



**MACHINE**

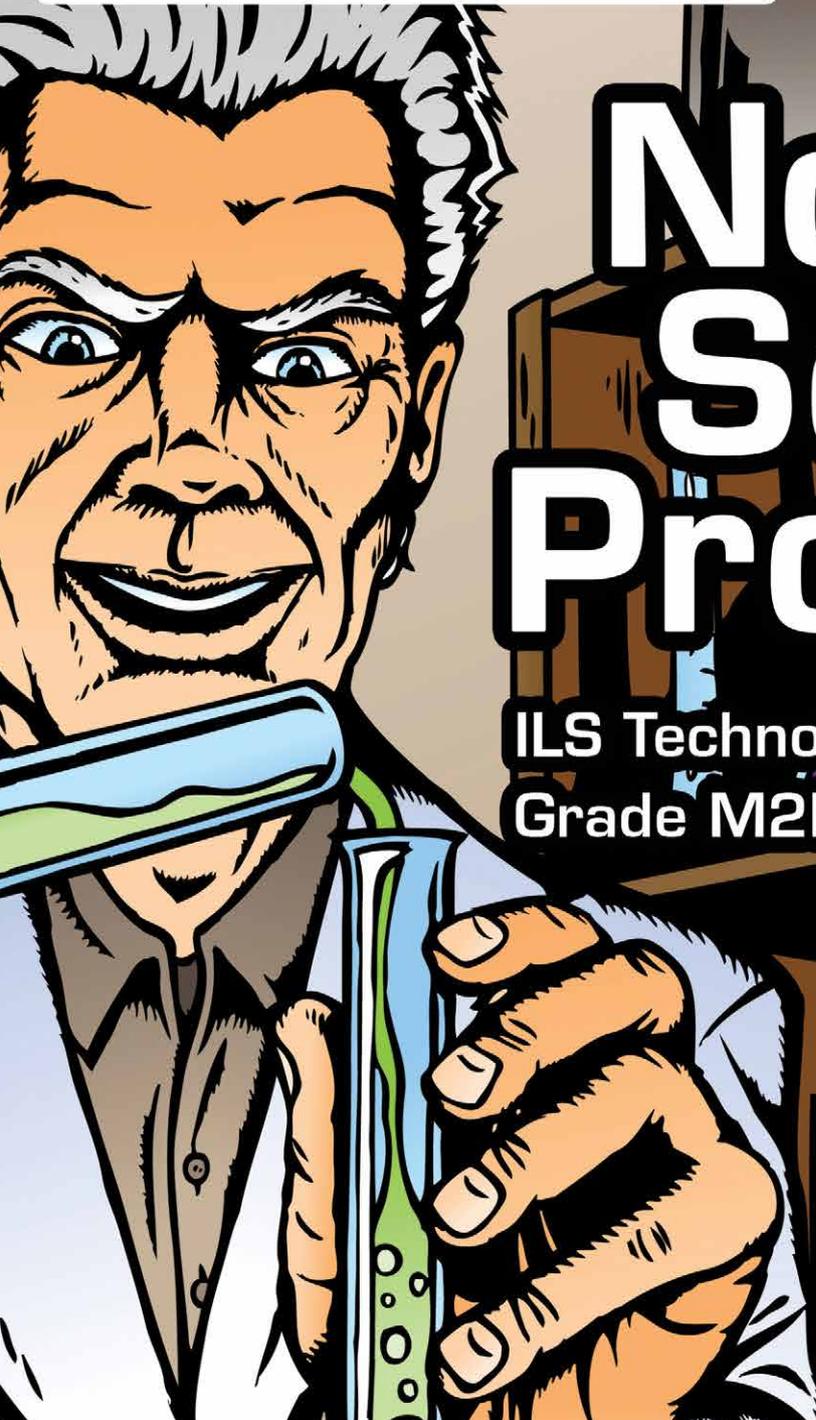


**MACHINE**

**Evolution**

**M A G A Z I N E**

The Hot List:  
Telehealth



# No More Science Projects

**ILS Technology Powers Enterprise-  
Grade M2M Solutions**

Intellectual Property,  
Patents &  
Machine-to-Machine

M2M Approaches the  
Tipping Point



## Most M2M solutions rely on mobile networks. You should know where they are.

Mosaik Solutions maintains the largest mobile network coverage catalog in the world, delivering marketing and analytical support to global M2M, telematics and network operators.

Ask us how the latest network intelligence will help you make better decisions to improve operational and financial performance.

**mosaik.com**

✉ [sales@mosaik.com](mailto:sales@mosaik.com)

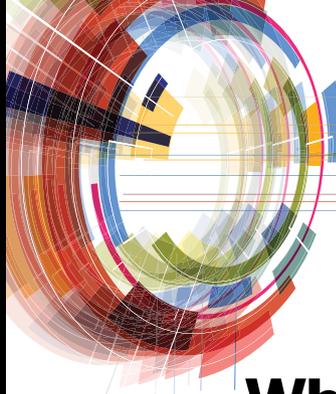
🐦 [@mosaikglobal](https://twitter.com/mosaikglobal)

🌐 [mosaik-solutions](https://www.linkedin.com/company/mosaik-solutions)

📘 [mosaikglobal](https://www.facebook.com/mosaikglobal)

© 2013 Mosaik Solutions, LLC. Mosaik Solutions name and logo are registered trademarks of Mosaik Solutions, LLC.





by Paula Bernier



# What's Driving On-Board Diagnostics

Rich Tehrani, *Group Publisher and Editor-In-Chief*  
(rtehrani@tmcnet.com)

## EDITORIAL

Erik Linask, *Group Editorial Director* (elinask@tmcnet.com)  
Paula Bernier, *Executive Editor* (pbernier@tmcnet.com)

## ADVISORY BOARD

Arrow's Joseph Zaloker, AT&T's Mobeen Khan & Nikki Cuban, Axeda's Dan Murphy, Compass Intelligence's James Brehm, CradlePoint's Ken Hosac, Crossfire Media's Carl Ford, Digi International's Matthew C. Jennings, ILS Technology's Dave Boulos, KORE's Alex Brisbane, Numerex's Jeff Smith, OnAsset's Matt Gropp, RACO's John Horn, Sprint's Wayne Ward

## Produced in collaboration with Crossfire Media

Carl Ford, CEO, Scott Kargman, COO, Joann Varello, Marketing Director, Bonnie Kravis, Speaker Coordinator



## TMC LABS

Tom Keating, *Executive Technology Editor/CTO/VP*

## ART

Alan Urkawich, *Associate Vice President of Creative*  
Lisa A. Mellers, *Graphic Designer*

## EXECUTIVE OFFICERS

Nadji Tehrani, *Chairman and Founder*  
Rich Tehrani, *Chief Executive Officer*  
Dave Rodriguez, *President*  
Michael Genaro, *Executive Vice President, Operations*

## ADVERTISING SALES

Sales Office Phone: 203-852-6800  
Matthew Gleeson, *Director of Business Development*  
(mgleeson@tmcnet.com), ext. 145  
Jaime Hemaec, *AVP Client Services* (jhemaec@tmcnet.com), ext. 217  
Laura Noya, *Account Executive* (lnoya@tmcnet.com), ext. 299  
Editorial Offices: 203-852-6800  
Customer Service: For all customer service matters, call 203-852-6800.

## SUBSCRIPTIONS

Circulation Director, Helen Juden, ext. 157 (hjuden@tmcnet.com)  
M2M Evolution magazine is published quarterly by Technology Marketing Corp. Annual digital subscriptions: Free to qualifying US, Canada and foreign subscribers. Annual print subscriptions: Free to qualifying US subscribers; \$24 US, nonqualifying; \$34 Canada, \$48 foreign qualifying and nonqualifying. All orders are payable in advance US dollars drawn against a US bank. Connecticut residents add applicable sales tax.  
Postmaster: Send address changes to M2M Evolution magazine, Technology Marketing Corporation, River Park, 800 Connecticut Ave., 1st Fl., Norwalk, CT 06854-1628 USA  
Canada Post: Publications Mail Agreement #40612608  
Canada Returns to be sent to: Pitney Bowes International, P. O. Box 25542, London, ON N6C 6B2, CANADA

## READER INPUT

M2M Evolution magazine encourages readers to contact us with their questions, comments, and suggestions. Send all editorial-related e-mail to Paula Bernier at pbernier@tmcnet.com. We reserve the right to edit letters for clarity and brevity. All submissions will be considered eligible for publication unless otherwise specified by the author.  
M2M Evolution magazine is a registered trademark of Technology Marketing Corporation. Copyright © 2013 Technology Marketing Corporation. All rights reserved. Reproduction in whole or part without permission of the publisher is prohibited.

## REPRINTS AND LIST RENTALS

For authorized reprints of articles appearing in M2M Evolution magazine, please contact The YGS Group Reprint Division, 3650 West Market Street, York, PA 17404, 717-505-9701 or 800-501-9571 x105 - tmcnet@theYGSgroup.com.  
For List Rentals, please contact Jill Olsen at JOlson@listincorporated.com or call 914-765-0700, ext. 105.

Fewer than 10 percent of new cars are machine-to-machine ready, but by 2020 90 percent of the vehicles that roll off the production line will be M2M capable. That's according to Machina Research, which recently did a study sponsored by Telefónica Digital on the matter.

