for M2M, but it had to be flexible and scalable. OSS components, on the other hand, can be reused from the existing network infrastructure.

To control operational costs, it is essential that the platform is designed from the start to support M2M. "The trouble that people get into is trying to use the wrong set of tools for the job," he said. "If your company is serious about M2M as a growth engine, you need to have a dedicated platform – usually, you need to give your M2M clients a really great portal so they can self-serve, and make sure you have the ability to generate workloads rather than having to pre-build whole loads of business logic and workflows into your middleware ahead of time."

So, to launch a client quickly, the platform needs to be there and there needs to be a plan to allocate the extra resources as more clients come on board.

M2M 'ghetto' is transforming into a world of IoT connections

Much has evolved in machine-to-machine communications since *M2M Now* last spoke to KORE's president and COO, Alex Brisbourne. He has clear views on the reasons for M2M's growth, and the frustrations of complex value chains and siloed applications. Jeremy Cowan sat down for a chat about the solutions.

M2M Now: It's been said recently that machine-to-machine and the Internet of Things are taking a bigger spotlight at larger telecom trade shows. If you agree can you shed some light on why M2M seems to have come into its own in recent months? And how will this play out?

Alex Brisbourne: Two or three years ago there was almost an M2M ghetto at *Mobile World Congress* in Barcelona, where people went to figure out what was going on in this new-found area called M2M.

The role of the Internet of Things, M2M and its contribution to the world of big data has become something which the wireless industry recognises is another important universe to embrace. It's become something else people have got to figure out how to do well. But we're still figuring out what 'doing well' actually means. A lot of attention is now being spent on areas from those as simple as connectivity and reliability, to complex areas such as integration into ERP service systems and platforms. I was at a conference in San Francisco last week which showed the whole nomenclature of M2M and IoT is itself creating some of its own challenges, where we see M2M almost as being the technology umbrella and the Internet of Things is more a concept – a flat world of connectivity.

M2M Now: Could you elaborate on the idea of the Internet of Things being a concept?

AB: The term the Internet of Things or Internet of Everything … does imply connectivity. It also implies significant peer-to-peer relationships. It embraces a broad range of subject and application areas outside the domain of traditional M2M, which is much more vertically integrated; but in the future there will be more horizontalisation of data, particularly at the enterprise level.

But as the industry exists today, applications that are driving M2M are highly integrated, verticalised and minimalistic in their data usage. As a result they are economical to deploy, but they're also point solutions. That's quite different to the future (in which) data becomes horizontalised across multiple segments. That's where you'll start to see the IoT type of vision becoming more appealing.

M2M Now: What about the value chain for global M2M connectivity? What challenges come from trying to connect a device across borders and continents?

AB: The complexities come up by a significant order. The value chain globally doesn't initially look fundamentally different to what already is a rather complicated value chain for an M2M service delivery. You've got devices, guys building particular applications, database services, and figuring how we interconnect to third party services, for example location or mapping. You've got to have a connectivity component and an interface to customers.

It is a relatively complicated integration process, which is why so much of the industry has fallen into the hands of ISVs or application service providers that take the load of managing the integration of these varying components. This is being simplified by initiatives that are coming from Java services and integrated processing into radio and application-level designs.

There are application platforms from companies like **Axeda, ILS** and even **Gemalto**'s SensorLogic initiative. But, nevertheless, it's still a complicated food chain. ➜

"It is a relatively complicated integration process, which is why so much of the industry has fallen into the hands of ISVs or ASPs."
Alex Brisbourne, KORE

When you start doing it across borders and continents you've got to two potentially 'gotcha' components that you add to that.

The first component is native connectivity, which is just the fuel that drives the application. Like having a car, if you don't have a petrol station the car's not a lot of use, whether it's a **Bugatti** or a **Toyota** Prius. The same applies to every M2M application; no connectivity equals no business application.

In business, what becomes critical is that that application can be served up reliably on a 24/7 basis. So, a few factors come into play. Number one, support, particularly technical and the business support often needed in different geographies, and how you deal with customer requirements in those markets.

The second is connectivity and its reliability as you go across multiple markets. So many things change, from the way in which IP sessions are managed, to how they are built, to whether devices will register, to choosing the most appropriate network in a geography. Just thinking that connectivity is a SIM card that works anywhere is extremely simplistic, and frankly misguided.

Designing the right connectivity into the application becomes very important. Today many applications are obviously co-located with people, and as a result cellular networks work rather well. If you think about growth areas – such as supply chain, asset control in natural resources and minerals management, and shipping – much of this happens where cellular networks don't exist. Today, 92% of the world's surface area is not accessible to a cellular connection. So, other forms of connectivity including satellite become increasingly important in the world of M2M.

M2M Now: Alex, what are the primary 'tech support' issues that people ought to consider in M2M connectivity and device management? In particular, how does the 'sunsetting' of 2G services change that dynamic, if at all?

AB: Much of the M2M end of the IoT market place is delivered on 2G services. Because they're relatively narrow bandwidth applications latency is not an issue, and 2G devices have traditionally been less expensive than alternatives. Add to that the fact that 2G has ubiquitous world connectivity.

I was reading an article in *The Economist* about a guy who travelled for 113 days through sub-Saharan Africa, through 27 different countries. He had smartphone connectivity in all but eight days out of 113. He couldn't have thought of that even five years ago. But much of it was through 2G.

In 2G networks the levels of diagnostics, support and connectivity are not significantly different to 3G. When you get to 4G networks life changes, but they're far from ready for primetime in M2M. So, the similarities between 2G and 3G in configuration are quite common in most markets.

3G is going to give people a life expectancy through the next eight to 10 years, very comfortably. Whereas re-farming the spectrum in many markets, Europe included, is starting to take place and the relative capacity on 2G, mainly because of efficiency, is starting to get reduced. We're advising customers to look at what technologies they use for the in-service lifecycle they expect.

If you're putting something out for 18 months to 2 years 2G networks are great. If you want it running for five to seven years 3G with 2G fallback is, frankly, an absolute driver. If you expect to be using a high data rate and you want to use 4G services it's interesting in urban areas, but there are so many interoperability considerations and costly devices that it's a very mixed service capability today.

From the point of view of technical support, the main area that we get concerned about is that as you move to a multiplicity of networks, many countries will give very different service standards; in the ability to provide and design in good hooks and eyes for diagnostics to determine which networks you're connected to, how you can enforce network selection via the devices, or how the devices can help make decisions on connectivity.

You also want to ensure that you can remotely diagnose in-service problems in the best way. In device management, unfortunately, today each and every device manufacturer is rather selfish, doing it in a very proprietary way. But we see this changing, and we're ➜

"You're sometimes moving it thousands of miles away into a remote village"

Alex Brisbourne, KORE

working with some equipment vendors to harmonise certain levels of device management capability.

You're not simply moving something tens of miles away under the hood of a truck. You're sometimes moving it thousands of miles away into a remote village. As a result, the cost of accessing these devices becomes terribly complicated. So the better the diagnostics capability, and therefore aid in what we call MTTU (the mean time to understand the problem) helps you to actually reduce the time to repair a problem. Sometimes that can be as easy as blacklisting the carrier, or it could be more complicated. But we feel customers need to put a lot more thought into the lifecycle support as they go global.

M2M Now: Can you describe the vertical effect in the M2M market, and the industries where you expect to see most growth? How do you see this developing?

AB: I mentioned at the outset the verticalisation that still exists in this market, and this tight integration from the application to the user interface and all bits in between. As we start to see more collector points which can be used for multiple purposes, so we can start to see horizontalisation of data. One example is in the automotive telematics area, and a second is in healthcare.

In automotive, if you think about it, we've got a great data collector, the on-board management system. It has many different sensors, accelerometers, heat and temperature sensors, vibration components. But the use of that data today is very siloed. It's used by an insurance telematics person for pay-as-you-drive, or by a manufacturer for warranty. It may be used for a variety of other purposes including accident prevention.

But in many cases it's the same data block. The insurance companies are interested in how you drive, steer, brake, and accelerate. They actually look at the driving dynamics, not simply your mileage.

The same thing is interesting to the automotive guy. At some point in the future today's verticalised stream that passes data to **BMW, Chrysler** or **Audi**, could be repurposed by the smart box in the vehicle. It isn't too far away to have the ability to split data and send it to different IP services.

It's the same thing in medical, where the type of sensor needed to determine whether you've fallen over, and for a personal emergency response application is only interpreting data from an accelerometer. If you had a different piece of data coming from a glucose monitor in diabetics, and you wanted to be able to provide an alert based on a wireless communicator, the ability to have a communicator hub-type device that you ➜

could string different types of application sensors to in a simple way, could repurpose much of what you have today.
There's not a lot of point in having a unique wireless communicator for a sleep apnoea device, and a wireless communicator, or a glucose monitor and another one for a heart patient. You could standardise much of that and just have a different sensor that is unique to the application.

M2M Now: Finally, can you tell us about the regulatory issues related to network access and data integrity? What should M2M-savvy enterprises pay attention to?

AB: There are three areas; regulatory (issues), a commercial constriction and maturity-related considerations – particularly as you move towards individual verticals and differing geographies.

Specific verticals have their own drivers. For example in healthcare, to what extent is data accessible or stored either by the wireless provider or by the application vendor themselves? If it is stored, it has to be treated according to the security requirements of that vertical industry.

The same thing happens in utilities, where if you operate an electricity utility grid, then the requirement to consider security ingress and egress issues and vulnerabilities becomes paramount in much of their planning. The difficulty in many of these is that many of these standards, particularly relating to data access security, tend to be built in by individual industry segments, as opposed to pan-industry.

Here in North America, the utilities industry is working with the NIST, the federal operations relating to access security. So, they're market-specific.

There are lots of interesting regulatory issues concerning geographies. If a **KORE** customer wants to deploy a product into multiple markets around the world, increasingly it's important to consider, number one, the local regulatory environment. Are devices capable of being sold into the market and remaining permanently in that market place (supported) by an organisation and with a wireless service from outside that market? A good example of that would be in Brazil, where the local regulator Anatel is specific regarding the limitations of having telecommunications-connected devices permanently placed in that market that are not governed by local regulatory controls.

The same thing takes place in Indonesia, India, Saudi Arabia and a number of other markets. So there's a regulatory component to whether or not permanently located devices can be supported except using localised services. Some of that's to do with tax collections or local job creation.

The second area is where does the data go? The big question here is people don't want to have data moving outside their own country or domain. Take China, if you want to backhaul M2M connectivity information to servers outside China, then you hit the wall of Chinese regulations restricting access to general internet connectivity across their borders.

In other markets there is extreme sensitivity to data relating to customers or customer application traffic moving onto server environments outside their own country. This is the case in the Middle East, but we're seeing a pseudo-protectionist view creeping into other markets.

The third area is just straight commercial considerations; markets where, particularly for wireless carriers, the notion of permanently allowing devices to operate in a country on somebody else's network using roaming-related services is seen as an invasion of somebody else's paid property. They don't want to see their revenue being lost to people operating in roaming markets. So you're starting to see de facto restrictions. Carriers in certain parts of the world are 'sniffing' permanent roaming devices where they're logged onto their HLRs and the VLRs. They see if they want to, let's call it 'stimulate' people to stop doing that with the threat of disconnection or in other ways.

If we provide services on a global connect basis, we also try to help to customers understand the best service offerings to meet their particular business goals within a region. That's one of the reasons why, under the Global Connect umbrella of KORE, we have elected to hub many carriers from different parts of the world into our platforms, so that customers can take advantage of the most appropriate and localised connectivity service offering. Yet their commercial relationship with us and their technical integration from us to them is unified. They connect to us once, they're connected to our data centres once, they design the APIs of our platform once. But we give them access to multiple differing carriers, typically those with strong regionalised capabilities.

M2M Now Jargon Buster

B2B = Business-to-Business

HLR = Home Location Register

IoT = Internet of Things

M2M = Machine-to-Machine

MTTU = Mean Time To Understand (a problem)

Kontron develops its own and partner solutions to meet changing customer and carrier demands

Carriers are developing ever-higher standards for original equipment manufacturers (OEMs) in machine-to-machine services. But customer demands are just as tough and also vary from market to market. Claus Giebert from Kontron tells M2M Now that meeting these needs can require some quick footwork.

M2M Now: Claus, is it right to assume that getting a high-volume product to market needs more than CE/FCC/UL certification if 2G/3G or LTE protocols are involved?

Claus Giebert: Yes, that's right. First of all, there's the certification for products that use this type of wireless technology, called PTCRB – you need that for most carriers. In addition, a lot of carriers have their own test-lab certification as well.

If you really go to volume, they will want to see your product certified in their lab. For example, if you want to deploy a product with carriers operating across Europe, one of the things they'll ask you is if it's high-volume. They'll check if you've fulfilled the certification and data-weight requirements in their lab because they won't want the end customer to blame the carrier for a fault in the unit itself. It's the same for leading carriers in the US, too.

M2M Now: What about the smaller carriers?

CG: It depends what you mean by 'smaller'. Some have a similar requirement, but they are okay if you are PCTRB-certified. As for others, the requirements vary from country to country. In some nations, the carriers will ask you to prove that it's working, and in others they won't. Some of the smaller carriers have actually stopped doing any aggressive stuff in M2M now.

The next kind of customer down the line is the virtual mobile operator; they have no requirements themselves in most cases, but you might have problems with the underlying carrier later on. Smaller carriers don't have the high volume of units out there with the high data weight.

M2M Now: If you are only able to deliver part of the value chain and your customer only wants that, will you have a problem because you don't understand the whole integration? ➜

Claus Giebert is product manager for M2M and OPS in EMEA, Kontron Europe GmbH

Kontron is responding to customers who are asking for help in improving internet quality in transport

CG: Well, look at it this way: if you only deliver tyres for a car and you don't understand the speed limits and so on, then you will have a problem. Even if you are an expert in tyres, you don't know where they are going to be used.

If you have a smaller vendor that only delivers a gateway from 3G to LAN and you have no idea about the protocols involved, the antenna technology or the cloud on the other side or how to transmit the data, then you might encounter a few problems even if you're an expert on the M2M gateway itself. We once had a customer who said: 'Oh, we can do everything ourselves. Just send us a box PC.' I think it cost me around two man-weeks of support effort to get them to a point where they could even connect to the internet.

Since they had no idea there was a problem with the antenna, they didn't know how to set all the equipment up and didn't realise they had to talk with the people on the contract to get a public IP address, so they met with all sorts of problems. Kontron says that if you don't understand the entire 'food chain', just part of it, then you have a problem. If you are a customer and only want to be part of the 'food chain', you still want your suppliers to understand all the problems you will be facing with this part – even though they're not issues concerning the part itself. Kontron covers the entire 'food chain', but if the customer doesn't want the whole package from us, we'll still be able to deliver part of it for him.

M2M Now: You offer your own and partner-based solutions, so you are clearly not driven by the 'not designed here' philosophy. How does Kontron ensure that it keeps its focus on your customer needs and the best solutions, including hardware, software and connectivity?

CG: We check the requirements from our customer base, and then try to find good solutions for them. This includes checking with partners and with our own portfolio. If we go for a partner, we qualify the partner's product within our own value chain, regardless of whether it's hardware or software.

If we say, 'OK, we'll use our hardware and a specific cloud, then we'll test our hardware with this cloud software in a close-to-real environment because we don't want to have the customer's machine here, of course. If it didn't work properly, we wouldn't release it for a partnership until the problems were solved. In other words, when we offer a solution, then the customer can be sure we'll have checked every single component in the value chain.

On our website, for example, it says that we partner with leading carriers such as Vodafone and Deutsche Telekom, which means we've got M2M SIM cards and profiles of these suppliers. We've tested these cards in a number of relevant countries; in one case, it was Spain, France, Poland and Germany. We said: 'OK, it's working with our own hardware, this type of SIM card and the official connectivity and VPN panel'. So we can say 'yes, it's working with this carrier'. In addition, we qualified our system for the carrier's network. So we were allowed to use it there and we were sure it would work.

M2M Now: Claus, Kontron has a wide variety of hardware-based products. How do you adapt these to meet varying customer needs?

CG: If a customer needs us to add M2M functionality, we can do so. If you look on our website, you'll see the M2M gateway, which is a development kit. In reality, your application will look different; it might be a box PC or a rack system. So even if we only show this one item of hardware, we actually have a wide variety of products and can add M2M functionality to most of these.

We have a great deal of experience in electronics and mechanics, so we have a wide range of hardware solutions in our product portfolio. This means we are ➜

"There are a lot of different products in our catalogue and you can add building blocks to practically all of them."

Claus Giebert, Kontron

capable of delivering a product to the M2M customer by adapting an existing product. He can always start from scratch with us if he wants, but that's expensive, so he can use these standard products, get us to incorporate our know-how and then obtain an M2M solution relatively quickly as a result.

M2M Now: I understand that Kontron looks at this as a series of building blocks?

CG: Yes, we have some qualified 3G modems we can add in the SIM, which could be one building block. We also have some certified software and we can add M2M building blocks to the standard systems as well.

M2M Now: Can you give us an example of how that has been done in the past?

CG: Someone once encountered some serious problems, as I said earlier on. They used one of our box PCs and thought they would only choose the modem building block (from Kontron) and do everything else themselves. We have the CB511 box in which it's possible to have a UMTS modem. The customer added a UMTS modem and asked us to incorporate the SIM card connectivity. But from that point on they wanted to do it all themselves, including the antenna, mounting and the rest of the connectivity.

That's okay in general, but you need to be aware of which M2M building blocks you have, of course. If you are unable to do the connectivity yourself, you should also add this building block, but in their case, they decided to only add the hardware building block.

M2M Now: So what was the solution and the outcome?

CG: The outcome was two weeks of support effort because they thought that dealing with the connectivity building blocks themselves would make it cheaper. In the end, they figured out that with all the effort they had put into it, it would have been cheaper for them to order the connectivity building block from us.

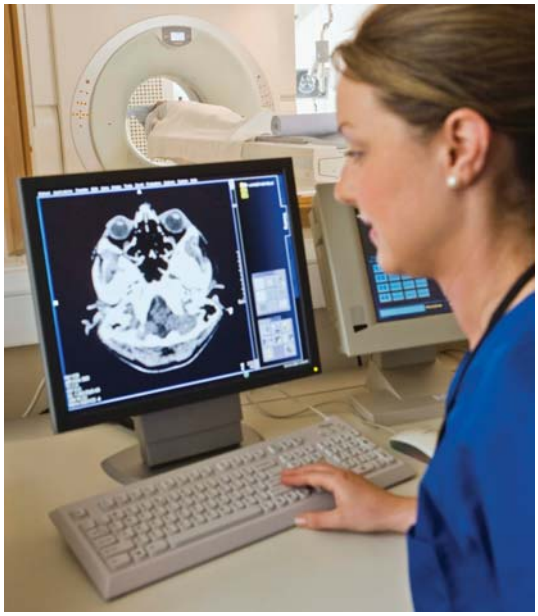
In addition, I have a Spanish customer who got the 19-inch rack system and they also ordered the modem and connectivity. This doesn't really sound very logical. Normally, you would assume a rack system wouldn't be combined with wireless connectivity. But in this case, the system was installed somewhere in the field away from everything except the power source. They decided not to use a telephone or network cable there, but to go for wireless instead. This shows that if you have a system where you haven't thought about adding the M2M building block, you can still do it. It's just not very common.

There are a lot of different products in our catalogue and theoretically you can add building blocks to practically all of them.

M2M Now: How important is it to be able to support multi-national companies – at least in major geographical areas or time zones – with local people and local knowledge? You mentioned India, for example.

CG: In India, we have requirements from a local railway company that wants to add something like mobile hotspots to the trains locally. If you don't have any people of your own there, it's really hard to find out what the actual requirements are. In addition to that, you need to find out how to deal with connectivity and contracting there. We only know the international requirements needed in Germany or Europe; there are always local peculiarities you need to be aware of elsewhere.

It also depends on the marketplace. The railways won't move from India to the US, of course, so that's not an issue. But if you have a medical customer adding some kind of remote management or asset tracking to a device, for example, these devices will be ➜



'If we go for a partner, we qualify their product within our own value chain, regardless of whether it's hardware or software.'
Claus Giebert, Kontron

deployed in major locations, so you should be able to help your customer get it working in the US, Europe or India. He should be able to do it himself, theoretically. But what we have found is that if they aren't prepared to do so already, then they simply won't be able to do it. That's a typical M2M mistake – you always think if it works at home, I can do it abroad. This is really problematic because between the UK and Germany we at least have the same frequency and technologies available. If you go for Japan or China, though, you won't even have that. Even if you forget the fact that you need a different contract, your hardware won't work there.

So in a nutshell, you need to be familiar with local requirements. It's not possible for the customer – because he's running a medical company, for example, or a railway company. If you ask a railway company where to buy the best brakes and how to brake from 300 miles an hour to zero over a distance of a mile, they can answer all those questions. But if you ask them what type of wireless connectivity to use as an uplink in India, say, when your train is going to travel to and from Tibet, and if it will change along the route, they won't have a clue about it.

Basically, 99% of our customers are good at familiarising themselves with the local aspects of their business. Medical regulations are different in India and US. Railway regulations are different in Russia and India. But if you leave their core business, you will quickly end up in situations where you need a company to be able to answer your questions.

This problem mainly applies to multinational customers. If you are a small German company and you deliver to another business in Germany, you might expect that if you supplied them with a German SIM card with German wireless connectivity and a suitable 3G modem, it would work worldwide. In this case, it will not cover China, it may partly cover India, but it won't cover Japan at all. Large parts of the US will not be covered either, and in Latin America I think Argentina and the Dominican Republic also use a different wireless technology. So you will have real problems on your hands if you are not aware of the differences in different countries.

To get this working, it's always good to have people who can help in the customer's time zone. Just imagine what it would be like if people at an Indian rail company were to call someone in the US – it would be difficult, and European time zones are even worse; by the time they start working, we might all be on our way home again…

M2M Now: What's different about Kontron in this respect? Do you ensure you have people in your customers' countries all the time?

CG: Well, in the same time zone, at least. I have people in Canada and the US, for example. I have no-one of my own in Argentina, but I do have partners there and even if they call the US, it's nearly the same zone because I have people on the east and west coast. I can't claim that we cover every single country, but we do cover the major time zones in the major locations – we have people locally who can answer questions if need be.

M2M Now: What are the most significant geographical markets for you at the moment in terms of M2M?

CG: India, the Nordics, we have some big projects in the US and currently some in Italy too – mainly in the smart- metering field. We also have some more in Austria and we are pushing for smart metering in Germany as well.

M2M Now: What other vertical industries are you targeting?

CG: We mainly have medical and industrial automation, and there are some projects coming up for railways, too – better internet quality in transport, basically, because we have requests for buses, railways and some for aeroplanes; it's becoming more and more common to have internet connectivity while you are on the move. So we're seeing some big projects there now.

M2M Now Jargon Buster

PTCRB = PCS-1900 Type Certification Review Board (GSM North America)

SIM = Subscriber Identity Module

UMTS = Universal Mobile Telecommunication System

Time to enter the M2M market, with a little help

Cycle30 believes it is in a unique position to help operators enter the M2M market. Steve Rogerson talks to Jim Dunlap, the company's CEO, to find out why.

There are many companies serving the major operators but few have the real understanding that comes from being part of an operator, and when it comes to advising those operators of how to implement M2M services, one company is finding that its operator heritage is providing a unique advantage. That company is **Cycle30**, which spun off from **General Communication** to become an independent company providing billing services for operators, utilities and M2M providers.

"We are a spin-off from an operator here in the US," said Jim Dunlap, Cycle30's chief executive officer. "We spun the IP into a separate company to serve the tier one commercial and the tier two residential and commercial markets."

Dunlap is responsible for overall strategic direction, operational and financial performance of Cycle30. He has 26 years of senior technology leadership experience in the retail, telecoms and utility

The author is Steve Rogerson, a freelance telecoms writer

Jim Dunlap is the CEO of Cycle30.

industries. Prior to Cycle30, he held senior roles at General Communication, **Campbell Soup** and **Nordstrom**. But he believes his current role provides him with a very different challenge.

"What is unique," he said, "is the operator heritage. We understand how operators work and the demands of the operator. We are all technology people and because of that we have used technology in innovative ways that we don't see elsewhere in the market today."

On top of that, he said, the company believed in "old fashioned customer service, and that is rare in the market today". Technology, he said, was used to drive down operating costs and improve customer service.

A good example of this can be seen in Cycle30's user interface. Dunlap believes that most billing platforms have user interfaces for operators and end users that are still relatively complex. Cycle30 has gone down the path of trying to hide as much of that complexity as possible.

"We have used technology to mask a lot of the technology," he said. "We want to help them choose whatever services they want to have." This involves only putting on the screen at any particular time information that is relevant to what they are doing. And he admits that some of the inspiration for this came from the way **Amazon** works.

Inspiration from Amazon

"We put a lot of the process complexity behind the scenes," he said. "It is much more like an Amazon ordering service. It is geared towards providing the best customer experience and putting the complexity in the platform itself."

He also said the company had made good use of new technologies to allow the platform to be available on an iPad or other tablet computer. When it comes to M2M specifically, he believes that the changes in the past two years have now made this technology essential for operators and carriers. This is an entirely new revenue stream but one that is growing so fast and becoming so pervasive that to ignore it could be disastrous.

"M2M will bring new revenue streams to operators ➜

and increased stickiness as customers see the value," he said. He gave three examples of how it was becoming such an integrated part of customers' lives that it made it extremely difficult for them to switch providers.

He was speaking from New Orleans, from where he could see the temperature of his house near Seattle. He can use an app to manage the temperature. "It is an easy-to-use M2M service that is saving me money," he said.

The next example concerned his car insurance company. He has a telemetry system embedded in his car that means his 18-year-old son has a good rate for driving the car as long as he follows safe driving practices.

"I can go on the web and see what speed he is doing, how many miles he has done, whether he is driving erratically, and so on," he said. "And my son knows it is in the vehicle and is motivated to drive safely because he knows he is being monitored."

Monitoring Alaska kin

The third example concerns his parents who are in their 70s and live in Alaska. They each wear Fitbits, devices that monitor their activity, such as how far they have walked, the quality of their sleep, the time spent not moving, and so on. "We can use that to challenge them to get them moving," he said. "We can challenge them to go out and walk more steps."

He said these were just three examples of thousands or even tens of thousands of applications that will be on the market in the next few years. "This provides a tremendous amount of stickiness because all of these are connected to my network provider," he said.

But it is not just wireless providers who can benefit from the growth in M2M services. Obviously, their clients will benefit but so too can the cable companies.

"The cable companies are very well placed to benefit," said Dunlap. "They have broadband connections and Wi-Fi networks. A lot of M2M services don't have to be mobile; they can be fixed. We are seeing an explosion in the number of devices on the market from small innovative companies."

An example he saw recently in the **Apple** Store was an app that lets people monitor the location of their pets. "You can put these devices out in the market and into people's hands," he said. "There will be an enormous influx of new technology coming onto the market. And it will be the customers who will benefit the most."

Dunlap said this competition to bring innovations to the market was set to drive the economy for years and years.

Difficult for some back offices

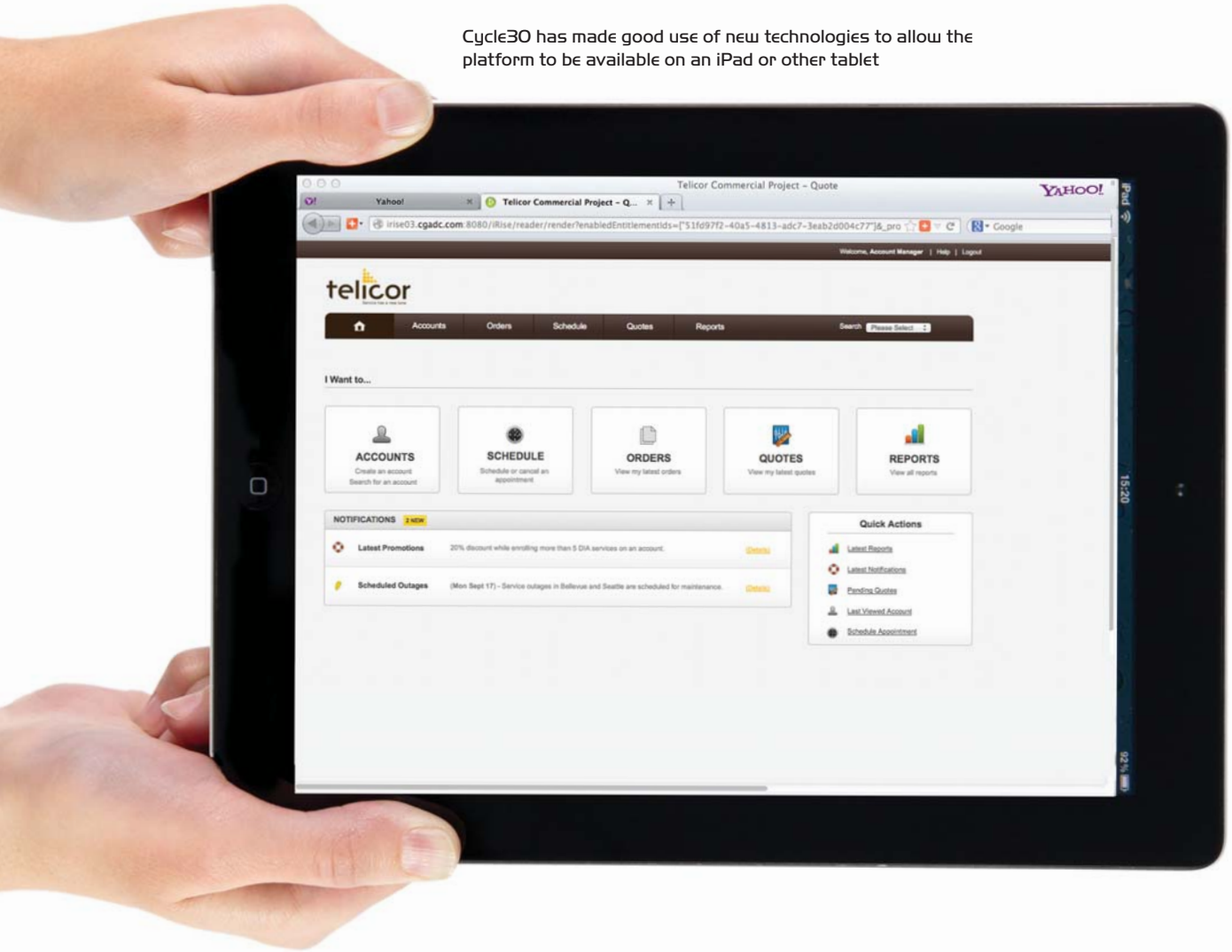
One problem with all of this is that for most operators their back office systems are just not up to the job for such a roll out of technology. These legacy systems were never designed to handle the volume of small packets of data that comes with M2M services. They were designed around cable and wireline services and modifying them for M2M is likely to be difficult and unsuccessful.