The study forecasts that by 2022 there will be 1.8 billion automotive M2M Internet connections, including 700 million connected cars and 1.1 billion aftermarket devices.

That may help explain why virtually every automobile brand on the road is taking the on-ramp to M2M. Such major tech companies as Apple, Ericsson, Google, Microsoft, Sprint, Telefonica and many others are rolling out new solutions to help them on that path.

Among the drivers of the automotive M2M market are regulatory mandates like the European Commission's initiative eCall, which TMC-net contributor Gary Kim explains, requires all new vehicles to be fitted with such systems by 2015, so emergency services are automatically contacted and provided with vehicle location in the event of a serious accident. And TMC partner Carl Ford of Crossfire Media recently pointed out in a blog that ABI Research believes that the government sector of telematics alone will be a \$1.26 billion industry by 2018, this primarily due to the government emphasis on fuel economy with lower gas emissions and alternative fuels.

But the opportunity for vehicular M2M goes far beyond the mapping and safety applications we've already heard so much about. There's also opportunity here for entertainment and maintenance applications, and apparently much more.

In recent interviews with M2M Evolution magazine, sources at Ericsson and Omnicell indicate that where things are going are to app stores for the car and truck.

Indeed, Audiovox is already moving in this direction. At CES in January, Audiovox introduced the Car Connection Pro, a solution available for the Volt that includes the ability to add a remote start and/or lock/unlock module to its Car Connection telematics device. Audiovox also now offers the AR Zentral Garage Door Control, which enables BlackBerry users to control their garage doors from their wireless devices.

Over-the-air software solutions are another way to address the varying automotive and tech lifecycle issue. Arynga, which offers an over-the-air software solution called CarSync, recently partnered with Xchanging Inc. to put together a proof of concept for Jaguar Land Rover that demonstrates how in-vehicle systems can be remotely updated via software over the air.

David Carpini of Xchanging, a procurement and tech provider, says there are about 100 electronic control units in every car that rolls off production line. Those units house all software in a car. The problem is that there's a 3-year development cycle for cars to be designed, manufactured and sent to dealerships. But those units are changing every 9 or so months, so you need a way to update the chips so they're functioning correctly and can also be enhanced. Secondly, the requirements for vehicle communications are moving forward quickly, so rather than requiring motorists to bring vehicles to a dealership for updates, it's much more efficient to do those updates over the air. **M2M**



A Technology Marketing Publication,  
River Park, 800 Connecticut Ave., 1st Fl.  
Norwalk, CT 06854-1628 U.S.A.  
Phone: (203) 852-6800  
Fax: (203) 295-3773, (203) 295-3717



## CAUGHT IN THE CROSSFIRE

by Carl Ford

# What Can Brown Fields Do for You?

My apologies to UPS for the liberties I have taken in modifying its slogan to suit my needs in the following piece. It couldn't be helped.

The use of metaphors is big in business, and in fact some of us can hardly earn a living without them. In technology this is especially true, as the always-arriving next generation frequently comes complete with several subsets of buzzwords like the Internet of Things and the cloud. These and so many others quickly shed their awkwardness and soon come to feel like terms that will last forever, though fundamentally they are good at giving focus to trends and concepts that will soon after morph and outgrow their own monikers.

Often I find myself joining a metaphor meet-up, mashing on a term, and thereafter using that term as something of an internal personal acronym. I catch up with the blue ocean groups, or the long tail gang, or even the aged innovators dilemma social club.

These days many of our conversations are not about clean slate networks – what we used to call green fields – but about augmenting existing networks. The label popping up to adhere to these networks is brown fields, and it seems quite appropriate for describing a lot of the implementations on the market today.

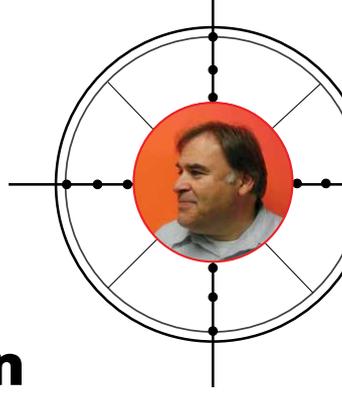
Currently, a lot of companies are implementing something internal with M2M, usually localized LAN, Wi-Fi, or Zigbee networks of sensors delivering information within the facility. Now many of you are wisely thinking, if it ain't broke, don't fix it; however, the beauty of IP is that you can replicate and extend without impacting the existing system.

Many M2M solutions – Cradlepoint and Sierra Wireless, to name two – are aimed specifically at simply extending the network; whereas other gateways – Spirent and ILS Technology, to name two more – send data to business intelligence systems. We have reached a point, though, where we see the larger players coming into the mix, and this should make previous generation terminology obsolete. For instance, Intel and Oracle are gathering momentum in their partnerships, which will inevitably result in a heating up of the brown field market and provide us with new terminology for insights regardless of whether they come from the cloud or stay within the firewalls.

So looking at our brief history, we started with a bunch of M2M islands, followed quickly by the vision of the platforms, and now we are adapting the vision with brown field solutions. Each generation builds on top of the other, always evolving and improving on the existing, but also often losing something in the transition.

The brown field model may indicate that the initial field-led deployments do not directly benefit from the platform model, which I don't think is based on any real flaw but rather on a lack of focus at the top decision-making levels.

If you build it, they will come is definitely a green field statement, whereas a brown field statement should start with why did we build this thing in the first place? That should be followed up with the question, what else do we want from it? After all, it's about what the brown field can do for you. **M2M**



TMCnet ([www.tmcnet.com](http://www.tmcnet.com))

### TMCnet EDITORIAL

Group Editorial Director, Erik Linask

Managing Editor, Richard Steeves

Executive Editor-IP Communications Group, Paula Bernier

Senior Editors, Peter Bernstein, Tony Rizzo

Web Editors, Rachel Ramsey,

Rory Thompson, Blaise McNamee

Copy Editor, Alisen Downey

### TMCnet PRODUCTION

Webmaster, Robert Hashemian

Associate Vice President of Creative, Alan Urkawich

Senior Director of TMCnet Communities and Channels, Maxine Sandler

Advertising Traffic Manager, Tim Goins  
([tgoins@tmcnet.com](mailto:tgoins@tmcnet.com))

### MARKETING

Associate Vice President of Creative, Alan Urkawich

Marketing Manager, Sarah Fullilove

Marketing Manager, Drew Stoga

### FINANCE

Vice President of Finance, Allen Frydrych

### READER INPUT

M2M Evolution magazine encourages readers to contact us with their questions, comments, and suggestions. Send e-mail (addresses above), or send ordinary mail. We reserve the right to edit letters for clarity and brevity. All submissions will be considered eligible for publication unless otherwise specified by the author.

M2M Evolution magazine is a registered trademark of Technology Marketing Corporation. Copyright © 2013 Technology Marketing Corporation. All rights reserved. Reproduction in whole or part without permission of the publisher is prohibited.

### REPRINTS AND LIST RENTALS

For authorized reprints of articles appearing in M2M Evolution magazine, please contact:

The YGS Group - Reprint Division  
3650 West Market Street  
York, PA 17404

717-505-9701 or 800-501-9571 e-mail: [tmcnet@theYGSgroup.com](mailto:tmcnet@theYGSgroup.com)

### FOR LIST RENTALS

please contact Jill Olson at [JOlsen@listincorporated.com](mailto:JOlsen@listincorporated.com) or call 914-765-0700 ext. 105.



### MAGAZINE

A Technology Marketing Publication,  
River Park, 800 Connecticut Ave., 1st Floor  
Norwalk, CT 06854-1628 U.S.A.