"To manage hundreds and thousands of new devices and analyse the data from them will be very complex," he said. "They don't lend themselves to this technology." What was needed he said were the platforms that would let the market evolve more rapidly and help companies get to market quickly.

"Some of the legacy systems are not capable of doing that because of the number of devices involved," he said. "It is a quantity issue and a time-to-market issue. Managing these devices and pulling data off them in a real-time basis involves millions of tiny, tiny data packages. The legacy systems are geared towards a slower process with less data that need to be analysed."

Nevertheless, most carriers and device manufacturers are starting to take this market seriously. Just about every carrier is looking at the commercial services that can come from M2M. They want to get into the market rapidly, but mostly without having to make extensive modifications to their existing systems. Yet a ➜

"Companies that (don't bite the bullet and go down the M2M road) could soon find themselves playing catch-up."
Jim Dunlap, Cycle30



Cycle30 has made good use of new technologies to allow the platform to be available on an iPad or other tablet

problem is that often their technology people do not understand what is involved.

"This means they want to buy the service rather than have to modify their own system," he said. "Companies that bite the bullet and go down the M2M road look likely to do well out of it, but those that don't could soon find themselves playing catch-up."

"Some cable companies once ignored Wi-Fi but now they are all providing hotspots for their customers to use," he said. "Those that put their heads in the sand on M2M will be last in the race. This is something that will grow phenomenally. They should start to focus on the value this can bring to their customers."

But it is difficult if not impossible to launch into this business without the right type of platform and thus finding a good platform provider is crucial. To start down this road, Dunlap advises carriers to carry out research in their own laboratories.

"See how some of the existing M2M products work on your network," he said. "Look at how these products are bought. Understand the lifecycle of the products and how to manage that. You need to set up a laboratory to help you understand this technology."

This, he said, was the first step. Entering this market is difficult without a good basic understanding of what is involved.

"It is not a big investment compared with other investments they have made in the past," he said. "What is tricky is if you try to squeeze this into your legacy platform. It is so different." This is where Cycle30 comes in to help the carriers make the transition.

"I think the platform we have developed to target the M2M space is one of the most unique platforms on the market today," said Dunlap, "in how it looks and how we have taken the complexity and hidden it in the back end. We have a unique model that benefits the operators by letting them figure out how to monetise the services, how to make money out of them, whether it is per device or per transaction."

Dunlap concluded by saying that he was seeing significant interest in the M2M market. Now, he said, was the time to move if you were not going to be left behind.

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What's your Big Data management strategy?

A quick fire interview with Oracle's Chris Baker revealed a sentiment that some in the industry are behind in their thinking, never mind the implementation of, a strategy to deal with big data. So, asks Georgina Elrington, where do you start?

The author is Georgina Elrington, an independent telecoms writer

The short answer is: with the big picture. "It's all about connected information and what you're going to do with it. However, that creates a series of challenges," said Baker.

One of those challenges facing the M2M world highlighted in the March 2013 edition of *M2M Now*, is deploying technology across the 50 billion activated devices in the world. It would be quite ridiculous to distribute upgrades and new apps on a one to one basis.

"That kind of approach will never be viable and, worse, your competition will shoot straight past you," Baker warned. The ability to write code once and deploy it across multiple device environments is key for success and core to Oracle's Java offering. Also vital is a platform that will mobilise that information effectively at every stage.

When we start looking into beneficiary sectors, such as the automotive industry's connected car, there are already some well-known examples like how onboard sensors behave and the value that they bring. It gets more interesting when you start connecting all the automotive data together and direct all that information back to the data centre.

Once you realise how many cars there are and how many sensors in each one it's not difficult to see how waves of data transactions can quickly tot up to a petabyte per day. But what value is buried in that data? What use is it and how can you access the intelligence within it?

Chris Baker is Oracle's Senior Vice President, Global ISV / OEM / Java Sales

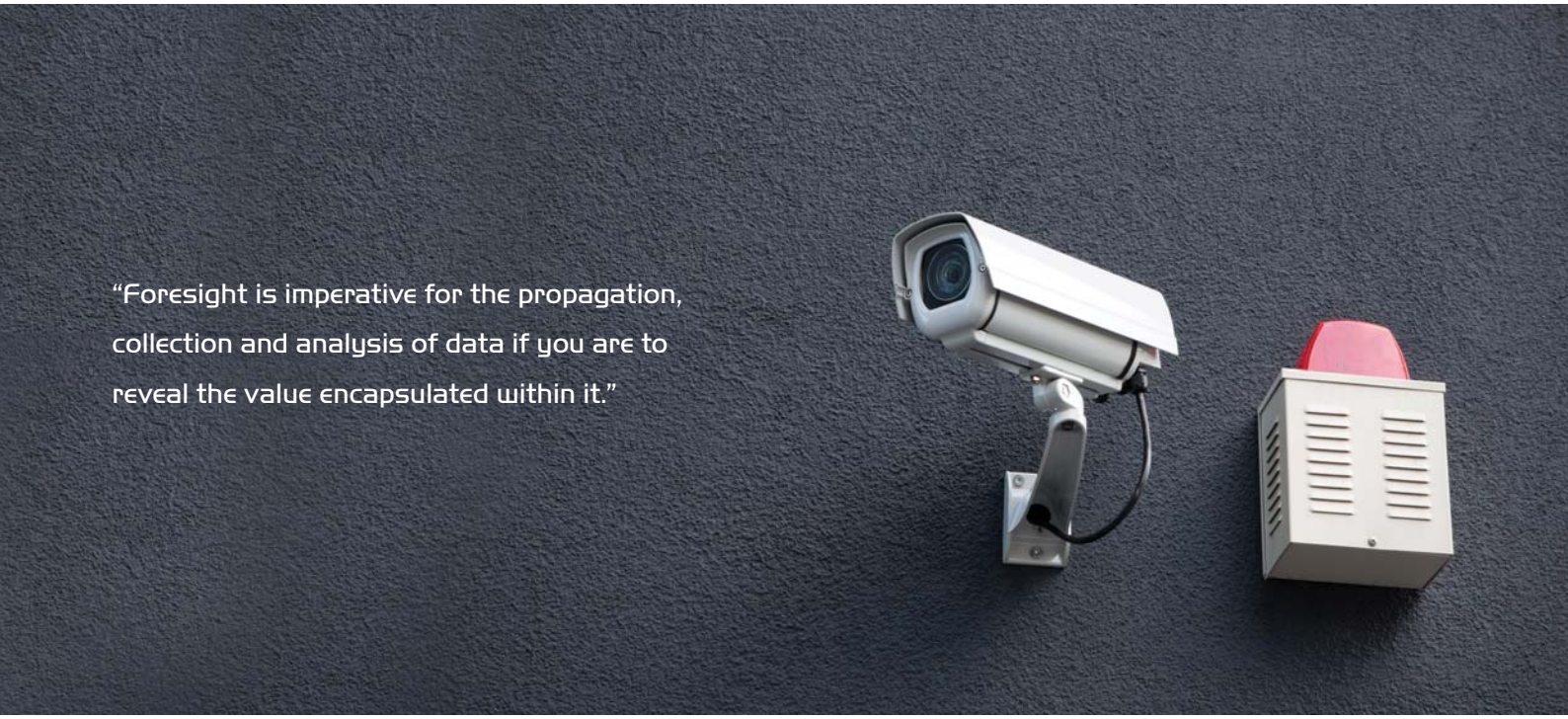
Chris Baker warned of lessons to be learned from the last financial crash. After the crash, some organisations collected all sorts of data to help with risk analysis. The fact is that some of them collected so much information, that without a true data management and analytics strategy, useful analysis became quite impossible.

Hence, not only do you need a platform strategy, you also need a data management strategy. You need to understand what you're trying to do and make sure that, for instance, when the petabyte of data a day becomes two petabytes, you know how to deal with it.

It doesn't matter how big your data is, it's what you do with it that counts

"It became clear to me that we were heading for a data volume problem about five years ago and at the time people thought that the numbers I was conveying were over-estimated. But today we're looking at even bigger figures," said Baker. "Many people don't really think through what it means when you've got this huge amount of data. Do they really think about how long the analytics are going to take? Do they design their platform to have the performance to get really critical information analysed? We have been talking about this since the introduction of Exadata and other Oracle Engineered Systems several years ago."

As vital as this is, Baker cautioned that the buck doesn't stop there. By using tools like complex ➜



event processing, you can do much more because you can create a much smarter and more usable rules-based environment.

"It is extremely important to think differently. Take car manufacturers who want to know what percentages of their vehicles have a fault so that they can do something about it. What we have there is a rules-based system that enables action to be taken in response to information received. Better still is when applications are linked to the data centre which fire off an appropriate fix to the problem remotely. That is all possible if the data has been analysed and channelled in the right way, paving a clear path for the right decisions."

He went on to explain that it's not just about processing at the data centre end, but actually embedding more intelligence into the devices and gateways. "In this way, only the information that you need is getting moved around, resulting in better performance and a much more real-time environment."

Fine-tuned data management strategies can also be realised in the healthcare sector. If someone suffers a fall, or enters a diabetic coma at home for instance, their device could follows a series of checks. Should it be necessary it can then send an alert for local medical assistance, triggering a chain reaction: sending location information to the ambulance crew, switching off the house alarm so that the medics can gain access, informing the hospital of the problem, when to expect the patient and what equipment will be likely required such as extra blood or a bed in intensive care.

It's clear that a strategy needs to encompass the originating device, subsequent corresponding devices, apps and elements in the process, all the way back to the data centre. However, this creates multitudes of simultaneous complex events, and all that information goes back into the data centre. It is critical to have planned your computing architecture and capacity so the correct amounts of computing power are available to carry out analysis and respond appropriately, after all some of it will need dealing with in real time and some of it won't.

Another demonstration is in the transportation sector. Here there are four key elements to be considered in a sensible data management strategy: These are: the vehicle manufacturer, the owner, the vehicle's service centre and the insurance companies. Much of the data, for each element, is sensitive and needs to be heavily protected at every stage. Data security throughout the entire IT systems from device to data centre, is critical and a pre-requisite for success. The point of note is that those security levels need to be appropriate and complete all the way through from the various machines back to the data centre, and then out to all the other devices in the process.

Driving this point home, Baker told us that his automobile insurance company had recently →

"M2M is just the beginning in extracting value from the big data chain."
Chris Baker, Oracle

In the future will we have a button in the Connected Car saying Send Data / Don't Send Data?

offered him an opt-in scheme whereby his driving could be monitored via telematics. The analysed data would then be used to instigate policy benefits and discounts to reward 'good' driving, with penalties for a more reckless approach on the road.

This is a good idea in principle but how far will telematics reach into our lives, what is being reported back, to whom and to what end? Some people may want the insurance company to know what they're doing, where they're going and how they're driving. Others may not.

Telematics has an obvious benefit for maintenance, such as taking your car into a service centre that has already been alerted as to which upgrades or works are required. However, when you start adding more personal elements – like behaviour or location information – it's not about the car any more, it's about the person.

So, in the future, will we have a button in the connected car which says Send Data / Don't Send Data? It's a pertinent question; one has to know, at the very least, what data is managed and who has access to it.

It's a chain reaction

The reality is that big data applications and appliances have a place in today's world. But in order to harness structured and unstructured information and allocate appropriate responses to all the elements, you've simply got to have a strategy which encompasses the entire chain.

"Machine to machine is one thing. But when you start getting into device-to-data centre the picture expands to several machines communicating with other machines, communicating with data centres, back to more machines and consoles to resolve the event. What you end up with is a daisy chain of information moving and collecting and being analysed both together and separately. You have to map out, architecturally, all the connected pieces and all the benefits," said Baker.

"Don't wait until you've got a petabyte of data a day coming at you before considering how to handle it. It's a bit late at that point. Instead, consider what you want to send and receive and where the value of those processes will be realised. Having a standard platform (Java) where you can write once and deploy many times all the ware from the device to data centre, where there is a standard platform Oracle Engineered System is critical for agility and scale.

"If you think about the big picture, considering everything from end to end, using a standard Java environment, you can build intelligence into your infrastructure from the device all the way back to the data centre," he said. "If you approach and architect in this way then there's a pretty good chance that you're going to be OK or, at the very least, know a lot more about the areas that need to be addressed. It's all about simplification and standardisation."

Sadly, we ran out of time before I could ask Chris Baker if he would opt in to a better-driving-gets-discounts scheme or, if it existed choose to press the Send Data button in his car, so we may never know. As for me, I pray that they remain just that – an option.

M2M Now Jargon Buster

Petabyte: 1 million gigabytes

ISV: Independent Software Vendor

OEM: Original Equipment Manufacturer

Taming a complex beast

It is a recurring theme among industry analysts. When asked to explain the reasons why the M2M industry falls short of delivering on forecasts year after year, the most common element in their answers is the continued complexity of integrating cellular technology into electronic devices in general.

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Some analysts have compared the process to that of getting a medical instrument to market – meaning that the regulatory hurdles and technology risks are among the highest in any industry.

It is up to us, members of the M2M value chain, to take on this challenge and work to remove hurdles and mitigate risks.

The integration of machine-to-machine (M2M) communication into devices has to be tamed for adoption to become more widespread, particularly in the small- to medium-sized enterprise sector. This is where the vast majority of innovation comes from but conversely these companies happen to comprise the group with the lowest wherewithal to overcome hurdles of nearly every type.

Telit has been a hands-on partner to our customers from the start. But we have now set out to completely bring down Integration hurdles. Our first official campaign in this initiative is a detailed map of the process that we have prepared for integrators and potential adopters of M2M. We call it the Integration Guide and anybody will soon be able to download it from telit.com.

Knowledge is the best tool in overcoming hurdles and the Integration Guide is that tool as it clearly lays out the process form beginning to end, pointing out the key engineering and design questions that must be asked, vendor and component selection criteria; and much more. Look for it at telit.com from May 15th.

The author is Alexander Bufalino, senior executive vice president, Global Marketing, Telit Wireless Solutions

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M2M for the Security Industry
May 8-9, 2013
Copthorne Tara Hotel, London, UK
www.smi-online.co.uk/m2m-security1.asp

Management World
May 13-16, 2013
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www.tmforum.org

M2M Forum 2013
May 14, 2013
Milan, Italy
www.m2mforum.it/eng

The Mobile Show
May 14 – 15, 2013
Dubai International Convention and Exhibition Centre, UAE
www.terrapinn.com/exhibition/the-mobile-show

Smart Utilities Central & Eastern Europe 2013
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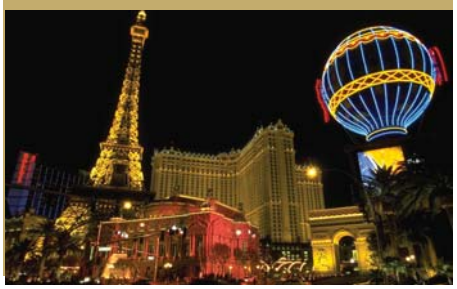

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EXPERT OPINION:

Capturing and analysing Big Data with M2M technology

Trends in big data, coupled with the proliferation of connected devices, have created the need for machine-to-machine (M2M) solutions to enable the capture and analysis of large data sets in the field, writes Robert Andres of Eurotech Group.

The author is Robert Andres, the chief marketing officer of Eurotech. With nearly 30 years of experience in the IT and communications industry, he has specialised in the fields of Embedded, Network, and IT Security.

Most data used to be created by humans, but today the quantity of digital data has exploded to roughly 2.5 quintillion (2.5 x 1018) bytes of data being created every day from a seemingly unlimited number of embedded devices and sensors in the world.

Some M2M solutions are simple, with a single application to communicate with, no connectivity options required, and only one type of device or sensor. However, for many customers, especially big data customers, M2M solutions are more complex. More complex solutions might have the need to support multiple services on the gateway, require various connectivity options, have more than one kind of vertical market to address, and have customer-specific business logic to be implemented.

An M2M platform based on the proper building blocks can simplify the capture and analysis of big data collected from these heterogeneous sources.

Data producers and data consumers

Modern applications have several distributed systems – consider a city bus, for example. Data could be collected from a number of producers including a passenger counter, cameras, a fare collection system and a fleet management system.

Then, the data may be transmitted to multiple data consumers such as customer displays in the bus depot, an application that provides transit information via cellphone, a back-end system for bus maintenance, and an accounting system for fare collection. These disparate systems all need access to the data.

In the recent era of connected devices, there are three factors that have increased the complexity of the Internet of Things:

1. An ever-growing number of data producers (sensors and smart devices)
2. The addition of new data consumers (applications) to enable new services
3. A reusing and combining of the data collected from different sources on a database level.

These factors will quickly result in a chaotic and increasingly ineffective M2M application landscape, as shown in Figure 1.

In order to effectively send data to the enterprise, the data must be delivered to a myriad of disparate systems. These distributed systems need a 'glue' to connect them to business applications.

An M2M integration platform

The glue missing in Figure 1 is an M2M integration platform – ideally one that is standards-based, open and cloud-centric. The proper platform must be optimised for the best possible device data communication, collection, analysis and management.

There is always going to be a growing enterprise demand to have the data both available and fresh, and without proper planning and architecture decisions, these types of M2M deployments will have vastly limited effectiveness.

An integration platform is designed to act as an intermediate system between the distributed devices and the applications making use of the big data coming from these devices. The ideal platform functions like an operating system for the Internet of Things, enabling the transfer of device data independent of any other language, platform or operating system to and from enterprise applications.

Figure 2 demonstrates how an M2M integration platform fills the gap to make delivering device data to the enterprise simpler.

On the device side, an M2M integration platform should include the broker technology to publish and subscribe data from the vast network of M2M devices, but also provide tools for device management including software, firmware and configuration. Managing the devices is just as important as managing the data.

For the enterprise side, the integration platform first and foremost has a robust set of connectors with the ability to quickly add more as new services and technologies emerge. The platform provides the tooling and web services to integrate the data as needed to the business enterprise. ➜

For more information or to contact Eurotech go to: **www.eurotech.com**

Looking deeper into the idea of an M2M integration platform, one approach simplifies and future proofs M2M solutions – the Enterprise Service Bus for machines.

Enterprise Service Bus for machines based on MQTT

In the enterprise IT world, an Enterprise Service Bus (ESB) is a type of middleware that resembles a universal, message -oriented communication backbone for enterprise applications. ESB solutions are designed to hide complexity, simplify access, allow developers to access and interact with other software components in a generic way, while handling complex details in the background.

An 'Enterprise Service Bus for Machines' can be implemented as the glue that connects distributed systems to business applications. With this type of unifying platform, M2M solutions can allow for easy integration of different device data systems and applications to enable the delivery of big data to the enterprise.

The first step to implementing an ESB for machines is enabling the array of devices and sensors to deliver their value or data. Since M2M solutions are rarely deployed in a robust environment, the messaging mechanism must be robust and efficient. MQTT is an ideal solution, an open source protocol designed specifically for the M2M environment.

MQTT is an interconnect protocol that is very robust, efficient and lightweight. It decouples producers and consumers of data and uses a publish / subscribe architecture. Decoupling publishers and subscribers makes the system scalable to a large number of publishers and subscribers in complex solutions, and also allows for the delivery of real-time data without dependencies or limitations.

With MQTT, devices publish the data and applications can subscribe to the data message streams. The data is sent automatically in an asynchronous manner when it is available, instead of having to be requested.

Just as in enterprise ESB messaging, MQTT enables devices to send and receive alerts and data when significant events occur, allowing for flexible information flow from 'many-to-many' instead of just 'one-to-one'. Independent producers and subscribers allow developers to collect data from multiple devices and then provide the information to many subscribers.

The MQTT transport protocol is completely agnostic on the data payload that it carries. The protocol mechanics are designed to assign data payloads with topics, but do not impose any particular data representation or format on the contents of the payload. The protocol allows you to link any kind of sensor with any kind of enterprise application, so you do not have to worry about how the data gets from point A to point B. Since you can send any type of data, MQTT is valuable for many types of data and devices.

An integration platform using MQTT can give developers the ability to connect any type of device to any type of application. Eurotech's Everyware Cloud is one example of an M2M integration platform that transforms bits of data at the edge of the distributed device network into valuable actionable information in the business user's hands.

The Everyware Cloud is a comprehensive solution that provides the functional elements needed to perform the appropriate message transformation, message routing, protocol conversions, data normalisation, service virtualisation, tracking, accounting, administration and lifecycle management of the distributed devices as shown in Figure 4.

No matter which solution is adopted, an integration platform is essential to bridge the M2M world with the world of enterprise IT.

It effectively hides the complexity of the Internet of Things and offers benefits that the enterprise IT team is desperately looking for – the ability to elastically scale the number of data producers and data consumers, develop new applications that enable new services in a short amount of time, and reuse and combine the data collected from varied sources.

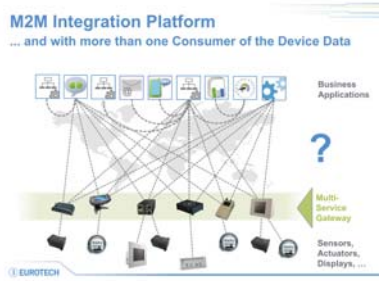


Figure 1: The chaotic nature of today's M2M solutions

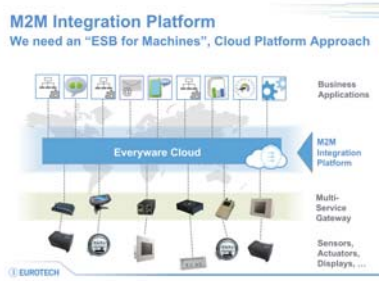


Figure 2: Integration platforms make delivering device data to the enterprise simpler

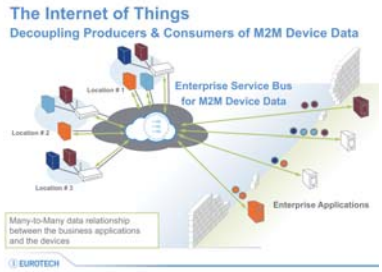


Figure 3: Decoupling producers and consumers of M2M device data

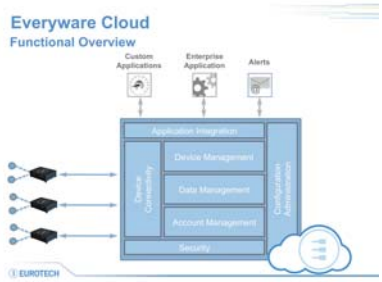


Figure 4: M2M integration Platform Functional Elements

Challenges of Big Data lie in new partner relationships as well as new technologies

One of the main challenges for the telecoms sector has always been that changes in business models or in one part of the network have major repercussions elsewhere. The impact of the 'Internet of Things' will be no different, argues Alun Lewis.

The author, Alun Lewis, is a freelance telecoms writer

As the number of connected devices and sensors continues to multiply almost exponentially – all feeding data back into the system – making sense of this wealth of information and using it for improved decision-making demands new processes, tools and ways of thinking.

The concept of 'Big Data' isn't new and has been talked up from different perspectives for its potential role in everything from smarter government, green issues and public safety to highly personalised advertising and sales. Applying these principles to the M2M space however presents some very specific commercial, technological and organisational issues to all the different organisations that will be involved in the value chain.

As Robert Andres, chief marketing officer at pervasive computing specialist **Eurotech** comments, "Whether you believe **AT&T**'s prediction of 50 billion connected devices by 2020 or **IBM**'s of one trillion by 2015, the amount of machine data in the world is growing rapidly and creating a new set of challenges to capture and analyse Big Data. There is vastly more machine-created data, and the systems creating that data are also more complicated. Many systems have several – even thousands – of data producers and several data consumers ranging from a back end server to a cell phone.

He continues, "To successfully deliver big data to the enterprise, solutions must include robust device software and powerful M2M integration platforms. IT-centric, cloud-based connectivity platforms are a necessary building block for these M2M systems forming an 'Enterprise Service Bus for Machines' allowing seamless integration of the distributed devices with the enterprise IT world. It is the combination of M2M integration platform, robust but effective protocols and smart, modular device software that ensure not only the transformation of bits of data at the edge of the network into actionable business information but also allows the effective deployment and management of distributed devices."

Robert Winter, chief engineer at **Kroll Ontrack**, cautions that, "Organisations can neglect the importance of data loss and the difficulties of data recovery. This is especially prominent among smaller organisations that may not have the resources to invest in state of the art storage arrays. Data storage suppliers such as **HP, Dell, EMC** and **NetApps** have developed new modular SAN/NAS storage appliances that are targeted at smaller organisations. One of the major benefits is they are designed to have a minimal IT management overhead. The consequence is that when data loss occurs there is likely to be minimal IT knowledge within the business to evaluate the recovery options."

Complex new relationships

The key problems with managing this new world lie not just with managing and applying the potentially vast volumes of information though. Instead they involve complex relationships between service providers, network owners, IT companies and all ➜

"Big data cannot simply be covered by a big database or warehouse solution."
George Bonev, Software AG

the different manufacturers and various vertical markets who could become involved in adding connectivity and sensor technologies to their products. Commercial and operational boundaries will initially be blurred.

Jaishankar Velapakam, practice lead at **Mahindra Systems'** Information Management and Analytics division, believes that, "Telecom operators might be best positioned to collect and integrate the M2M data – but the associated metadata that would add meaning will be owned by the user of the M2M data. Therefore, an association of data generators and telcos is required. For example, an electronic control unit in a car can continuously spew out data about engine speed, pressure and other data about driving patterns. The question is how much will such data help an auto insurer refine their actuarial models and what would be the net impact of such pricing?"

This blurring of boundaries is already happening with some manufacturers in the automotive and white goods sectors, for example, such as **Bosch** seeing IT and connectivity as a core competence in retaining strategic control of the big data that they can gather from their customers, analyse and use in innovative ways.

Break out of the 'data pipe'

For Holger Reinhardt, senior software architect at API specialist Layer **7 Technologies**, while providing big data analytics might help operators break out of the commodity data pipe business, helping their customers reduce the 'friction' and costs involved in managing this, counter arguments also exist: "The flip-side of this kind of offering is that it gives the perception of customer lock-in and makes it potentially more difficult to share and resell the data. While a large number of M2M customers are using the data in silos, new commercial opportunities will come from correlating data across these silos to create a new class of context-aware applications and services. Anonymising and aggregating such data so that it can be used in a different context beyond its original purpose might unlock additional value and, by extension, additional revenues."


Donald Farmer, QlikView: Decisions may get 'baked' into the model early on

He adds, "For example, data collected by smart trashcans (e.g. www.bigbellysolar.com) is owned by the city but can and should be shared with the private contractor wanting to optimise their pick up routes – but could also be sold or shared with other bodies, such as organisers of major events or public safety teams."


Holger Reinhardt, Layer 7: Perception of customer lock-in

That said, the sheer speed and scale of the data sets involved present their own problems as George Bonev, Lead Solution Architect for Big Data at **Software AG**, explains, "In the context of M2M, it's not always clear how providers can best harness and utilise the vast amount of data generated, especially given the speed and diversity at which they operate. The sheer complexity of the big data challenge is compounded when information assets are combined with other dynamically changing data sets such as weather, social feed, news broadcasts and so on. As such, 'big' data →

Jaishankar Velapakam, Mahindra Systems: Are telcos best positioned?

Phil Croxford, Oracle: Intelligent inferences

"Just because you can measure something it doesn't mean it's important." Donald Farmer, Qlikview

cannot simply be covered by a big database or warehouse solution – although these should play a role in the overall architecture. Simply put, storage does not effectively make the most of the important business opportunities."

This perspective is also emphasised by Philip Croxford, senior director, ISV/OEM/Java Go-to-Market at Oracle , who stresses the need to not only differentiate between structured and non- or semi-structured data, but also recognise when some pre-processing of data, closer to the source, might be advantageous.

He explains, "There are clearly some M2M application areas and industry sectors where data is well structured, is based on hard empirical sources and can be compared to historical data within a well-understood pragmatic framework. The energy and industrial plant sectors are good examples of this, where geophysical and seismic data or information from sensors on drills, cranes and derricks can be instantly sent back to base for analysis. This improves the efficiency of extraction operations, firstly by the more efficient targeting of the resources underground and secondly by identifying when vital equipment might be about to fail, allowing pre-emptive action to be undertaken before extraction is impacted. Indeed, the use of M2M in these situations have become powerful business enablers and market differentiators.

"By contrast," Croxford says, "consumer behaviour-oriented data gathered from social networks, tweets and similar sources is much more difficult to quantify meaningfully and analyse in consistent ways – especially given the fickle nature of human opinions ! That said, techniques are being evolved that can make intelligent inferences from these sources."

He continues, "The second issue concerns how exactly the data is collected and aggregated and it's here that the use of Java – either on the devices themselves or at remote data concentrators – can perform what could be called an intelligent triage, filtering out noise and reducing the need to backhaul large amounts of data to a central site. Complementing this, there needs to be a focus on the Event Processing environment to ensure that that downstream applications, service oriented architectures and event-driven architectures are all driven by true, real-time intelligence."

Croxford concludes, "Whatever infrastructure choices you make – fast data, big data or some form of cloud solution – it's essential that there's a clear executive vision driving things from the top downwards. It can be all too easy for organisations to lose their way when trying to make sense of the huge amounts of data involved and extract monetisable and worthwhile information from it."

Bonev adds, "For these reasons, the challenges organisations face when dealing with increased volume, variety and velocity of data are best dealt with via a combination of multichannel integration, low latency messaging, in-memory data management and real time data analysis with complex events-processing capabilities. The opportunity lies in finding the patterns that impact on the business in real-time and then taking advantage of that pattern. This cannot be addressed by simply storing information in a database/data warehouse."

When it comes to finding appropriate tools and processes to actually analyse all this data, recent advances in in-memory processing using superfast 64-bit addressing are making it much easier to correlate data and spot important trends in far more dynamic ways than previously was possible, says Donald Farmer, a renowned data scientist formerly at **Microsoft** and now vice president at business intelligence specialists **QlikView** – but important caveats apply.

"While the industry can go on producing ever more powerful and complex algorithms to analyse data, there's a serious danger that decisions get 'baked' into the model early on," Farmer says. "This limits the freedom to explore and experiment as requirements change across the lifecycle of a project. These systems can suffer from what the Ancient Greeks called *pareidoilia,* projecting meaning and patterns onto what is essentially random noise, such as seeing faces in clouds. It's much better to be able to display a wider breadth of data in intelligent ways – like using appropriate colour codings – to help the humans who make the critical business decisions to use their own intuition to make the necessary cross-connections. We need to enhance human pattern recognition skills, not try to replace them totally, especially where entrepreneurial and innovative thinking is required."