Phone: 203-852-6800

Fax: 203-295-3773 and 203-295-3717



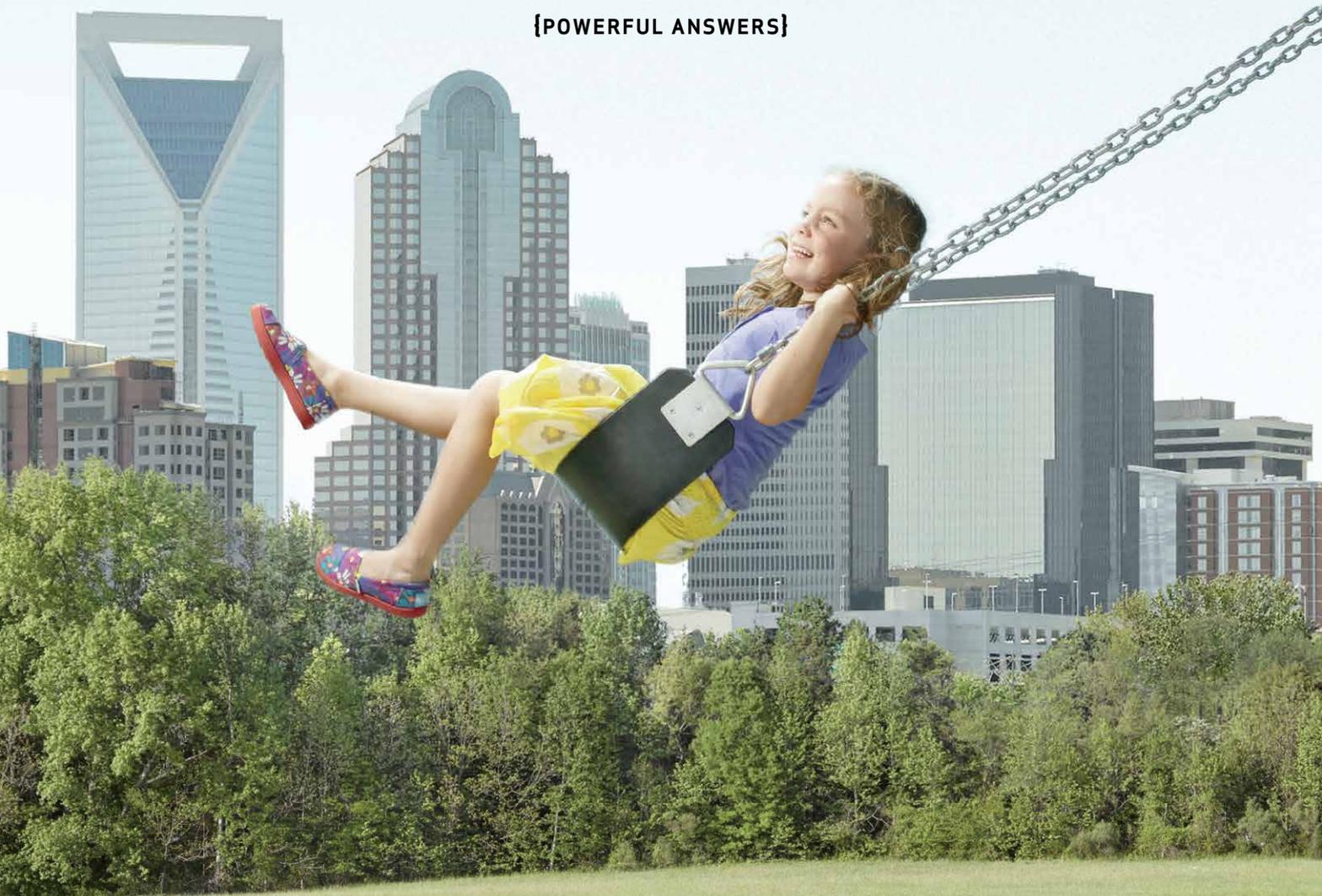


---

# WHEN MACHINES COMMUNICATE, *THE CITY OF CHARLOTTE BENEFITS.*

---

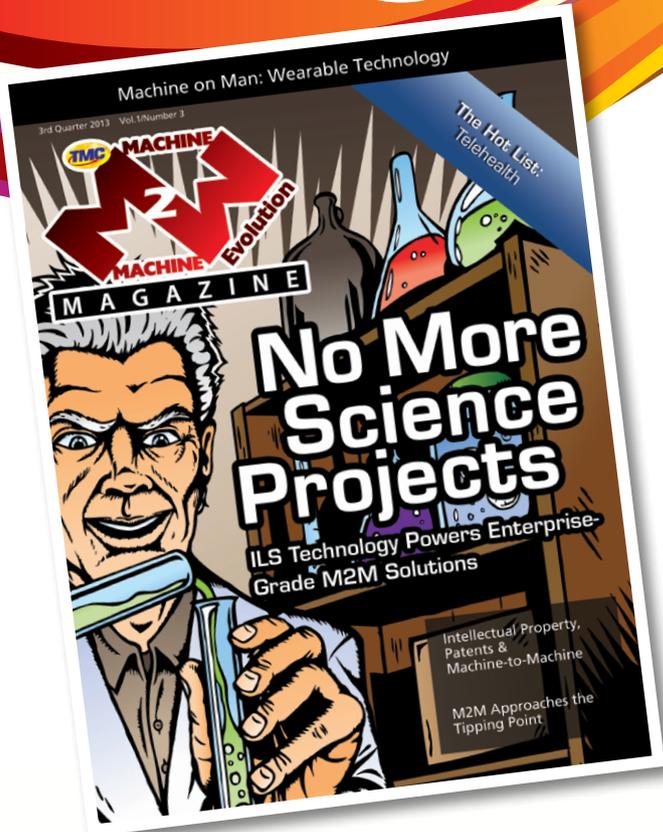
{POWERFUL ANSWERS}



**Machine-to-machine (M2M) connectivity helps Charlotte reduce energy consumption.** Verizon uses its leading M2M management platform, together with an extensive partner ecosystem, to offer industry-specific M2M solutions that help improve communications, enhance safety and improve energy usage. One Verizon-enabled solution, using real-time data displayed on public kiosks, is helping the city of Charlotte significantly reduce its carbon footprint.

**Because the world's biggest challenges deserve even bigger solutions.**

**Machine-to-machine solutions at [verizon.com/connectedmachines](http://verizon.com/connectedmachines)**



## On the Cover

### Cover Story

**22** No More Science Projects: ILS Powers Enterprise-Grade M2M Solutions  
*by Paula Bernier*

### Advisory Board

- |   |   |
|---|---|
| <b>12</b> M2M Security Enablers: Foundations for a Secure M2M Experience<br><i>by Ken Hosac</i> | <b>16</b> Are We Experiencing an M2M Tipping Point?<br><i>by Alex Brisbane</i>      |
| <b>13</b> The Machine of the Future – Available Today<br><i>by Dan Murphy</i>                   | <b>17</b> Bit Pollution and the Tragedy of the Ethercommons<br><i>by Jeff Smith</i> |
| <b>14</b> Embedded Cloud Computing<br><i>by Joseph Zaloker</i>                                  | <b>18</b> Consolidation in M2M<br><i>by John Horn</i>                               |
| <b>15</b> The Rise of Connected Machines<br><i>by Mobeen Khan</i>                               |   |

## INSIDE Every Issue

- 3** The Internet of Things  
*by Paula Bernier*
- 4** Caught in the Crossfire  
*by Carl Ford*
- 8** Navigating M2M  
*by James Brehm*
- 10** M2M Transcendent  
*by Tony Rizzo*
- 33** Bits
- 42** Making Connections  
*by Rich Tehrani*

## Sections & Series

- 20** Edit Series  
Mobile Network Coverage: The Key to M2M Success  
*by Greg Hull*
- 26** Network  
26 Best Practices for Designing Connected Health Application  
*by Olivier Pauzet*  
28 The M2M Billing Balancing Act  
*by Paula Bernier*
- 30** Endpoints  
30 Gemalto Dives Deep into M2M  
*by Tony Rizzo*
- 34** The Hot List  
Telehealth: What You See is What You Prescribe  
*by Carl Ford*
- 38** Boardroom Report  
38 The Intellectual Property Land Rush and It's Impact on the M2M Space  
*by Paula Bernier*  
40 Standardized Architectures Bring Simplicity, Flexibility to M2M  
*by Paula Bernier*  
42 With the Money Supply 'Tapering' Off, What Should the Boardroom M2M Strategy Be?  
*by Carl Ford*  
44 As M2M Gains Momentum, Is Your Organization Ready?  
*by Don DeLoach*

# THE FUTURE DOESN'T FIT IN A BOX.

Tuesday, January 7  
through Friday, January 10, 2014  
Las Vegas, Nevada • [CESweb.org](http://CESweb.org) • [#CES2014](https://twitter.com/CES2014)

WE, HOWEVER,  
FOUND A WAY TO PUT IT IN  
1.9 MILLION NET SQUARE FEET.

Over four days, those who shape the future gather in Las Vegas. Here, brands, markets and economies converge in what's far more than a tradeshow. And in 2014, there's more opportunity than ever to connect with those who matter. All that's missing now is you. **Register today at [CESweb.org](http://CESweb.org).**



THE GLOBAL STAGE FOR INNOVATION

PRODUCED BY  CEA



by James Brehm



# When's the Rollup Going to Happen?

It's been said that we've entered an era where every device that can benefit from being connected will be connected to the Internet and/or other devices and that this hyper-connectivity will propel society into new ways of interacting with the world around us. But to get to this world of hyper-connected nirvana, it is about much more than just the platforms, devices, applications and connectivity. It's about money.

Over the past year, my team at Compass Intelligence has held discussions with more than 350 active members of the M2M ecosystem, from service providers to platform providers; application developers to hardware vendors; VARs, resellers, and systems integrators. We've also been approached by venture capitalists, angel investors, private equity firms, investment banks and others looking to capitalize on the high growth of M2M.

Many of the organizations we've spoken to are looking for funding, some are looking for companies to partner with, several are looking for new investments, while a few are looking for companies to buy to improve their market position. Most, if not all, ask us a similar question – when's the rollup going to happen?

Like any emerging industry, there's an incredible amount of fragmentation in the M2M marketplace. Vertical solutions have grown out of necessity and spawned hundreds of niche companies, each with a handful of active deployments.

While that's good for the growth of small business, these niche companies are capital constrained and lack the ability to scale. And while there's so many of them, where do those that have the capital to invest place their bets? VCs are going to invest in organizations they see as having truly differentiated solutions, while investment banks and private equity firms are going to invest in companies that meet strict criteria (such as EBITDA, employee headcount, run rate, etc). And the companies that most need the money are left out in the cold. As Bob Hope said "a bank is a place that will lend you money if you prove that you don't need it."

So what's been happening over time is that the haves are acquiring the have-nots. The haves (companies with the most available cash) are buying market share from their smaller brethren. The haves have generally been successful in their niche, and are looking for ways to expand outside of that. Take a company like Telit, first acquiring Motorola's module group to expand market share and then going vertical with the

acquisition of integrator and MVNO Crossbridge Solutions. What's next for Telit, acquisition of an application development platform to complement its module business?

Or look at RACO Wireless, an MVNO with deep industry experience that received private equity help and is making bold moves to bolster its solution set. Recently RACO announced the acquisition of location-based services provider Position Logic. This is exactly the type of acquisition needed to accelerate the industry. With few common customers, the acquisition will combine the expertise and assets of leaders in two separate but complementary markets. If done correctly and quickly, integrating the two organizations should result in growing topline revenues, decreasing total cost of sales, bolstering its platform and helping to eliminate the industry of one more fragmented player.

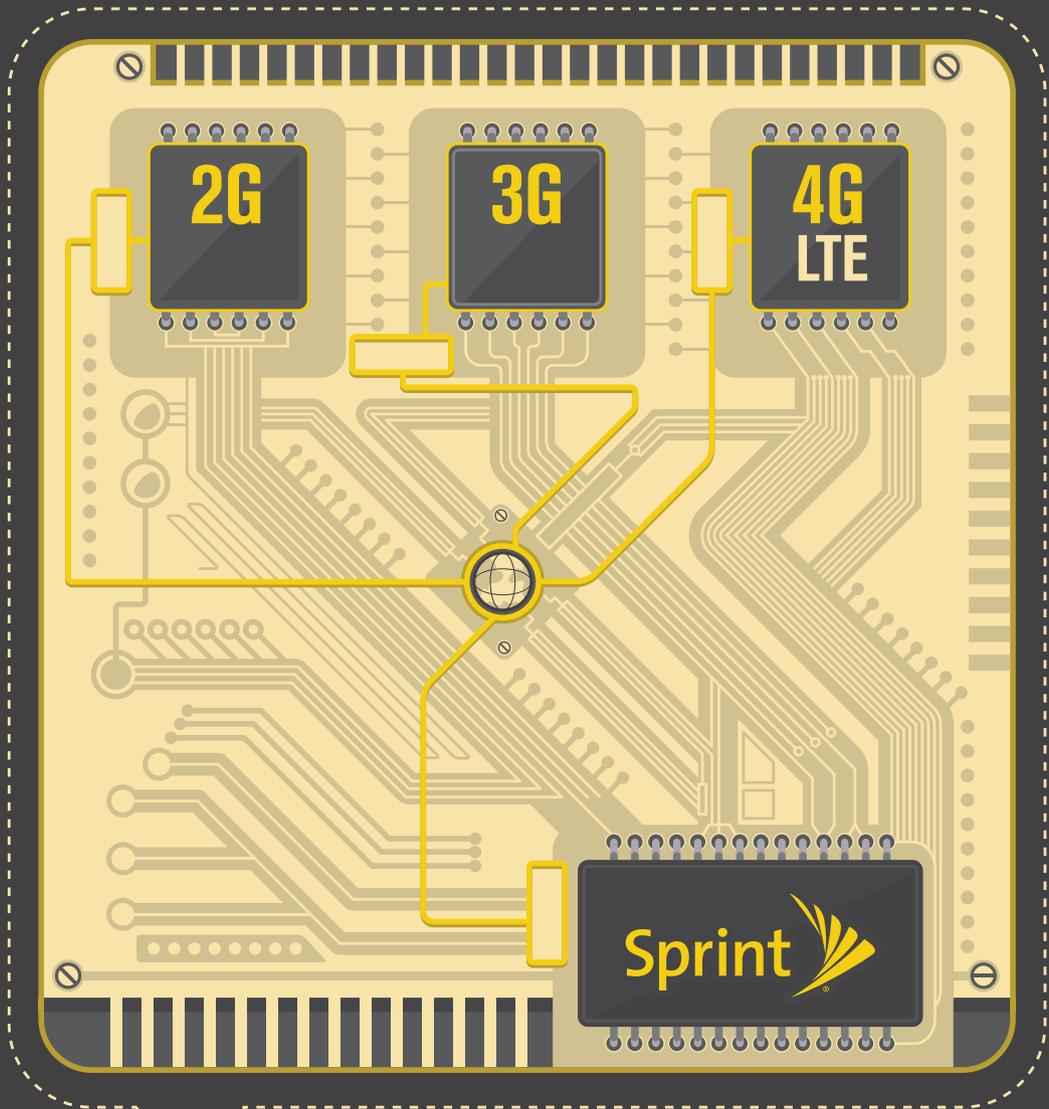
Now let's look outside of acquisitions at partnerships and joint ventures. Convida Wireless is the result of discussions of two large non-traditional players (InterDigital and Sony) trying to capitalize on the promise of M2M and the IoT. The vision is to create an investment vehicle to build a better mousetrap. Convida brings the innovation strength of Sony and the intellectual property know-how of InterDigital together to develop an ecosystem with the best possible standards-based platform in the industry. Will it happen? We'll soon see.

So when is the big rollup going to happen you might ask? Well, many in the industry thought the rollup was going to begin a couple years ago. About a year ago, Verizon fired a shot across the industry bow with the very large acquisition of Hughes Telematics – this coming on the heels of the acquisitions of nPhase, Terremark, and Cybertrust.

The acquisition helped Verizon to tell its M2M story better, but did it really help the company to create a new and differentiated platform?

This analyst believes that story is still to be told, because right now, there's still too much cloudiness around what is real and what is in the messaging from those acquisitions. What these acquisitions do, however, is to provide the acquired organizations with stability, access to development resources, and much needed capital to scale. They also help defragment an industry with far too many participants for each of them to be viable business entities. **M2M**

*James Brehm is senior strategist at Compass Intelligence (www.compassintelligence.com).*



**2G. 3G. 4G LTE. We're here for the long haul.**

As a carrier committed to network choice, Sprint believes customers should be able to choose based on their custom need, whether it's 2G, 3G or 4G LTE. That's why we plan to maintain each—including 2G—for the long term as part of the overall Sprint Network Vision strategy.

In short, we're in this for the long haul.

Visit [m2m.sprint.com/sprint2g](http://m2m.sprint.com/sprint2g) to learn more about Sprint's network commitment to 2G or to attend a seminar near you.



# Wearable Technology and the Longer Term View for M2M

Since late last year I have had a laser focus on the wearable technology space. As the conference chair for TMC's Wearable Technology Expo and Conference I had the uniquely interesting challenge of assembling a world-class collection of wearable tech speakers and building a conference program around them. Our conference took off in New York City for two days in late July, and with sold out attendance and both a mainstream and tech media presence of well over 100, I can chalk this one up as a success.

My aim for our inaugural event was to build a program that reflected the myriad collections of wearable technologies that now exist, the role that design will play in driving the acceptance of wearable tech, and most importantly to my mind, the means by which wearable tech will likely evolve into much more than personal wearable technologies. This last issue is critical for this column as in fact the only way to achieve something greater than mere personal tech is to grow the industry into a machine-to-machine connected world.

What do I mean by this? For starters, as much as wearable tech represents a lot of "me" kinds of products – for example, sensors that help me to walk straight, or that monitor my heart and pulse rates, and devices that allow me to interact with my smartphone through, say, a smartwatch interface – it is also now beginning to represent opportunities for collectively viewing unique individual activities within the far larger contexts of collections of people (and their individual data points) operating collectively with either large and undefined ecosystems or collectively through well-defined ecosystems.

A large and undefined ecosystem may, for example, refer to a nationwide medical project. In such cases perhaps a very large collection of users may participate in a drug evaluation process running on a fairly massive scale – say, perhaps, hundreds of thousands of users taking a specific drug. Wearable tech sensors might aggregate data locally to smartphones and then transmit that data up to the cloud on a daily basis for overall aggregation. Or perhaps the sensors might incorporate a wireless capability within a hospital setting that feeds information to a wireless monitor that aggregates the data and then forwards it on to the cloud.

A smaller ecosystem might consist of a work environment – perhaps an oil rig, where various sensors can monitor both

air quality and various vital signs of the workforce. That data could in turn be aggregated for each individual and in turn be aggregated collectively, resulting in both individual and group data points that can then be analyzed and correlated.

Another smaller example of an ecosystem – and this one is a real Adidas soccer application called miCoach Elite, not merely a hypothetical example – might be a sports team wearing a collection of smart fabrics and sensors that can monitor both player activities and interactions in real time (this is particularly important for sports) and gather that data for analysis. In the case of the Adidas app there is a wireless base station that serves as the gathering point. This is a true M2M application (in this case a many-to-one set of interactions) that are able to monitor all kinds of player activities – including heart rate as well as sweat and hydration levels.

Underneath these M2M applications based on wearable technology there are also many collections of big data analysis at play. In the case of Adidas, the analyses themselves also happen in real time although analysis can also be further conducted later on. In the field coaches and doctors are able to monitor and react in real time.

The Adidas application is currently available only for soccer, though Adidas is working of course to extend the technology into other sports. Imagine for example, if the system were to be implemented on the football field, where concussions sometimes take place but are not immediately diagnosed. Imagine a football player wearing sensors that are able to measure certain physical attributes in real time for each individual player. In this case looking for markers that indicate a concussion can allow doctors to take defensive actions to protect a player.