This emphasises the eternal fact behind big data and any kind of metrics – just because you can measure something doesn't mean that it's important! For data to be useful, it needs to drive the classic hierarchy and be transformed next into information, then knowledge and, hopefully at the end, practical wisdom.

Cardiauvergne, almerys and Digi save lives and money, as France pilots M2M-based cardiac care

Each year, the US-based M2M systems and services provider, Digi International hosts two User Group conferences – one in the US and the other in Europe. The French Riviera again played host to 140 delegates who heard about a life-and-death critical healthcare application being trialled in France.

An insight into the challenges of extending a successful pilot telehealth scheme into a nationwide roll-out were highlighted in a presentation by Robert Boualit, health services director at **almerys**, a French client of **Digi International**.

Cardiauvergne was France's first co-ordinated heart care service to use telemedicine tools. Operational since January 2011, Cardiauvergne has already supported more than 300 patients, 250 doctors, 230 pharmacies, and 500 nurses receiving up to 80 alerts per day.

At the start of this initiative the goal for Professor Cassagnes, chief of Cardiology in Clermont-Ferrand, was to strengthen the co-ordination of care and the monitoring and education of patients with the most serious cardiac conditions in the Auvergne region. Chronic heart failure is the most common cause of hospitalisation among patients of 60 years or older in France. Medical monitoring, emergency response, hospitalisation and treatment can be very expensive for the patient and for healthcare providers.

Aware of this major public health issue, the Auvergne Regional Health Agency supported the creation of Cardiauvergne, as a not-for-profit initiative offering a free service to patients. Cardiauvergne chose almerys for its experience in wireless data and financial transactions within the French healthcare system. Founded in 2000 by state-owned network operator **France Telecom**, almerys is now a subsidiary of **Orange** and is the French market leader in third-party insurance payment systems.

A common indicator of a heart treatment failure is that the patient starts to retain salt and water and →

"The return on investment works out at €5,000 - €6,000 per patient per year."
Robert Boualit, almerys

gains weight. This correlation is so strong that if a patient's weight is monitored regularly any weight gain can provide a crucial warning signal, enabling medical professionals to take action.

The mission for almerys was to develop a system of in-home monitoring that would collect the patient's weight data daily, and transfer it quickly and securely to the co-ordination unit. The unit would then make the appropriate medical decisions.

"With medical monitoring applications there is always health at stake," said Robert Boualit, health services director at almerys. "Our goal was to develop a system that had a secure infrastructure that we could control entirely. We could not rely on (finding) established internet connections and computer equipment for patients who, for the most part, are elderly residing in rural areas. We wanted to design a system that would operate independently – out of the box – wherever it was placed."

The solution was to network a weighing scale using a wireless module that would collect and transfer data back to the co-ordination unit. Following a comparative study of several suppliers recommended by Orange, almerys chose Digi ConnectPort X3 gateway and the Digi Transport WR41 to form the communication piece of its solution.

"We wanted to be up and running quickly and Digi provided us with the rapid development environment we needed. Its solutions were easily integrated into our IT platform. The solution was ready in less than two months, and enabled us to get to the markiet quickly," explained Boualit.

The ConnectPort X3 is connected via the serial cable to the weighing scales provided to the patient. Daily weight readings are recorded by the ConnectPort X3, which is programmed in open source with Python to the Device Cloud by Etherios™ platform that remotely manages the operation of the devices. The data is then transmitted to a secure almerys server which communicates it on to the health co-ordination unit. The Digi Transport WR41 is used where the patient's home is not covered by a 3G or RTT network. The WR41 transfers the weight data via the fixed line network.

The pilot project began in September 2011 and so far 315 patients have been monitored. Cardiauvergne has responded to over 600 alarms, with responses ranging from calling the patient to organising emergency hospitalisation. "This has averted 600 health crises and, in critical cases, helped us save lives," said Professor Jean Cassagnes, cardiologist and medical director at Cardiauvergne.

"In 2013 our goal is to extend our offering to other networks and healthcare organisations specialising in heart failure in France," said Robert Boualit. "Looking to the future, we hope to continue our collaboration with Digi to develop a telehealth application that can remotely monitor a number of different health indicators, such as body temperature, heart rate, and so on."

As Boualit's presentation showed, for an outlay of €15.00 per patient per day, the return on investment works out at €5,000 - 6,000 per patient per year. Most of the saving reportedly comes in avoiding hospitalisations. The French Ministry of Health approved an expansion of the pilot following the recent visit of President Francois Hollande.

M2M Now Jargon Buster

ARPU = Average Revenue Per User

GSMA = Global System for Mobile communications Association

MVNO = Mobile Virtual Network Operator

RTT = Radio Transmission Technology

TTM = Time-to-Market

Digi conference

In his keynote presentation to the Digi conference, Jeremy Cowan, the editor of *M2M Now*, focused on the industry's urgent need for simplicity. "There have been enormous strides forward in telematics, automotive, agriculture, and healthcare services just to name a few," he said. "M2M is Good News – and this is echoed by the CEOs that I speak to: M2M services are growing well, … even if profits are growing more slowly than connections."

One of the things holding back M2M, he said, is low profitability. In fact, some of the challenges are closely inter-related. He pointed to the complex delivery model for M2M applications, and the urgent need to cut time-to-market for new services. Solve one of these problems and you make it easier to solve another.

Complex, crowded supply chains

M2M service delivery often contains eight or more ecosystem partners, all of whom need to take a share of the revenue. Compare this, he said, to the four or five partners involved in the delivery of mobile voice communication services, and it becomes easier to see why some M2M applications, already plagued by low ARPU, find it hard to achieve an attractive return on investment.

The good news, Cowan added, is that M2M network connections worldwide are currently growing at 25 - 30% per year, and **Beecham Research** forecasts faster growth to come (see webinar, How to launch an M2M customer in 30 days, www.M2MNow.biz). He went on to describe the re-shaping of the current M2M landscape with original device manufacturers getting involved in platform provision, platform developers turning into catalysts for new global operator alliances, and MVNOs becoming Managed Service Providers.

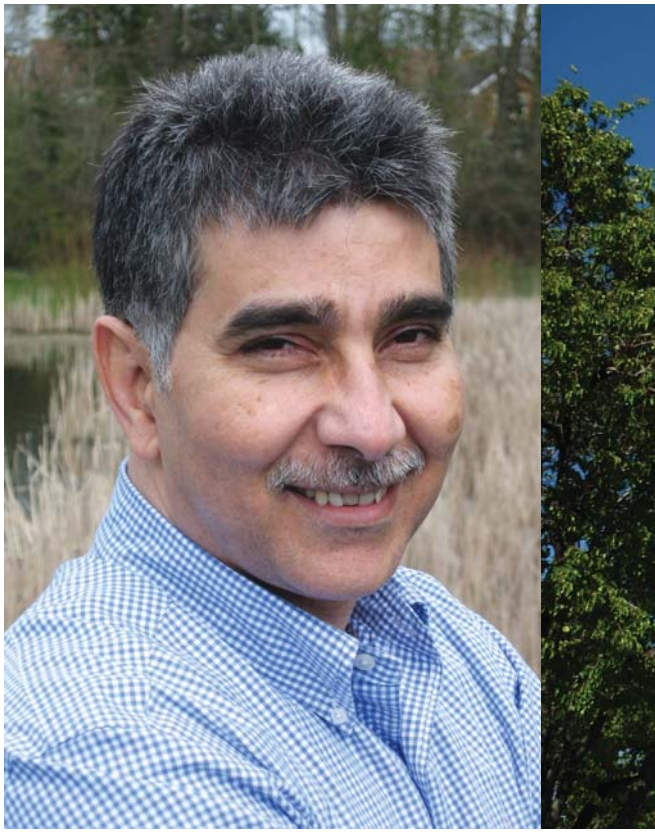
"Clearly, the whole M2M 'industry', if we can call it that now, is re-inventing itself," he said, "not just to drive down costs but also for service innovation."

Designing out M2M's financial and strategic uncertainties

Separating tangible business potential in the M2M world from all the visionary hype out there can still be difficult, says Alun Lewis. Service providers, individual businesses and almost every industry vertical are all looking at its potential from their different perspectives and with greatly varying degrees of commitment and assurance.

Everyone knows that machine-to-machine communications (M2M) is going to be huge – and possibly even strategically vital for many companies – but, for some of those looking to develop M2M strategies, substantial uncertainties still exist about costs of ownership, investment returns and technology choices.

In that context then, it's well worth looking at the experience of specialist M2M service provider **Aeris Communications**, which is now entering the EMEA marketplace. In business in the US for over 17 years, the company has grown rapidly and consistently, providing 'white label' M2M services to some major cellular



Mohsen Mohseninia: North America and EMEA M2M markets are very different

Alun Lewis, the author, is a freelance technology writer

operators while also working directly with a wide variety of end-user companies.

Having shown a healthy profit for the last three years,and with Aeris' early investment in its own core network, application platforms, billing and management systems, and cloud infrastructure now shown to be paying off, the company is keen to share its proven insights, expertise and technologies with the growing M2M community over here.

Working across multiple sectors

While working across multiple sectors, the company claims leadership in the US automotive sector, supporting manufacturers like Hyundai by providing automatic Vehicle Crash Notification services for their half million strong customer base. For telematics specialist PeopleNet, who support a community of nearly 200,000 long-haul trucks, Aeris's operations emphasise the need to build truly scalable and flexible systems and what it calls its 'Made for Machines' technology strategy. The company's figures are certainly impressive, regularly processing around 20 million cellular signalling transactions and 30 million mobile IP transactions each day – with these numbers growing by a factor of ten during peak periods.

For Mohsen Mohseninia, the ex-Logica executive recently appointed as EMEA VP Market Development for Aeris Communications, there are a number of critical differences between M2M operations in EMEA and in North America. These make it crucial for customers to recognise the impact these could have when selecting an appropriate partner, especially where support for truly international operations is involved.

"North America and EMEA are in very different places as far as the development of M2M markets are concerned," he says. "For a start, our customers in EMEA – whether they are operators looking for white label solutions or individual companies themselves – are focused on a truly international marketplace. That means dealing with a much wider mix of cellular standards and network technologies and providing global SIMs, as well as delivering appropriate multi-language support through the portals that we provide to give our customers direct control over their services.

"Another key difference," Mohseninia adds, "are the two very different approaches that have evolved in the region. In North America, much of the development of M2M has been as a result of focused, ground-up innovation by individual companies across many market sectors and verticals. By contrast, at least in Europe, a lot of development has been top down, driven by regulation focused on areas such as vehicle safety or on environmental issues such as smart metering."

Complex relationships

"Relationships between the different service

Mohsen Mohseninia, Aeris Communications: Customers directly control devices

providers here (in Europe) are also much more complex across the regions, with the big players switching between competition and co-operation as their tactics change," he continues.

"That complexity can translate into headaches for end customers who try to deal directly with the service providers themselves and grow their own international coverage. We have many years of experience in negotiating wholesale capacity across multiple cellular carriers to ensure that our enterprise customers get the optimum footprint for their needs at an optimum price. In addition, where we have access to multiple networks, our technology allows a device to choose the best signal from amongst the different networks available at any one point," says Mohseninia.

Aeris's strategy of building its own supporting systems, adding intelligence and opening up APIs to allow customers to easily integrate the company's cloud-based M2M environment with their own business systems, certainly seems to fit in with the general development path of the whole sector. According to recent research by **Informa**, although most revenues in the M2M sector have historically come from the provision of basic connectivity services, that picture will shift significantly over the next few years with business intelligence, service level management and professional services generating most of the money.

Based on years of experience working with customers to develop specific customers M2M services, Aeris has developed a wide range of systems and platforms unique to the M2M industry. At the heart of Aeris's offering lies its own fully patented solution, consisting of three main radio access technology agnostic elements: AerFrame, which interacts with the various signalling systems in the host networks and provides HLR, GGSN and other functions with enhanced capabilities; AerPort, their connectivity management platform; and the company's application enablement platform AerCloud.

Flexibility and scalability

Supporting and integrated with all these are the necessary OSS/BSS functions, each also designed to deal with the specific requirements demanded by the highly individualised M2M environment, such as near-infinite flexibility in tariff plans, high volume service provisioning and easy and fast creation and prototyping of new services by the customers themselves.

For Aeris's Mohseninia, all these functionalities translate into multiple benefits for both service providers and their customers and put the direct control of devices firmly into their hands – while also cutting costs into the bargain.

"Thanks to its deep integration with the core network elements and the supporting systems such as ERP systems from **SAP** and **Oracle**, AerPort can provide far more than just the basic usage

"Complexity can translate into headaches for end customers who try to deal directly with the service providers themselves and grow their own international coverage."
Mohsen Mohseninia, Aeris Communications

information that's available on traditional connectivity management platforms. This translates into numerous strategic advantages for users," he says. "For example, they have far greater access to network information to troubleshoot a service or a device. AerPort also allows customers to access some of the unique capabilities of our network elements – such as dynamic hotlining or VLR clearing, to name but a few – that have proven to be extremely valuable to all our customers across every vertical market. Similarly, the seamless links with AerCloud, our Application Enablement Platform, enable application developers to rapidly create and deploy M2M business applications at minimal costs, with zero integration overheads and involving much lower risks for the carriers involved.

"As the market matures," he continues, "there's also going to be a continuing need to support an increasingly diverse device community out there over long timescales. With our AerCloud Secure Protocol Adoption Layer, enterprise customers can evolve their devices, using next generation sensor technologies, for example, without needing to change the actual applications that consume and manage that data.

Here Mohseninia argues that attempts to develop standards for the M2M sector – either by the telecoms industry or by individual market sectors and user organisations – could act as a drag on fast time to market and driving real innovation. "M2M needs to be characterised by dynamism and agility," he says. "If service providers are to grow new revenues and relationships and customers are to develop differentiators to compete more effectively. We've designed our entire technology environment to put creativity and flexibility directly into the hands of the customers. "

Simpler automotive service

He highlights a number of examples of this: "One major US car manufacturer wanted to get out of the business of providing call centre support for an Automatic Crash Notification service that they provided with their vehicles. Using our platform they were able to easily redesign their service so that alerts and details were instead forwarded to the nearest emergency service call point (PSAP) without the need for interim human communications.

"Another major telematics customer has been able to use our 'ShoulderTap' application to reach out to a vehicle and re-establish an active IP connection when it's switched off. That gave our customer a real competitive advantage in their particular market," says Mohseninia.

"Looking only slightly further into the future", Mohseninia adds, "we have full support for LTE-based services as well, while in terms of complementing our applications and analysis features, we're already preparing for the convergence of M2M with 'Big Data' and creating a 'crowd-sourced' component."

"We have a significant advantage compared with many of our competitors in not only owning our own technologies and patents – and so control our own destiny and can provide unique capabilities – but, as a result, we're also able to be very, very flexible when it comes to commercial relationships, licensing and tariffs, he says. "This is very important given the huge variations in M2M traffic and usage patterns between different customers and instead allows them to focus on monitoring key events, rather than being forced to impose a subscription model from the consumer world. One of our customers, for example, runs a huge fleet of harvesters which are off the road outside of the season – they only need connectivity and support for four months of the year!"

M2M Now Jargon Buster

API = Application Programme Interface

OSS/BSS = Operations / Business Support Systems

SIM = Subscriber Identity Module

VLR = Visitor Location Register

MAY 2013

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A-Z List of M2M Zone Exhibitors and the Conference Agenda

M2M zone

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M2M tackles speed to market and cost control in Barcelona

M2M INTEGRATION

How to enable easy M2M enterprise integration ▼

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CTIA 2013 is here!

May 21-23, 2013: Conference & Exposition Las Vegas, Nevada, USA Register at: www.ctia2013.com

Jeremy Cowan

It's Vegas time! All over the Americas and beyond, executives from service providers, network operators, retailers, distributors, application providers, enterprise and vertical market users, content providers and mobile web companies are packing their bags to join you in Nevada for CTIA 2013™ (www.ctia2013.com).

The main conference and exposition runs from May 21-23 in the Sands Expo & Convention Center. Under the tag line, "Prepare for tomorrow. Get smarter. Think big." CTIA 2013™ aims to enhance wireless knowledge generally. The event is organised by CTIA–The Wireless Association®, a world authority in mobile and wireless communications since 1984.

The topics covered at CTIA 2013 range from Apps, Content & Media through the Cloud and Cybersecurity, to Money & Retail, plus Start-ups & Innovation. But the critical area for us is, of course, machine-to-machine, and M2M Now will be there in person and in print.

M2M Zone

The M2M Zone within CTIA 2013 is gathering together knowledgeable speakers and up-to-date information for the embedded systems community. From telematics to smart grid to telehealth, the M2M Zone's organisers understand that machine-to-machine technologies stretch across multiple industries to create a dynamic M2M eco-system that needs to be reflected in this dedicated conference and expo.

For more information on the M2M Zone conference agenda and on the companies exhibiting there see page C4.

CTIA 2013 SUPPLEMENT CONTENTS

CTIA2013 THE Mobile Marketplace

CTIA 2013 Show Stats

- May 21 – 23, 2013
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- Las Vegas, NV, USA
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- 1,000 Exhibitors / 300,000+ sq. ft.
- 1,100 Media & Analysts
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Tel: +44 (0) 1732 807411

DISTRIBUTION
UK Postings Ltd
Tel: +44 (0) 8456 444137

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Printed in the UK by The Magazine Printing Company using only paper from FSC/PEFC suppliers www.magprint.co.uk

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M2M Now: ISSN 2046-5882

M2M: The Great Challenge of Vertical Markets

Co-located with CTIA Wireless 2013
Sands Expo & Conference Center,
Las Vegas, Nevada, USA

Wednesday May 22, 2013
Room: Bellini 2104-2105
11:00 am – 4:00 pm

Gold Sponsors: **Deutsche Telekom, Inmarsat, KORE Telematics, Telefonica, Telit**

The M2M Zone provides the only interactive, sponsored M2M content programme at International CTIA Wireless. Conference attendees will get a chance to see a broad set of industry sectors presented in detail, with brief presentations followed by extensive Questions & Answers, moderated by the best-known analysts in the industry.

Registration: 10:45am, May 22 2013
Keynote Address: 11:00am – 11:10am

Overview of the World M2M Market

Christian Solomine, Telefonica Digital, General Manager, Digital Services – Telefonica USA

Session I: 11:15am – 12:25pm

Automotive Telematics Come of Age

- Life-cycle planning remains the biggest question mark
- New app roundup: "navigation plus" to 'driverless cars'
- International government initiatives for safety

Moderator:
Steven Bayless, Senior Director, Telecommunications and Telematics, Intelligent Transportation Society of America

Speakers:
Enzo Taronji, Head of Business Development M2M, Telefonica Global Solutions, Telefonica USA

Mike Ueland, SVP & General Manager, North America, Telit Wireless Solutions
Speaker TBC, National Highway Traffic Safety Administration

Session II: 1:00pm – 2:10pm

Wireless Healthcare Looks for Business Models

- The hurdles: From wearable technologies to clinical analytics
- Technology solves security/privacy for personal health records
- Is a shake-out coming for e-health vendors?

Moderator:
Sam Lucero, Senior Principal Analyst, M2M & Connected Devices, IHS

Speakers:
Niclas Andersson, Sr. Manager, International Sales Development, Deutsche Telekom

Alex Brisbourne, COO, KORE Telematics
Robert Jarrin, Senior Director of Government Affairs, Qualcomm

Session III: 2:20pm – 3:30pm

New Impetus for the Smart Grid

- Government initiatives may revive the sector
- How Electric Vehicles (EVs) and electric storage will change the game
- What will the end-to-end smart grid look like?

Moderator:
Robin Duke-Woolley, Founder & CEO, Beecham Research

Speakers:
Joel Schroeder, Director M2M Program, Inmarsat

3:35pm:
Analysts' Roundtable on M2M Trends

Analysts make their predictions for the M2M market moving forward.

(Content subject to change)

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ERM Electronic Systems
eSky Wireless Inc.
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Eurosat CS spol. S r.o.
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Fleet Freedom
Foresight GPS
FreightWatch International
Gosafe Company Ltd.
Grand-Tek Technology
ILS Technology
Indesign
Inmarsat
Iridium
JouBeh
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Laird Technologies
Matrix Electronica S.L.
Mesh Systems
Multi-Tech Systems
NetComm Ltd.
Novotech
ORBCOMM
Orbel Engineered Solutions
Poynting Antennas
Queclink
RACO Wireless
Richardson RFPD
Robustel
SGS North America Inc.
SimCom
Shenzhen WinCom Communication
SkyWave
Taoglas USA Inc.
Telecom Media Group
Telefonica
Telenor Connexion AB
Telit Wireless Solutions
ThingWorkx
u-blox America, Inc.
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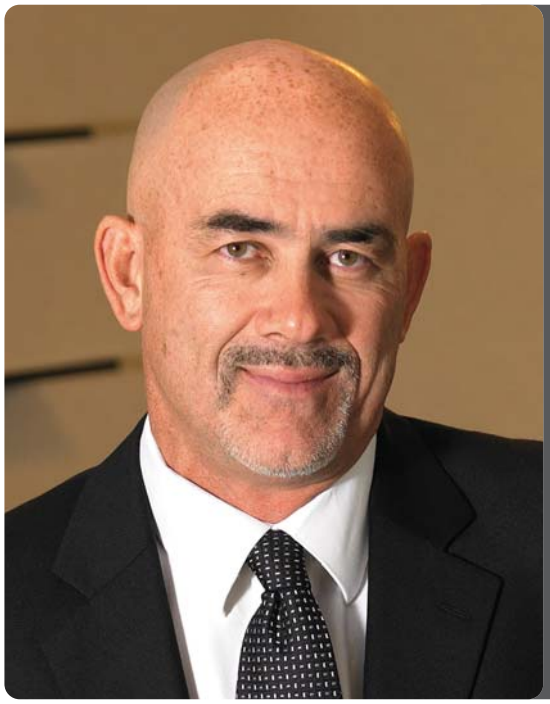


Brace yourself for M2M disruption and the evolution of CRM

Global market disruption and radical changes in CRM are ripping across our industries. To find out more, M2M Now spoke to Joe Dunsmore, chairman of the board, president and CEO of Digi International Inc., about the next big shift in M2M and why you should be getting up close and personal with your products to find that all-important competitive advantage.

The five billion devices in current circulation are predicted to increase 10-fold by 2020. At the moment those devices operate using some 10,000 different languages and protocols. With 27 years of tribal knowledge in connecting devices across vertical environments, beyond the core enterprise, Digi's expertise is in machine-to-device linguistics, understanding the protocols and how to get your networks communicating.

M2M Now: So, where will we see the real business impact of M2M?

Joe Dunsmore: We're going to see all kinds of new ways to leverage M2M that will drive business disruption and new revenue streams. It's across the verticals where the most interesting plays are being enabled by M2M. Competitive advantage can be realised from both process efficiencies and greater customer intimacy.

For the companies that learn how to listen to their machines, a whole realm of new service offerings will be possible. Perhaps most significant, over time, will include the reinvention of customer service. M2CRM (Machine to Customer Relationship Management) as we refer to it, can liberate product data that will help you serve customers better and unlock sources of productivity gain.

In terms of sectors, the benefits of connected cars and smart meters are pretty well chronicled. Beyond those we're going to see really aggressive deployment of solutions in key areas like telemedicine, security and surveillance, construction and fleet management that will really begin to drive growth. M2M is starting to bring positive Return on Investment (RoI), on expensive machinery. What's even more exciting is that the dramatic reductions in costs of M2M hardware and connectivity, combined with things we're doing to make it easy to deliver machine information right into a company's business processes, will open up M2M benefits to whole new classes of equipment. We'll see M2M naturally extend over time through to everyday pieces of equipment such as generators, drills and chainsaws. Connected products will really enhance the end customer's experience, via real-time data for predictive diagnostics (think of a machine fixing itself, or telling you when something needs to be replaced), usage data that can be turned into operating tips and new product ideas and probably entirely new business models. And then think of the dramatic improvement possible in business processes. If a company knows when their products are going to fail, what does this mean for spares management? How much more cost effectively can customer service be provided? What will warranty costs be when a company can prevent ➜

"At every point in the value chain we will continue to see the accelerated pace of both cost and complexity reduction. It's a 20 year+ growth cycle and we're at the tip of the wave right now."
Joe Dunsmore, Digi International

"M2M will redefine the notion of what the product actually is, and turn it into a listening device."
Joe Dunsmore, Digi International

problems from happening, or know when products are being used improperly? For those ready to listen to their machines, I think it's a very rich area of opportunity.

M2M Now: What are the main drivers for growth? Have you noticed any trends?

JD: I would venture to say that over the last three or four years, at every point in the value chain, we've seen reductions in cost and complexity. At the access level, with cellular communications for example, a few years ago we were seeing a US standard price per device in the US$10 to $12 per month ballpark, sometimes more, seldom less. Now we're seeing carrier quotes for some applications for less than 50cents per device per month. And if you look at 2G technology from just four or five years ago, you paid about $125 for a hardware module that supported 200Kb of throughput. Today, $80-90 can buy you a 4G cellular module with 40Mb of throughput. With the unprecedented throughput levels, devices that were choking on data five years ago and coughing on data today will be breathing data in the future.

These fundamental dynamics are enabling all kinds of new ways to think about how to leverage M2M. Markets around the world are evolving in slightly different ways. For example, a trend we're seeing in the US is taking the power of M2M to a new level by integrating it into core business processes. We're working to help organisations understand that implementing an M2M solution doesn't have to mean creating a whole new and expensive system. In fact, the biggest opportunity is when you integrate it to an existing scheme.

We now have players, like Digi with its Device Cloud by Etherios, making it easy for someone building an M2M application, be it a SaaS provider or a company building their own, to connect hundreds of thousands of products in a scalable, secure, reliable way with value-add services for storage and analytics without having to invest in their own infrastructure.

M2M Now: How can M2M be integrated into core business processes?

JD: When you talk about core business processes, business platform integration is a major trend. The first benefit we'll see from M2CRM is with customer service. Historically, customer service has been reactive. You sell the product, you have a help centre, you wait for a phone call from a customer with a problem, and then you measure how fast you respond to and solve the problem.

A company with connected products that knows how to listen to them can completely flip this model to become much more proactive… even preventative. The first step is seeing when a product fails and proactively calling the customer. The next step is listening carefully to real time data from the product, analyzing the data, and calling the customer before the product is going to fail or sending out a replacement before it fails. And the full move to preventative applies new levels of analytics to the data so the product or how it's being operated can be modified so it won't fail.

So, the early opportunity here is to connect the products to customer service platforms, to drive that model in terms of downtime, customer service efficiency, warranty and service costs.

However, that's not it. There are many more opportunities to really liberate data from products and extend benefits beyond customer service. For example, salesforce.com has a platform from which they offer multiple different offerings including Sales Cloud, Service Cloud, Marketing Cloud and other collaboration capabilities like Chatter. Salesforce has over a hundred thousand customers worldwide. We can now plug data directly into these different offerings. This kind of data sharing helps bring down business silos. This means that with real-time product performance data, you can work more intimately with your customers, get marketing and real-time usage data, demographics, inventory, advanced segmentation opportunities and better campaign reporting. Liberated data can also identify and create up-sell opportunities!

M2M Now: What competitive advantages does a fully integrated M2M system give a business?

JD: It's all about making machines work better. While it's still early days, in terms of the kinds of really enriched M2M deployments that we're going to see over time, we're nearing a market inflection point. In the past, it's been the big players that were able to make huge proprietary end-to-end investments for their systems.

What companies like Digi are doing is bringing down the barriers to deployment, with our Device Cloud and on-boarding capabilities, making it much cheaper for organizations of all sizes to deploy and get a positive RoI. So we're seeing a lot of disruptive technologies emerge as they become more economically viable.

There will be all kinds of new revenue opportunities; largely because we've enabled a lot of really interesting companies with our M2M capabilities. ➜

M2M Now Jargon Buster

RoI = Return on Investment

SaaS = Software as a Service

Take energy management for instance. One of our customer partners is deploying an innovative energy management solution that takes into account an individual household's thermal characteristics and user preferences, in addition to weather forecasts, to wirelessly adjust the thermostat frequently and remotely. This can drive down consumption and decrease bills by up to 20% to 30%, while maintaining desired comfort levels.

Another example is the SmartSantander project in Spain that aims to deploy a city-wide network of sensors, actuators, cameras and screens to offer useful information to citizens and city management. Libelium sensors, networked by Digi, have been deployed in more than 12,000 nodes across the city to monitor and record environmental factors like noise, carbon monoxide levels, temperature and humidity. Digi Mesh is the protocol that sends information to a monitoring platform, which is then displayed in real time on an interactive map that's available to citizens. Magnetic fields can even detect parking spaces and communicate them to a Smart Parking Platform to help people find a space.

Yet another example is an air compressor company with 50,000 coin operated tyre inflation machines at service stations. They faced two problems. Knowing when machines were not working and making sure that all the coins collected from the machines actually made it back to the company. This application would never have worked in the days of $10-12 per month cellular fees. We designed a custom cellular connectivity module for their air compressors, created an application based on Device Cloud that immediately informs their customer service team when a machine is down as well as linking into their financial system for accurate and verifiable tracking of coins collected. From the simultaneous improvement in revenue and reduction in service costs, the RoI has been powerful with payback in less than a year.

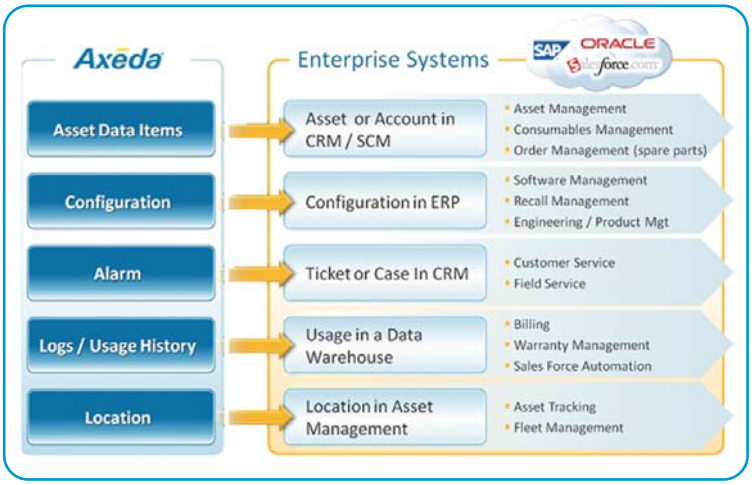
At Digi, we're putting an emphasis on cloud platform integration because an integrated approach makes machine communication a possibility for more organisations. With better usage data and demographics you can become more targeted with your marketing, and orientate your organisation as a 'customer company' creating a competitive advantage with data liberation.