As in our earlier example, the individual football player data can then in turn be aggregated into larger data pools that can be studied on a larger scale. The bottom line is these are all pure M2M applications, only in these examples it is wearable tech that makes the M2M applications possible. It is all very cool and very useful, and we are only at the very beginning of such possibilities. **M2M**

*Tony Rizzo is senior editor at TMCnet, the online entity of M2M Evolution magazine parent TMC.*

*In here, meters keep in touch,  
so your crews don't have to.*



In the network of possibilities, meters report usage in real time. The power grid monitors itself to identify problems before they become outages. And utilities put resources where they're needed most. As the only communications provider offering complete smart grid solutions, AT&T is a partner you can rely on to manage your data, so you can focus on managing your power grid.

Discover what AT&T Smart Grid Solutions can do for you at  
[att.com/smartergrid](http://att.com/smartergrid)





### A Word from the Advisory Board

In this, the third issue of M2M Evolution magazine, we'd again like to recognize our advisory board. All advisory board members are listed on our masthead. But on the following pages we'll hear from a subset of these experts.

# M2M Security Enablers

## Foundations for a Secure M2M Experience

**S**ecurity has become one of the top themes of discussion in the M2M community. If you catalog the various M2M applications under development or in deployment, the specific requirements vary according to the sensitivity of the information. However, it's easy to argue that most applications generate and utilize data that companies want to keep private.

Information security is the practice of defending information from unauthorized access, use, disclosure, disruption, modification, perusal, inspection, recording or destruction (thank you Wikipedia). In our business, we provide M2M connectivity solutions that leverage many of the best practices that have been refined in the world of enterprise IT.

We connect end devices to the network and the cloud. As such, my focus here is networking security rather than securing the devices themselves, and specifically using 4G-LTE routers as the network gateway. Here are some of the key enablers and best practices that we've implemented within our own customer base.

### Device Authentication

The first step is to make sure that M2M devices connected to the network are really the ones that you want connected. Our experience in the retail point-of-sale world is that many security breaches are accomplished using malicious devices such as credit card skimmers that are attached to the LAN side of the network.

- Device authentication via server (802.1X for Ethernet, WPA2/Enterprise for Wi-Fi)
- Device authentication via MAC address (Ethernet and Wi-Fi)

### Connection Security

The second step is to make sure that the connection itself is private and secure. M2M applications often use a combination of Wi-Fi, Ethernet and serial LAN connectivity on the local-area network, and 3G/4G and Ethernet (via T1/cable/DSL) WAN connectivity on the wide-area network. Additionally, the devices themselves have varying system resources. Lightweight devices may rely upon the gateway for providing connection security. Heavyweight devices may have their own capabilities to establish connection security. Here's a sampling of enablers for connection security.

- VPN (device-to-concentrator, gateway-to-concentrator, gateway-to-gateway, etc.)
- GRE tunneling
- MPLS
- IPSec

- Firewalls
- SSL
- 3G/4G Carrier Private Networking (ie, AT&T, Sprint, Verizon)
- Native 4G-LTE security

### Stored Data Security

The third step is the electronic and physical security of any data collected from or in the transmit queue to M2M devices. Whether this data is hosted privately or at a third party, there are well-established security standards that should be met depending on the sensitivity of the stored data.

- ISO 27001 /27002 (information security standards for hosted data centers)
- PCI-DSS Compliance (standards required to process for credit cards)
- SSAE16 SOC 1-3 (auditing standard written for service providers)
- US-EU Safe Harbor Framework (established to meet EU data protection requirements)
- CPS (standards written by the Content Delivery and Security Association)

### Network Equipment Security

The fourth step is to lock down the security of the network devices themselves. This prevents malicious users from gaining control of a network resource and re-configuring it to allow access to private data. In our experience, the most successful approach is to utilize a combination of device-based and cloud-based security features.

- Server authentication for admin access (TACACS or Radius)
- Cloud-based configuration deployment to ensure initial configuration is consistently applied across all network equip

- Cloud-based configuration management to automatically reverse unauthorized configuration changes **M2M**

*Ken Hosac is vice president of business development at CradlePoint ([www.cradlepoint.com](http://www.cradlepoint.com)).*

## ADVISORY BOARD

Dan Murphy



# The Machine of the Future – Available Today

**T**here's no doubt machines are becoming more and more sophisticated and intelligent. Fifty years ago, machines were still mostly mechanical. It wasn't until the past few decades that software became a major component of machines. Today, product design is just as much about software design as it is hardware design.

Network connectivity also began to make its way into machines the past couple of decades. Recently, we've seen remote connectivity being designed into the machine natively. Although the connectivity was typically put in place for diagnostics and remote service, it has enabled machine data to be used in many innovative ways including usage analytics, business system integration and new end user apps.

So what's next?

Many agree that there are nine major characteristics we will see in the machines of the future. A couple of these are already in most machines:

- 1) Connected – wired and wireless virtual tethering to a network or networks to communicate
- 2) Remotely Serviceable - service providers have access to “see” the machine as if they are standing next to it to diagnose, configure, and repair
- 3) Trackable - GPS or some other means to determine locations
- 4) Informative – data is filtered and presented to enhance the machine's intelligence and user experience
- 5) Self-Healing – data is analyzed from within and from surroundings to adapt to conditions and usage
- 6) Integrated – with business systems and analytics engines to enhance workflows and processes
- 7) App Centric – machine data is also being made available via APIs, enabling them to be interactive and engaging
- 8) Eco-friendly – real-time efficiency for lower energy consumption and carbon footprint
- 9) Collaborative – often refer to it as the Internet of Things or machine-To-machine with intelligent systems or smart devices

Regardless of what we label this macro trend, most agree we are in the first inning of a new connected world order. The machine will be at the heart of it, and I welcome the machine of the future: healthy, wise, well spoken, green and social. **M2M**

*Dan Murphy is vice president of marketing at Axeda Corp. ([www.axeda.com](http://www.axeda.com)).*





## ADVISORY BOARD

# Embedded Cloud Computing

In machine-to-machine applications, the ability to remotely monitor, collect, store, and visualize data is paramount. Clients today have the choice to build out their own back end server system and associated software elements, or look to a cloud-based system where much of the solution has been provided. Which solution is best depends on many factors including: core competency, complexity, capital investment, time to market and more.

Cloud providers utilizing a multi-tenant architecture are uniquely suited to provide customers with best in class service as their architecture is optimized to scale and server the needs of many clients on a single platform. In many cases, cloud providers also have pre-build integration solutions to popular enterprise edge systems, which can greatly lower adoption costs for M2M initiatives.

Working with a cloud vendor who can support your processor architecture is paramount. Having to change your processor architecture to accommodate a cloud choice is a huge red flag.

Seeking a cloud solution with the smallest footprint API that performs the desired functionality should be a goal. In a microcontroller, memory is the main driver to the overall cost of the microcontroller solution. Having to change your microcontroller to a larger memory footprint to accommodate a bloated software API will drive the cost of your solution higher.

XML is one protocol for moving data off a device to a cloud-based system. In general this is a suitable solution; however, in a system where they are trying to minimize

the packet overhead and latency, XML is probably not the most prudent choice. SNP, MQTT, GPRS, REST, UDP, and other Transport Control Protocols should be considered to provide better performance.

Latency is another specification that needs to be keenly understood in the cloud-based solution one chooses. Applications vary, so what is real time to one may be slow or fast to another. Sub millisecond response is achievable today in cloud-based systems. Delays in the seconds range may be red flags around system performance. Cloud providers should provide for geographic load balancing to provide the lowest possible latency for geographically dispersed M2M implementations.

The primary goal of collecting data from remote devices is to apply business intelligence and analytics to the data. To provide a long-term analysis on business process efficiency the field data needs to be stored and accessible. If your cloud solution does not offer long-term storage, you will need to provide a storage solution yourself or move the data to another cloud-based server solution (at additional expense, latency, and risk). Sophisticated cloud platforms can

handle millions of simultaneous connections, and provide highly scalable, high performance redundant data storage.

When discussing cost models, simple is best. Within the industry there are as many costing models as solutions, so you must be careful to understand exactly what you have to pay for.

The simplest method is being charged per month based on the number of nodes one wishes to communicate with. Look for solutions where tiered pricing and discounts are possible based on deployment of more nodes.

Some vendors require the amount of data sent/received to stay below a preset threshold. Look for a vendor that doesn't charge extra for different tiers of data stored. Typically, telemetry data from an embedded system should be included at no extra cost to the user. Of course, if you are streaming 24 high definition cameras at 30 frames a second and need to store all the data for years, you can expect to pay more for this type of application.

API calls occur when the application queries the system for information. Some vendors will limit the number of API calls per month (and charge extra per month based on the actual number). Look for unlimited API calls at no charge.

Some vendors tack on an additional charge per transaction, and require a minimum per month. Beware of these seemingly small charges that add up quickly and drive the cost of service up. Seek vendors with no transaction costs. **M2M**

*Joseph Zaloker is director of technical marketing at Arrow Electronics ([www.arrow.com](http://www.arrow.com)).*



## ADVISORY BOARD

# The Rise of Connected Machines

**C**ompanies around the world are turning to technology not only to transform the way they do business, but also to stand out as leaders in their respective industries.