Essentially what this means is reinventing the notion of what the product is. By listening to your devices, and using what they tell you, not only can you have a more efficient customer service function with dramatically higher customer satisfaction, but you can simultaneously create new revenue opportunities and have much more timeline and insightful input for product roadmaps. The companies that do this right will create a long-term competitive advantage.

The Device Cloud by Etherios is a public cloud platform-as-a service (PaaS) that provides application integration with device networks. Supporting any device operating platform, it is driving The Internet of ANYthing™, connecting any application, anywhere, to anything, anywhere. The free Etherios Cloud Connector™ is a software download that allows any M2M device to be integrated with the Device Cloud.

M2M as an integral part of the Enterprise

A battle is brewing over how to enable easy integration of M2M data into enterprise applications, databases and service buses to optimise critical business processes. Think of it as the 'Internet of Corporate Things' says Bob Emmerson. Here he describes three vendors' common vision of how connected devices and cloud computing are converging.



This schematic shows how data from various M2M solutions can be leveraged when it is integrated into an enterprise's CRM/ERP systems. Alarms, for example, can generate a CRM ticket or case, which improves customer and field service. Data can also be sent to a billing or supply chain management system to eliminate the mistakes of manual processing.

M2M solutions deliver significant benefits, but the majority of wireless solutions are in vertical, silo architectures. In addition, proprietary technology is employed because there is still a dearth of standards. This is in stark contrast to the horizontal and standards-based enterprise model. So, M2M applications such as fleet and asset management and mainstream business apps like ERP and CRM function in alien environments.

Integration should be based on M2M solutions that are standards-based, open and cloud-centric. However, this only facilitates integration: it does not enable the bi-directional, seamless transfer of information between M2M apps and business processes.

M2M solutions emerged over 20 years ago, although the term was not used at that time. They were literally machine-to-machine, being deployed on factory floors and in vending machines as well as specialised industries such as oil and gas. Communication was wireline and the data was integrated into business processes. However, in recent years M2M innovation has increasingly been wireless, short-range RF and wide area cellular, with solutions based on the proprietary silo model.

A recent survey by **Axeda** indicated that users with large, static assets are either already using cellular or increasingly likely to do so because of the falling cost of cellular versus alternative communication methods. Fixed lines often need new labour-intensive installation and data navigation through on-site networks. Cellular connections side step these issues and provide a separate 'tunnel' straight to the data centre/cloud.

The survey also showed that the majority of early adopters who participated are planning to integrate their connected products into the enterprise to share the data with other departments. Around 11% have already integrated M2M data: while 67% are interested, planning or scheduling integration with ERP and CRM systems in order to: optimise field service capabilities; enhance customer service; and automate asset management and configuration management.

What are the key issues?

Integration is relatively easy when data is transmitted over an enterprise LAN: but communication over a wide area cellular network is different. For example, there is a long, multi-vendor value chain, which includes the mobile network operator, and there are operational issues, e.g. the SIM cards have to be deployed, activated and managed. It's not rocket science – witness the proliferation of M2M apps – but it does require the specialist know-how and experience of a solution provider. Moreover, M2M is a fragmented industry, which breaks down into nine main sectors and numerous sub-sectors.

On the other hand there is an equally complex set of integration challenges, for example whether to use SOA stacks or a lightweight standalone ESB (see sidebar). ➜

Systems integration (SI) requires specialist know-how and experience in both environments and that is hard to acquire. The big SI players tend to see M2M as an industry that operates on the dark side of the moon, similarly many M2M vendors are way out of their comfort zone when it comes to the enterprise back office systems. That's the main reason why we're at the early adopter stage.

Robin Duke-Woolley, CEO of **Beecham Research**: "M2M is now on the radar of CIOs. Integration with ERP and CRM is on their agendas, with increasing interest in how such data can strengthen their competitive edge. As part of that, there is also growing interest in data analytics to store and mine the data from remote devices in order to gain new intelligence about customer needs and new market trends."

Having feet in both camps

Axeda has the requisite M2M and enterprise skills, for what they term the 'Internet of Corporate Things', a B2B subset of the IoT. The offer is predicated on the management of the physical products that a company delivers to its customers and the management of a company's corporate assets including facilities and plants, operational equipment, vehicles and goods being delivered. And it begins with the fundamental understanding that supporting customers' use of a company's products requires connectivity, monitoring, remote service, usage analysis, ERP/CRM integration and value-added services.

The offer also includes managing internal corporate assets and operating the infrastructure, which requires an understanding of interconnectivity between assets, places, people and information. Making M2M an integral part of the enterprise clearly isn't a walk in the park, but it's doable and the benefits are compelling and proven. Companies need to integrate M2M data into their mainstream applications and processes in order to leverage the functionality of their connected products and assets and thereby create new applications and business models that differentiate their offer.

Axeda's platform includes application services and data management as well as an integration framework that employs standards-based message queue technology to enable integration with enterprise systems, including ERP (e.g., Oracle and SAP), CRM (e.g., Salesforce.com), plus billing and data warehouses. Connectivity services, software agents, and toolkits are employed to establish connectivity between devices or assets and the Axeda Platform and all major media types can be used: cellular, internet, WiFi, or satellite. Connectivity to legacy devices or assets (those deployed and running in a silo system) is provided in different ways. For example, agents can be installed on or near the devices. Alternatively, the proprietary TCP/UDP messages can be translated on the fly into the company's data model.

This process must not interfere with the legacy solution: it goes on running as before. This is achieved by a rules engine in the cloud that decides what to do with the data. If it's for the legacy app then it will be forwarded to the regular application server: no rule is applied. Data destined for integration can have different rules, for example, if the device data is indicating an abnormal condition then it will be forwarded to the relevant mainstream app because it's data that they may need to see immediately. Axeda says this is a key requirement; if a pure message broker is used all the M2M will go to back-end systems which will be overwhelmed.

ILS Technology is another player having both skill sets. The company is 10 years old, but has been active in M2M for 30 years, an oxymoron explained by the fact that ILS is a spin-off from **IBM**. The founders and most of the team were in Big Blue's factory automation department where they did last-mile integration, such as remote access to machines employed in semiconductor fabrication.

Along the way the company has developed a comprehensive portfolio of application transports and connectors for the majority of mainstream enterprise applications, including those of IBM, **Microsoft, Oracle** and **SAP**. They are deployed in the enterprise gateway. Connectivity to devices is enabled in three ways: (1) by installing gateway software on the device; (2) using an Asset API when the device can't support the software; and (3) creating a custom proxy to integrate devices to the M2M platform. This is the preferred approach for devices already deployed. As illustrated, the software is located in the asset gateway. Systems integrators and IT departments can employ these products to simplify and accelerate integration, and ILS also provides support services.

The deviceWISE application platform, which is located in the cloud, is the bridge between the two environments, enabling direct links to be established between the intelligent device and the enterprise environment.

A neat feature is the ability to leverage most existing M2M investments without forcing migration. Typically, this would be realised by copying the data stream from devices and sending it to the enterprise gateway, thereby leaving the legacy application in place.

'Everyware Cloud': an M2M integration platform

The term EveryWare Cloud comes from **Eurotech** and like ILS, the company was doing M2M integration long before the term was coined. Eurotech developed solutions for the oil and gas industry over 15 years ago as well as projects employing M2M technical building blocks that connected intelligent devices and sensors in the field with business applications. The company also worked closely with IBM on the direct connection of its devices into IBM Websphere and this lead to the development and open sourcing of MQTT. (See Message Queue Telemetry Transport.)

EveryWare Cloud functions in a similar way to **Gartner**'s Integration Platform as a Service (iPaaS) concept. This is a controversial topic, but Eurotech found that their solution follows the general concepts of iPaaS. However, the design focus is on integrating distributed systems into the enterprise IT world through standard protocols and APIs.

This allowed a message-based 'Enterprise Service Bus for Machines' architecture to be incorporated and that allows easy integration of different device data systems and applications. It also enabled device data management and device lifecycle management, as shown in the following schematic. ➜

The author, Bob Emmerson is a freelance M2M writer

"A neat feature is the ability to leverage most existing M2M investments without forcing migration"

Enterprise Service Bus (ESB)

An enterprise service bus is a software model used for designing and implementing the interaction and communication between mutually interacting software applications in a service-oriented architecture. It provides agility and flexibility with regard to communication and interaction between applications and its primary use is in enterprise application integration, which comprises heterogeneous and complex landscapes, hence its use for integration with M2M.

M2M Now Jargon Buster

API = Application Programme Interface

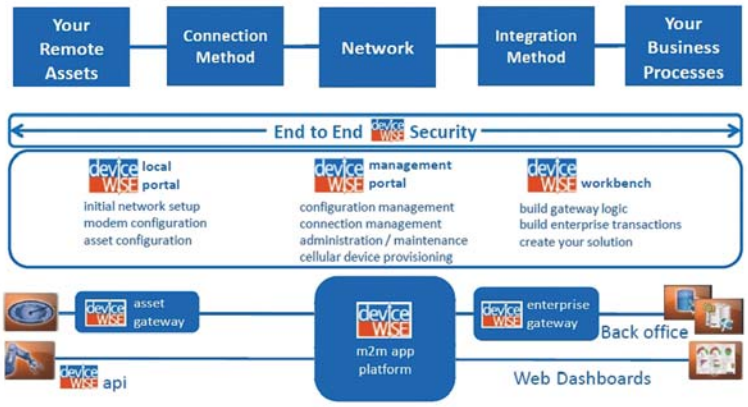
CRM = Customer Relationship Management

ERP = Enterprise Resource Planning

ESB = Enterprise Service Bus

QoS = Quality of Service
RF = Radio Frequency

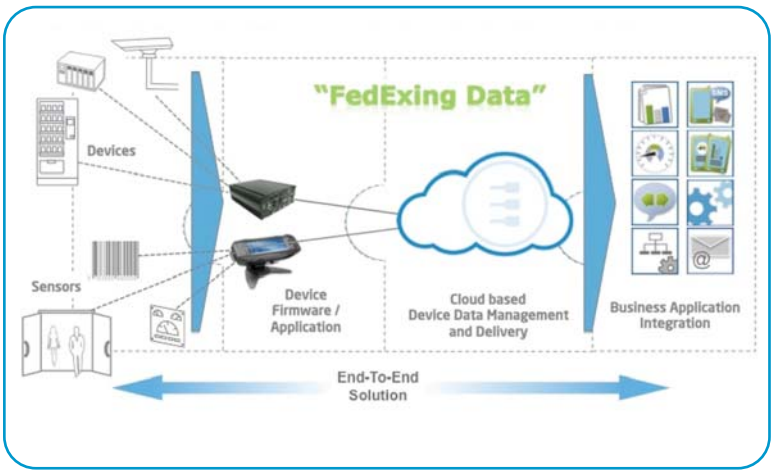
SOA = Service-Oriented Architecture



ILS's M2M application framework and deployment functionality. Key usage functions include direct connectivity to SAP, SQL databases and enterprise service buses.

Message Queue Telemetry Transport

MQTT is a broker-based publish/subscribe messaging protocol designed to be open, simple, lightweight and easy to implement. These characteristics make it ideal for use in constrained environments, for example: where the network is expensive, or when run on an embedded device with limited processor or memory resources. MQTT is a technology as well as a protocol. IM-type messages can be used and files exchanged, which means that transportation is payload-agnostic. In addition MQTT has three Quality of Service levels.



The Everyware Cloud transforms bits of data at the edge of the distributed device network into valuable actionable information in the business user's hands. It decouples data producers (sensors and devices) from data consumers (applications). A lightweight protocol, MQTT, is used to communicate with the devices; standard protocols and APIs are used to communicate with the enterprise applications.

This is a comprehensive solution that provides the functional elements to perform message transformation, message routing, protocol conversions, data normalisation, service virtualisation, tracking, accounting, administration plus lifecycle management of the distributed devices. The same features are deployed in 'regular' integration platforms.

This means that EveryWare Cloud delivers additional functionality to the enterprise environment. It allows the M2M infrastructure to be seen from the IT perspective just like another enterprise application, and it allows interaction with the M2M infrastructure in IT-centric ways.

An important feature is the use of device/protocol-specific adaptors to retrofit legacy solutions. They are created using modular software building blocks, e.g. Modbus and CAN bus on the device side. On the enterprise IT side there are generic adapters, like REST APIs for device data management as well as device management and different standard ways of retrieving device data. In addition, there are application-specific adaptors for email, SMS, TingWorks, Twitter and soon Salesforce.

The business logic on the device side is done using Java, facilitated by partnering with **Hitachi** and Oracle. Java corresponds not only with Enterprise IT approaches and best practice, but also solves a massive 'resource scalability' problem associated with the IoT. In addition the inclusion of an OSGi (Open Services Gateway initiative) layer in the software framework allows enterprises to add, amend and drop M2M services in line with changing requirements.

Conclusions

M2M solutions and IT systems occupy alien environments and have evolved in separate cultures. M2M transmits real-time data from small devices and processes into actionable information. IT systems employ batch processing, the old mainframe computing model, and they deliver results after the fact.

Cloud computing is the development that is driving convergence — bringing them together in order to create a unified environment that leverages the M2M investment and extends the functionality of the business applications. In a nutshell, and here I am referencing a white paper from **Harbor Research**, when M2M inputs are integrated into systems that connect people and processes the result is real-time knowledge that enables collective awareness, efficiency and better decision making. Therefore, "it is vitally important that business leaders understand this phenomenon" and that they should "position themselves for the opportunities that are literally around the corner."

M2M tackles speed to market and cost control while next gen services prepare to amaze you

For many years, Mobile World Congress (MWC) was a large and expensive distraction for M2M-related businesses. In the past it seldom focused on machine-to-machine applications, and when M2M was noticed the discussions centred on connectivity. But, as Jeremy Cowan reports, visitors to #MWC2013 found their lives, homes, businesses and cities are becoming connected like never before.

The 'Connected City' was inescapably one of the highlights of an exhibition spread across eight halls yet all under one roof, at the event's new home in the Fira Gran Via. The Connected City included a town hall, department store, apartment, electrical retailer, hotel, café and lounge, office, a car showroom and a busy street.

The city was developed in partnership with **AT&T, Deutsche Telekom, KT, Telenor** and **Vodafone** to showcase new products and services. It illustrated how a wireless future will benefit people's daily lives with mobile connections in our vehicles, education, health, homes, and retail (see the Connected City video at www.m2mnow.biz).

Of course, these ideas work well in demos, but not all are fully functional. For that you need back office expertise. The world might be increasingly connected, but from the customers' viewpoint it is still a disjointed experience, as they navigate multiple, fragmented silos.

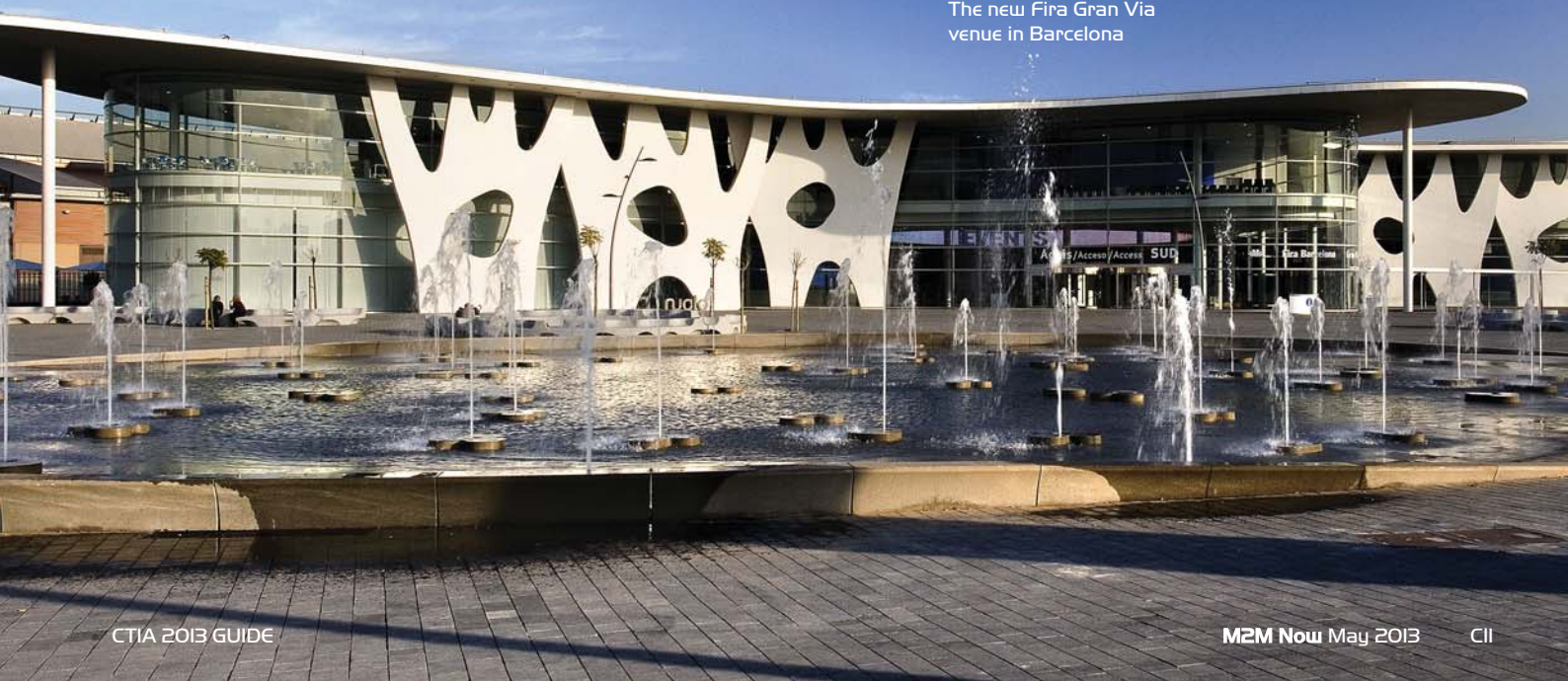
So, it was interesting to see how keen **Oracle** was to demonstrate its track record in M2M. The company has had a low profile in the sector until recently, but you don't get to be Oracle's size without acquiring some significant expertise in a growing market such as this.

CSPs challenged to add value

Cheng-Kian Khor, director of Architecture in Oracle's Communications & Media Industry Solutions Group told **M2M Now**: "The challenge for communication service providers is providing added value."

Asked what the way forward is for these telcos – is it SaaS-based, a legacy platform or a dedicated M2M ➜

Gordon Rawling, Oracle: Telcos need to ensure they get the value from (their) data



The new Fira Gran Via venue in Barcelona

"The solution remotely manages all kinds of devices without the need to change the eUICC during the device's lifecycle."

stack? – his colleague, Gordon Rawling, Oracle Communications' senior marketing director replied: "Most have already put a toe in the water and now need a platform. So, it's about how we can make it quicker for telcos. As telcos have learned more, they have understood better what needs to be robust and what needs to be provided."

Cheng-Kian agreed. "We're past the toe in the water stage. It's about how to scale up the service infrastructure, say from 15 to 50 million connections. Telcos also see the cost of providing end-to-end services has to become lower so, for example, billing costs need to be cut.

"There's an interesting competitive landscape in certain industry verticals," added Rawling, "such as in who owns the customer in automotive. The CIO of BMW says they own the customer. But most interesting is the terabyte of data they can take per day from a vehicle. Our heritage is data. Telcos need to set up better to ensure they get the value from that data. Telcos won't become healthcare providers or auto makers, but they need to understand where that data is coming from and how it's used."

Regular readers of www.m2mnow.biz will recall that in December 2012 Oracle bought **DataRaker**, a cloud-based analytics platform provider, further evidence of Oracle's intentions in the M2M arena. This enables Oracle's electricity, gas and water utility customers to use vast amounts of data to optimise their operational efficiency and improve the customer experience.

Utilities worldwide are investing in software and infrastructure to collect data from millions of distributed smart meters and sensors. **DataRaker'**s solutions help customers to transform smart meter, customer and network data into insights that dramatically impact upon organisational performance.

Tom Taylor, vice-president of Advanced Strategy at Oracle partner **Hughes Telematics** discussed the companies' collaborations. For example, Hughes is expanding its work with Oracle solutions to include subscriber billing, which has paved the way for the rapid launch of a new **Mercedes-Benz** promotion. OnStar will also be rolled out in China in 2013.

Working with Oracle is also allowing Hughes to expand into new markets and develop new revenue streams. A Mercedes occupant unfortunate enough to be involved in a car accident will benefit from OnStar's ability to identify and locate the car and, using Oracle's Siebel, to put a call in to emergency responders. Hughes is not only expanding these in-car services but developing personal emergency response services (PERS) for groups such as "active seniors". The Lifecomm service uses the same technology from a wrist-worn accelerometer to enable users to send information automatically to carers or family members in the event of a fall.

Better user experience

Among the companies actively monetising the connected lifestyle experience was **Orga Systems**, whose focus in Barcelona was on real-time integration of telecoms, utilities, automotive, and other M2M-enabled services, using its MyDigitalLife concept. This gives a single, centralised and easy-to-use interface that integrates their digital experience, including communications, utility bills, smart car alerts, and smart home entertainment services.

The Paderborn, Germany-based company provides real-time charging and billing solutions and can point to an existing international customer base, not just in telecoms, but also the utilities and automotive markets. MyDigitalLife is a concept for achieving revenues across different industry verticals.

As Mathias Liebe, EMEA marketing director at Orga Systems told **M2M Now** (see 'The My Digital Life Concept' video: www.m2mnow.biz): "As a vendor of real-time charging and billing, but also customer and order management products, we're looking to make those services understandable for the customer. Together with the service providers, auto makers, and utility companies we need to make sure that those new services touching our digital life are available to the consumer, that we give information about the new products available."

His colleague, Christian Blaser, technical product manager, added: "What you see here is a combination of aspects of the consumer's digital life. For example, if you look into the 'My Wallet' view, he (the user) can look at the services he already has. If the user wants to go on vacation, he can say 'I don't need the full TV package' and simply lower (the subscription) from a Premium to a Starter pack. If he also wants to have additional SMS during his vacation he can choose another package (on screen)."

Accelerate service roll-out

Israel-based billing specialist, **FTS** is increasingly focused on M2M. "Billing is an essential element in the expansion of the M2M domain," said VP of Sales & Marketing, Yitzchak Feldman. "Operators must be able to offer new deals, services and pricing models quickly and easily to keep pace with the fast-growing M2M sector. Billing needs to happen at the speed of marketing."

Leap™ Billing for M2M can, said FTS, easily be deployed by service providers or by M2M MVNEs and MVNOs. It provides easily configurable pricing and rate plans; flexible service plans based on transactions, connections, devices, time of day, and so on; unlimited policy and charging rules from a dynamic business-rules engine; real-time balance management, volume-based discounts and time-based charging; a scalable and flexible system; and delivery via cloud or on-premises models while running on a range of hardware and on Linux to keep costs down.

As **M2M Now** reported before Mobile World Congress, **WeDo Technologies**, a worldwide provider of **revenue and business assurance**, released its new software suite, RAID to help communication service providers (CSPs) keep pace with the changes caused by new business models, network technologies, subscriber offerings or even new **charging, billing and customer care** methodologies. Add to this the fact that CSPs are also faced with making changes and information system migrations quickly in order to remain competitive, and there is the potential for profit pitfalls.

GSMA unveil two mini towers to satisfy visitors missing the old Fira landmarks

Bridging analytics from various departments is one of RAID 7.0 key features and it enables CSPs to visually link strategic objectives. It does this by mapping risk indicators to KPIs running on RAID through its Balanced Scorecard Framework and Business Sensors, helping executives to continually drive and monitor the business. The new release also extends RAID's built-in business logic and adds new packages that make it up to 25% faster to deploy.

Stronger bottom line

"Making sense of data is vital," commented João Resende, WeDo Technologies' vice president of Product Development. RAID 7.0 aims to enable CSPs to "address the ever increasing number of (business assurance) challenges that they face on a daily basis such as LTE, machine-to-machine or mobile money," to improve their bottom line and customer service.

Asked about current relationships between mobile network operators and systems integrators, all battling to enhance profitability, John Horn, the president of Arizona-based **RACO Wireless** said: "There are as many approaches as there are carriers at the moment. Some carriers are branding the services they're most comfortable with. And some carriers are supporting *Fortune 100* company services. It's as easy for me to support companies with 10 M2M accounts as it is with 1,000. Carriers don't want to support that scale."

"What will the world look like when we get to a soft SIM and can move among carriers? It's not easy if you have to get contracts with all carriers – you have to have these relationships, so we'll become even more critical," Horn added. "Scale and consolidation are two key words for us for the next two years. Now I could support half a billion devices on my network with what I had to build for **Audi**."

Well, we appear to be entering a world of soft SIMs already.

Simplifying M2M adoption

The M2M market is filled with devices being used in business-critical applications spread globally and over long lifecycles. An example is the smart grid, where smart meters and power stations are increasingly connected over mobile networks and typically have life times measured in decades. The same applies to connected cars communicating via the mobile internet for applications ranging from entertainment to telematics.

First, M2M device makers cannot be sure of the country in which the device will be sold or the network they will connect to. Second, the embedded Universal Integrated Circuit Cards (eUICCs) are increasingly soldered into devices at the manufacturing stage. Finally, the durability of the device could mean a change in the connectivity provider during its lifecycle. Together these factors demand flexibility and openness in subscription management.

To address these challenges, **Ericsson** and digital security vendor, **Gemalto** are partnering to provide Dynamic Device Subscription Management. The partnership integrates the Ericsson Device Connection and Gemalto Subscription Management Platforms. The combination of these fully operated platforms aims to reduce the complexity of M2M deployments for mobile network operators and offers investment scalability. The solution also remotely manages all kinds of devices without the need to change the eUICC during the entire lifecycle of a device. For operators, the partnership means they get one integrated and streamlined M2M connectivity solution.

Subscription management has also been a priority for **Giesecke & Devrient**. The M2M Multi-Operator Alliance announced a single worldwide SIM card is in trials on a connected platform. Using SmartTrust AirON subscription management platform from Giesecke & Devrient, remote subscription management is now commercially available. It enables a single worldwide SIM card to be used by all members via a web-based platform. The significance of this new capability was underlined by the simultaneous news that the Middle East's largest operator, **Etisalat**, has become the alliance's eighth member.

The eight mobile operators – **KPN, NTT DOCOMO, Rogers Communications, SingTel, Telefonica, Telstra, VimpelCom** and **Etisalat** – together comprise the world's largest mobile operator coalition. The alliance particularly aims to eliminate complexity for multinational companies associated with worldwide deployments of connected devices.

Multinationals planning to roll out connected devices worldwide face a multitude of hurdles, including

"...working out why a driver and a van aren't in the same place or why two suspected criminals or terrorists are."
Gareth Price, NEC

The Connected City included a department store, apartment, retailer, hotel, café, office and a busy street

M2M Now Jargon Buster

CSP = Communication Service Provider

eUICC = embedded Universal Integrated Circuit Card

KPI = Key Performance Indicator

MVNE = Mobile Virtual Network Enabler

MVNO = Mobile Virtual Network Operator

OTA = Over-The-Air

PERS = Personal Emergency Response Services

SaaS = Software-as-a-Service

SIM = Subscriber Identity Module

mobile operators with limited local coverage, fragmented network landscapes and multiple connected device platforms. The alliance aims to build the technical capability to simplify multi-network M2M solutions for multinational customers in the retail, healthcare, consumer electronics, transport, automobile and energy sectors worldwide.

The alliance offers **Jasper Wireless**'s Control Center, the M2M platform for enterprises which is connected with the subscription management platform from Giesecke & Devrient enabling secure subscription swaps. Throughout the 2013 Congress, alliance members conducted live demonstrations showing their SIM management capabilities and Over-the-Air (OTA) subscription updates on connected tablets to simulate the real consumer experience.

Munich-based G&D's Tobias Lepper, senior product marketing manager, told **M2M Now**: "The alliance has the first commercial subscription management service, which started a few weeks ago. The alliance partners provide a SIM card and the service stays with them, but subscription management software is loaded onto the card. The device manufacturer can solder in the SIM and commercial subscription will be managed over-the-air (OTA). Subscription management will be done by us on a Software-as-a-Service (SaaS) basis or the mobile network operator can manage their own subscriptions on a system purchased from us."

No visit to MWC would be complete without a glimpse of the future from **NEC Europe**'s head of New Business Strategy, the ebullient Gareth Price. In 2011 NEC launched its Connexive cloud-based infrastructure to connect sensors and terminals to M2M networks, and later that year Connexive began to provide system infrastructure for M2M services through cloud platforms. Today its cloud services include predictive analytics for machinery and cars, as well as invariant analysis and geofencing for security and site monitoring capabilities such as "working out why a driver and a van aren't in the same place or why two suspected criminals or terrorists are together," said Price.

Currently, NEC's M2M services include traffic control, monitoring noise, congestion, pollution, and accident data. In the environmental sector the company is measuring groundwater salinity – especially in Japan following the Fukushima disaster. In a more urban setting, NEC's field analytics are being used today to profile the age, gender and time of visit for shoppers entering a department store in Korea. This enables advertisers and store owners to optimise their messages to shoppers.

Other applications for similar field analytics systems include face recognition to identify drivers in Hong Kong giving a facial 'fingerprint' (even in the shade) and matching it to car number plates. Trials are also under way in Japan using cameras positioned above billboard advertisements to assess the age and gender of passers-by who look at the digital advertisement. This enables ad agencies to tailor the advertisements according to the profile of pedestrians at any given time of day.

Car makers, who are starting to exhibit at MWC, need to remotely manage devices without changing the eUICC during the device's lifecycle

Some Barcelona stats

More than 72,000 visitors from over 200 countries are said to have attended the 2013 Mobile World Congress. As well as attracting visitors from the communications industry, the four-day conference and exhibition lured executives from a range of industry sectors such as automotive, finance and healthcare, as well as government delegations from across the globe. The GSMA even reported that "over 50% of this year's MWC attendees hold C-level positions, including more than 4,300 CEOs".

The GSMA represents the interests of mobile operators in more than 220 countries, bringing together nearly 800 of the world's mobile operators with an additional 230 companies in the broader mobile ecosystem.

The 2014 Mobile World Congress will be held on 24-27 February, 2014, again at Barcelona's Fira Gran Via.