Although machine-to-machine communications continues to evolve across all communication channels, we are seeing mobile connectivity as a very popular choice. Companies utilize M2M solutions to connect their machines and assets as well as evaluate near real-time data to respond accordingly. As a result of connecting M2M assets to a wireless network, organizations can realize potential savings in time, cost and labor, as well as gather data about conditions affecting the asset and even conditions surrounding the asset. Mobile connections are easy to set up and allow full or partial mobility of the assets being tracked.

M2M solutions involve a lot of moving parts, like the device or module on the machine, the network, security components, the back end that hands the data off to your company's systems, analytic tools and, especially, the software that holds everything together. AT&T's M2M solutions are based on the integration of M2M components, which can include devices, sensors, connectivity, cloud, security, applications and professional services. The combination of these components helps companies in a variety of industries deploy flexible M2M solutions.

## M2M Use Cases in Vertical Markets

Aside from the technical aspects of M2M, enterprises are concerned with maximizing efficiency, reducing costs, and building new revenue streams. Consider three vertical markets in which M2M is helping to achieve these goals:

**Transportation** – M2M can play a role in helping ensure that expensive cargo remains secure and maintains its value from departure to arrival through multiple modes of transportation. For example, M2M solutions can track if perishable food in a shipping container should still be fresh, or if it is in danger of spoiling because of a faulty refrigeration unit. A well-constructed M2M solution can use one set of sensors near the food to measure temperature and another set on the cooler to ensure that it's functioning properly. When combined with technologies like geofencing and GPS, M2M can also help prevent loss by ensuring that the cargo is always where it's

supposed to be and by triggering an alert when it isn't. Both sellers and buyers can keep track of their assets at all times across the world.

**Heavy equipment and dispersed assets** – Heavy equipment is at the heart of industries such as construction, engineering and agriculture. These expensive machines become even more expensive when they're idle, broken, offsite for maintenance or in the wrong place, so smart manufacturers build M2M modules into their tractors, combines, cranes, excavators and other heavy equipment. The actionable data that comes back over the wireless network – whether from across the street or across an ocean – shows owners the location, usage, critical diagnostic data of their equipment and helps them to monitor, protect and get the most profit out of it.

**Energy** – The demand for new sources of electricity is rising far faster than the supply, and the energy industry is scrambling to make the smart grid smarter. At the same time we are all trying to reduce both our personal and business carbon footprints. M2M is at work in residential and commercial power meters, wirelessly sending real-time data about consumption to the utilities and operators that constantly monitor it. Local governments have begun to offer financial incentives to large-scale consumers of electricity – like office buildings, water treatment plants and hospitals – to get them off the grid fast during demand spikes, and M2M-based energy solutions can switch them over in a matter of seconds instead of hours.

## Future Growth of M2M

A recent Analysys Mason study shows the worldwide market for M2M device connections for enterprises with heavy equipment and dispersed assets will grow from 21 million in 2012 to 94 million in 2021. It's becoming very clear that businesses in many industries are adopting M2M solutions to reduce operational costs and enable new revenue opportunities. Early movers adopting M2M solutions in their consumer or business products can create a competitive advantage yielding improved customer loyalty and higher margins. As the number of connected machines continues to rise over the next decade, we expect a growing number of success stories for the businesses that use them. **M2M**

*Mobeen Khan is executive director of product marketing for advanced mobility solutions at AT&T Business Solutions ([www.att.com](http://www.att.com)).*





## ADVISORY BOARD

# Are We Experiencing an M2M Tipping Point?

**M**achine-to-machine communications is said to have reached its tipping point, the fine line where awareness, supplier activity and demand – combined with unit economics costs making M2M affordable for mass adoption – suddenly meet to create a burgeoning market for new services.

There have been a number of recent articles that have touted the growth of the M2M market, made glorious (and often unrealistic) claims on forecasted numbers of connected devices, and pointed to machine-generated data as one of the biggest drivers of the ubiquitous big data trend. A number of these predictions point to rapid M2M growth in very specific vertical segments, such as telehealth or wireless payments.

The M2M topic, and the market itself, have steadily grown in prominence at arguably the wireless industry's three largest conferences – both CTIA shows and Mobile World Congress. The presence of M2M-focused companies, sessions and resulting media coverage is a testament to how far the market has come in recent years.

Many companies are now forging their own solid paths to M2M and the Internet of Things with dedicated teams or business units focused on the market. The larger consumer-focused wireless carriers have teams dedicated to better understanding and servicing the M2M market, and leading software vendors are building in capabilities and formats for reading and seamlessly ingesting machine data. The desire to wirelessly connect devices to the Internet and begin harnessing personal or business

value from the data they're collecting has never been higher.

There are a number of reasons for this M2M growth, from the ubiquitous and reliable coverage of today's M2M wireless networks to the knowledge and understanding of the M2M pioneers to the improved cost efficiencies of M2M devices. For these reasons alone, M2M connectivity capabilities are now being built into more devices and software platforms currently entering the market. It has truly never been easier to deploy an M2M device/solution and realize near immediate ROI.

Another factor tipping the M2M scale is broader general awareness of what the technology can do. From the frontlines to the C-suite, the impact of M2M and connected devices is often viewed as more than just an efficiency improver through automation, but as a secret sauce for gaining a competitive advantage. In addition, the lower cost of entry has opened the market to startups looking to build new money-making services around M2M.

While a number of experts are currently bullish on the M2M market growth, there are some potential bumps in the road ahead. For instance, an issue near and dear to my heart is the ongoing

challenge of global M2M connectivity. This complex process is not easy to do as devices cross networks and borders, and there are a number of different approaches that organizations need to investigate to determine which one is right for their business. It is my personal belief that the best approach to global M2M connectivity must have one point of management for all native in-country connections.

When looking holistically at the current state of the M2M market, there are several key summary points that keep coming to the surface:

- Some of the numbers thrown around about M2M device growth have probably been overly ambitious.
- Mobile trumps fixed – fixed, wireline M2M connectivity is being dwarfed by the propagation of mobile sensors connected via cellular or satellite services.
- There is stronger takeup in Asia Pacific, including Australia, Japan, New Zealand and South Korea.
- Machine devices are not huge generators of sustained data traffic.
- While M2M device ARPU is considerably less than consumer devices to be sure, it actually presents a great business case because the acquisition and support costs are so much lower.

Is M2M at a tipping point? It is certainly at a point where more business leaders are recognizing its value and actively investigating how the right M2M solutions can positively impact their business. For M2M network providers, device manufacturers and application providers, our job is to remain focused on empowering those value-adding, life-improving applications that show demonstrable ROI for the end user. **M2M**

*Alex Brisbane is president and COO of KORE Telematics ([www.koretelematics.com](http://www.koretelematics.com)).*



# Bit Pollution and the Tragedy of the Ethercommons

**T**he tragedy of the commons conceived in a paper published in 1968 by Garrett Hardin in *Science* is a powerful metaphor. It says that a shared resource is inevitably ruined by uncontrolled use. Modern application is in sustainability – particularly in respect to the environment. Recently I have been thinking about how this applies to wireless and M2M.

I am writing this on a 14,254-foot peak in Rocky Mountain National Park. The top of Long's Peak is about the size of a football field. Every person up here is part of the "commons" to keep it pristine. I planned a trip to Basecamp at Everest once, but never made it. I have heard that it is truly a "tragedy of the commons" – a shared resource exploited. Oxygen bottles and other refuse have been strewn all of the way to the top of the mountain. It is human nature to spend fewer resources concerned about the future when the present is challenging. We must fight this behavior.

Several years ago during a keynote at an M2M conference I said "lithium ion batteries are going to be the asbestos of the future." I was referring to the number of M2M short-range wireless sensor applications with small batteries embedded into buildings and machines. Well, I was partially right. We should be concerned about the long-term effects of "things" that are made of atoms and how these devices will accumulate over time and how we deploy and reclaim them – or design them to naturally decay into benign components, like biodegradable plastic bags. Recyclable, reusable, decomposable – ecofriendly; how does this apply to M2M? This is one aspect of M2M pollution, but another – and I think greater concern – is bit pollution.

Devices that continue to operate after their useful life is over contribute to bit pollution. Licensed and unlicensed spectrum needs to be protected and so do network elements. "Leave no trace" applies to bits. Lower layer resources do not typically have accounting mechanisms embedded – in many cases the bandwidth for the accounting would exceed the bandwidth for the message. Therefore, it is a "commons". The tragedy is that even now, devices that are no longer providing useful information and in many cases cannot connect to the end system are consuming resources and polluting our ethersystem.

There are both long and short life cycle decomposition concerns regarding M2M devices, particularly in cellular and satellite networks. M2M devices act differently than handsets. Handsets have inherent designs that disable them in a relatively short period of time – batteries run out. They are not designed to operate for years without recharge. M2M devices, on the other hand, many remote and mobile, and many these days with energy harvesting technology including solar and vibration, could last many years. Even as the networks are upgraded and these devices are unable to connect to the end application they continue to transmit – like E.T. trying to phone home.

We need to take a long-term look at things and understand that both wired and wireless devices now have the capability to operate for years or decades on harvested power. Perhaps only a portion of that lifetime produces valuable information. The rest of the time the device is chatting away trying to establish a connection to the network to offload information that has been obtained while disconnected.

In the same way that ecology and environmental systems became prevalent as awareness rose in the 1970s, there must be an awareness and action taken with bit pollution. The first step is to assess the magnitude of the problem. The difficulty with this assessment, like in the 1970s, is a lack of knowledge, very little transparency from the telcos, few methods for measurement, and no accountability. Leveraged buyouts of large corporations in the 1970s hid much of the environmental abuse. Perhaps much of that is hidden today in the wireless industry.

Standards organizations, which have been focused on interoperability and security, can and should take a leading role in lifecycle management. Establishing a set of requirements for device lifecycle management would be a good start. To some extent this has started at the network operators with device certification. This certification should have consistency and transparency so that as networks evolve and M2M adoption accelerates we do not have to deal with the tragedy of the ethercommons. **M2M**

*Jeff Smith is chief innovation and technology officer and executive vice president of Numerex Corp. ([www.numerex.com](http://www.numerex.com)).*





## ADVISORY BOARD

# Consolidation in M2M

## Looking at the Past to See the Future

Imagine a world where your car can drop you off and park itself, your refrigerator can tell you when you need to buy milk, and hospitals can care for patients who are at home in their own beds. What once seemed the stuff of sci-fi movies is now becoming a reality with machine-to-machine technology.

There are now over half a billion Internet-connected devices in the U.S. – approximately 5.7 devices per household. Globally, there are about three connected devices per person, and it is expected this figure will grow to more than six per person by 2020, with 50 billion connected devices. As a result, the market for M2M-enabled devices is projected to grow at an annual rate of more than 23 percent for the next decade.

Just as society has benefitted immensely from the information available through the proliferation of the Internet, we will all benefit from the potential efficiencies, saving time, energy and resources that are possible through M2M technology. This enormous network of connected devices is capable of generating both cost savings and new revenues that could add \$10-15 trillion to global GDP – the current size of the U.S. economy – over the next 20 years.

While these statistics and projections are widely discussed among those who are familiar with the M2M industry, these discussions tend to overlook what must occur to produce the hardware, software, connectivity, and services to enable a network of 50 billion connected devices.

In today's fragmented ecosystem, a user typically has to go to different companies for each segment of its M2M solution, which makes it challenging and

time consuming to adopt and service new technology. While the large mobile network operators may have the advantage of controlling connectivity, they are limited by a fragmented array of companies in the value chain. No single company has emerged thus far as the dominant end-to-end provider.

The industry must be restructured to make M2M technology feasible and attractive for small businesses and individual consumers, which will allow us to reach the lofty projections for the technology. The next natural step for the industry is consolidation through partnership and acquisition.

Consolidation is necessary to expand M2M applications, simplify the currently complex value chain of niche market solutions, develop standardization across the industry, decrease cost and time of adoption and increase profitability. This process has been under way over the past few years.

Verizon made news when it acquired Hugh's telematics last summer to enter the automotive space. CA Technologies acquired Layer 7 to provide application programming interface management and security. Hardware and software providers are attempting to diversify into each other's segments, as illustrated by Cisco's acquisition of JouleX and Silicon Labs' acquisition of Energy Micro.

Change is inevitable, but it does not signal the industry as a flash in the pan,

but rather a space that is going through a healthy growth process. This is the way that industries grow. Consider the development of the Internet as an industry. It began with a functional idea in the late 80's, and the connectors, or Internet service providers such as AOL, Microsoft, Netscape, and NetZero, quickly grabbed control of the market.

In the mid 90's, companies like Amazon, eBay and Google began to create the key enabling services and applications to make the Internet more operable. The large ISPs initially viewed these as niche markets and did not innovate with their own applications. As a result, many of them failed to innovate and grow into end-to-end providers, and eventually, parts of the value chain became commoditized and were less relevant.

The value to consumers wasn't viewed in the connectivity services, but rather the tools that made the initial technology innovation relevant and simplified. By the time Y2K rolled around, the applications that made the Internet useful began to dominate the market.

Many of the large MNOs in the M2M space still view connectivity as king, but the eventual winners in the industry will be those that are able to consolidate connectivity with the other applications and tools necessary to create integrated turnkey solutions.

Looking ahead, I firmly expect the trend of consolidation to continue with a focus on creating start-to-finish solutions and just as the Internet exploded a couple of decades back, we can expect an even greater explosion in growth and innovation in the M2M space. **M2M**

*John Horn is president of RACO Wireless ([www.racowireless.com](http://www.racowireless.com)).*

# 35% ROI - YES!

## It's Possible...

Let Multi-Tech show you the way



Let our DEPTH and BREADTH in the M2M industry help you customize your solution and maximize ROI. Get started today! Our M2M Simplified approach provides access to our internal experts and ecosystem toolbox:

- ✓ Carriers
- ✓ Platforms
- ✓ Software Engineers
- ✓ Hardware Experts

**MultiTech**<sup>®</sup>  
Systems

[www.multitech.com](http://www.multitech.com)

# Mobile Network Coverage

## The Key to M2M Success

Companies are implementing M2M solutions into their business models at increasingly higher rates. According to Yankee Group, the M2M industry will triple in the next three years, with more than 313 million active cellular M2M connections estimated by 2016. This rapid growth is no surprise, considering the opportunities M2M technologies, especially mobile M2M applications, provide.

Fixed-line M2M technologies are currently addressing inherently immobile applications, such as utilities, smart grid, security and surveillance, retail and vending. However, these technologies cannot be used in applications that are mobile by nature, such as the transportation and automotive industries, logistics, asset management and even health care. According to Analysys Mason, by 2020 far less than 10 percent of all M2M device connections worldwide will be over fixed-line networks. The tides are changing and M2M is going mobile, opening up new doors for those that are ready.

Mobile M2M applications not only improve business processes, but drive new revenue opportunities. A few great examples of this include observing driver behavior with on-board diagnostics (such as OBD-II) to enhance insurance companies' auto insurance risk selection, tracking perishable cargo to assure that the proper temperature is maintained during cold chain transport and real-time monitoring of service use for enhanced billing. However, for a company to truly take advantage of the benefits of M2M, one crucial factor must be taken into consideration – network coverage.

Even the most advanced mobile M2M application is useless without the required mobile coverage. Knowing where connected devices are able to communicate, and being able to relay this information to the appropriate parties, is vital for success. With rapidly expanding 4G net-

works, lack of coverage in some rural areas, a dynamic spectrum landscape and complex mobile roaming relationships with limited quality of service measures, strategically planning the launch of an effective M2M solution is no small feat.

To reap the benefits that M2M solutions can deliver, understanding the depth and reach of mobile network coverage is required. This becomes a reality with geospatial network intelligence; updated and accurate network data that can assist in strategic planning and managing customer expectations. With the right tools in place, M2M providers can acquire and retain customers by making sound business decisions and executing with a solid information base.

### Knowledge is Power

To provide the best-possible M2M solution and experience, M2M providers are demanding enhanced network coverage scale and services depth. Access to the most timely, comprehensive and accurate network data is a must for M2M providers to be able to weigh their options.

Mosaik Solutions' MapELEMENTS is an example of a tool that makes this possible. This cloud-based mapping platform allows M2M decision-makers to view mobile network intelligence from their web browsers. It is not limited solely to the geographic reach of mobile operators' network coverage footprints. Users are able to search worldwide 2G, 3G and 4G technologies by operator, technology or location and compare options. With these data and analysis capabilities, M2M providers will have the reach to be competitive and the knowledge to obtain the best overall wholesale value possible.

From a strategic perspective, addressing the impact of traffic on underlying networks to facilitate a smooth experience for users is an important step to M2M success. However, managing customer expectations is equally as important.

### Managing Customer Expectations

A key factor in an M2M provider's success is customer happiness. Customers need assurance that their M2M devices will work where, when and at the quality they need and expect. For example, OnStar must be able to communicate to customers where to anticipate services during their travels. This includes not only navigation services, but features that could prove vital to customer safety such as emergency crash response.

To manage customer expectations, Mosaik Solutions developed CellMaps, a tailored, online mapping solution that provides customers with interactive global coverage maps for corporate websites. By placing a CellMaps deployment on a website, M2M providers give customers quick and easy access to a solution that helps them understand where they can and cannot expect their M2M devices to work. This relieves the time the M2M providers must spend answering customer inquiries and gives customers peace of mind that their expectations are managed. The overall result is decreased customer service costs, increased customer satisfaction and reduced customer churn.

### Looking Forward

The growth of M2M solutions will continue to accelerate. More and more businesses will continue to implement M2M services to enhance their businesses processes. However, as the demand for M2M solutions increase, so does the demand for mobile network coverage. To make the most informed and strategic decisions necessary to both acquire and maintain customers, geospatial network intelligence tools will remain one of the most vital tools for M2M providers. **M2M**

*Greg Hull is vice president of sales and corporate development at Mosaik Solutions ([www.mosaik.com](http://www.mosaik.com)).*

NO MATTER WHAT YOUR PRIORITY,  
**WE'RE ON IT.**



Nobody gives you better insight into your supply chain than OnAsset. With real-time tracking for all modes of transportation, you can monitor the location, security and condition of your assets anywhere on Earth (or above it) with just one device.

You can't buy peace of mind like that. Except from us.

# No More Science Projects

## ILS Technology Powers Enterprise-Grade M2M Solutions

**M**achine-to-machine communications has been around a long time, but it still has plenty of maturing to do. That's because many of the M2M deployments in place today were put together with whatever processes and technologies were available at the time. Seldom were those solutions optimized for enterprise-grade performance and quick time to market. But that's starting to change, says Jim Wert, general manager of M2M at ILS Technology.

To expedite that change, ILS Technology is promoting a new paradigm for how customers introduce and manage their M2M systems.

"Gone are science project days," Wert says. "Now, with ILS Technology's solutions, organizations can have enterprise-grade, robust M2M applications that are ready to roll in weeks instead of months."

ILS Technology offers what is known as an application enablement platform. In fact, the company recently was ranked the leading AEP vendor by ABI Research, which noted that ILS Technology has "an impressively long list of customers located throughout the world." About a third of ILS Technology business comes from the U.S., a third from Europe and the other third in Asia.

An IBM spinoff, ILS Technology started life under this new name in 2001. Now part of diversified manufacturing services and products holding company Park-Ohio Holdings Corp. out of Cleveland, ILS Technology had been Big Blue's factory automation vertical, so it had well-established relationships with the big three U.S. car and truck brands, as well as some heavy equipment companies.

The ILS Technology solution now known as deviceWISE is an M2M application platform that grew out of the original IBM business, but now addresses more than just the automotive

vertical. ILS Technology also has a second product line called secureWISE, which is a remote connectivity product geared at the semiconductor market.

In manufacturing facilities, deviceWISE is used to connect manufacturing lines with back office IT systems from SAP, Oracle and others. These solutions, which typically leverage wireline connections, serve to convert raw machine data into actionable business events, explains Wert.

"An inventory management system needs an alert to know when stock is consumed, it doesn't need to know anything about the raw data that was used to create the alert," says Wert.

The deviceWISE portfolio also includes an application platform that links any M2M-enabled device to any enterprise application, allowing real-time information transfer, transaction logging and bi-directional control. This decreases installation and maintenance costs and enables businesses to make decisions based on real-time data.

"The deviceWISE agent can interface directly to a number of industry-leading databases such as SAP, Salesforce, and Oracle," says ABI Research analyst Craig Foster. "ERP/CRM integration is increasingly important as leveraging information from connected devices allows companies to optimize critical business processes and become much more efficient."

ILS Technology's M2M Asset Management solution, which falls under the deviceWISE umbrella, allows customers to minimize service costs through reduced field visits; optimize field service personnel utilization and preventive maintenance efforts while increasing operational efficiencies; improve customer experience through maximum field equipment uptime, minimum mean time to resolution, and real-time changes/improvements; and generate new service revenue based on real-time, remote monitoring and remediation.

"The deviceWISE M2M Platform has two edge components, the Asset Gateways that are good at talking to devices, and the Enterprise Gateways that talk to business systems," says Wert. "We connect our edge components with our M2M Service in the cloud to make our M2M Platform."

ILS Technology has been operating its cloud infrastructure for a decade, but Wert downplays the cloud aspect of the solution,



## Standard Practice ILS Technology Helps Move Ease-of-Implementation Forward

By Paula Bernier

One of the ways in which ILS Technology is working to make M2M easier to implement is through its contributions to industry standards work. One of the efforts in which ILS Technology has been a key participant is the TIA's TR-50 Smart Device Communication Standard.

In fact, Jim Wert, general manager of M2M at ILS Technology, is vice chair of TR-50, which published the TR-50 refer-

ence architecture and protocol specifications at the end of 2012. Additionally, the TR-50 specification has been submitted to oneM2M for inclusion in the global M2M specification process.

TR-50 is a protocol that standardizes the link that smart devices use to communicate with services and applications. As with all standards, the goal is to create conform ways of doing things so different pieces of a solution can work together more easily, reducing the need for costly

and time-consuming integrations, and allowing for faster time to market.

ILS Technology already has added full support for TR-50 to its platform and all of its gateways, so anyone with a gateway running the ILS Technology agent is now TR-50 compliant, says Wert, adding that ILS Technology also has required its portfolio partners to interface via TR-50.

"I think we'll see very good adoption of TR-50 coming as early as this year," says Wert.

commenting that everybody these days operates a cloud. What's truly unique about the ILS Technology M2M solution, he says, is its edge intelligence.

If you're trying to do complex management and monitoring of a generator, a traditional M2M model would grab information from devices maybe every hour, and the back-end would generate an alarm if the generator is not operating within acceptable performance parameters, says Wert. But when you have intelligence at the edge, as ILS Technology does, the device knows not to transmit unless the generator is above a certain temperature, for example, he adds. That enhances system efficiency and helps customers reduce their data traffic, which is important if there are a large number of M2M devices involved, he explains.

Wert adds that deviceWISE is also optimized as compared to traditional M2M solutions because the deviceWISE asset gateway can be programmed using a Visual Logic-based click-to-configure tool that enables users to create flow charts of what they want to happen. That "radically simplifies" the configuration process, so organizations can get their M2M solutions up and running in as little as four weeks, as opposed to the more common six- to eight-month production timeline.

In addition to the automotive and heavy machinery industries, ILS Technology has engagements in the food service, petrochemical, shipping, smart building, and utility arenas. It's working with an asset tracking company providing location services for containers and equipment. It's powering a demand-response system in Texas for Acclaim Energy Advisors, so when the energy grid gets near capacity, the utility can curtail load at commercial and industrial sites when needed. And it's helping food service outfit Restaurant Technologies Inc. keep tabs on cooking oil and deep fryers.

Another of the applications in which ILS Technology is involved has to do with pipeline monitoring. Additionally, in January, ILS Technology announced



**“Gone are science project days. Now, with ILS Technology’s solutions, organizations can have enterprise-grade, robust M2M applications that are ready to roll in weeks instead of months.”**

– Jim Wert of ILS Technology

a partnership with SkyWave Mobile Communications, a global provider of wireless data communications for the M2M market, to deliver a joint solution enabling the oil and gas, utilities and industrial automation industries to implement SCADA applications at a lower cost and shorter timeline.

Tom Blackwell, SkyWave's vice president of M2M business, comments: "We continue to add value for organizations using SkyWave products by bringing comprehensive technology with leading partners like ILS Technology to the market. These partnerships complement our business of offering with the ability to integrate machine data with seamless integration to back-office applications, significantly reducing risk, cost and development times."

ILS Technology does much of its business through OEM engagements, says Wert. Its OEM partners include companies like Emerson Network Power, Mitsubishi Electric, and SkyWave, all of which provide the ILS Technology solutions to customers on a white-label basis. Several service providers also co-sell or resell the ILS Technology solution. That includes a long

list of high-profile companies including AT&T, CTC-Itochu, Deutsche Telekom, KORE Telematics, Telefonica, Sprint, Tata Consulting Services and Verizon Wireless.

Alex Brisbane, president and COO at KORE, says: "Our relationships with the leading CDMA and GSM cellular network providers combined with KORE's ability to provide global satellite services ensures that enterprise organizations have the reliable wireless data connections required to power their M2M devices. Managing all aspects of these device connections from PRiSMPro is the perfect complement to the integration capabilities of deviceWISE, and we look forward to working with ILS Technology to make M2M part of the enterprise IT strategy."

"ILS Technology continues to innovate in the area of enterprise integration," adds Robin Duke-Woolley, founder and CEO of Beecham Research. "The ILS Technology solution provides a bridge to enterprise IT applications that enable comprehensive corporate value from remote data – without which M2M industry growth has been held back over the years." **M2M**

Compass Intelligence, a global consulting and strategy acceleration firm is pleased to announce ...



*A-list in M2M Awards is now...*



*An Official CES Event*

Contact us now for more information



The A-List in M2M

# Best Practices for Designing Connected Health Applications

**C**ellular machine-to-machine communications have opened the door to a world of new, beneficial health care applications previously thought to be unfeasible. In fact, the ability to design, manufacture and distribute devices that can monitor and collect information in real time around the clock has led to innovative and useful applications that can improve people's health and well being, and that's a trend that is sure to continue well into the future.

For example, connected health devices are now being used in a variety of applications, such as home health monitoring for patients with chronic conditions; connecting mobile caregivers and medical equipment to back-end institutional systems and patient records; improving fitness and athletic training; and assisting people with disabilities.

## Cellular Communications in Health Care

Modern medical science can do amazing things to improve people's health and wellbeing, but it is usually only as good as the information doctors have access to. To detect problems early, to make prudent and informed decisions, and to empower people to improve their own health and wellbeing, doctors need up-to-date, accurate health information about their patients.

M2M technologies can help provide this information more quickly than before, when updates to a patient's status could only be made during office visits. Because of this, connected health applications can contribute very effectively to enhancing preventative care, improving compliance with prescribed treatments, and ultimately realizing better, more successful health results for individuals.

New solutions can capture and transmit a patient's heart rate, respiratory rate, temperature, and other vital signs remotely – allowing patients to remain under constant care, even when they're at home. Connected health monitoring devices can also play a role in the management of chronic conditions such as diabetes or sleep apnea. In the past, doctors were reliant on patients to manually track and record their day-to-day (or even hour-to-hour)

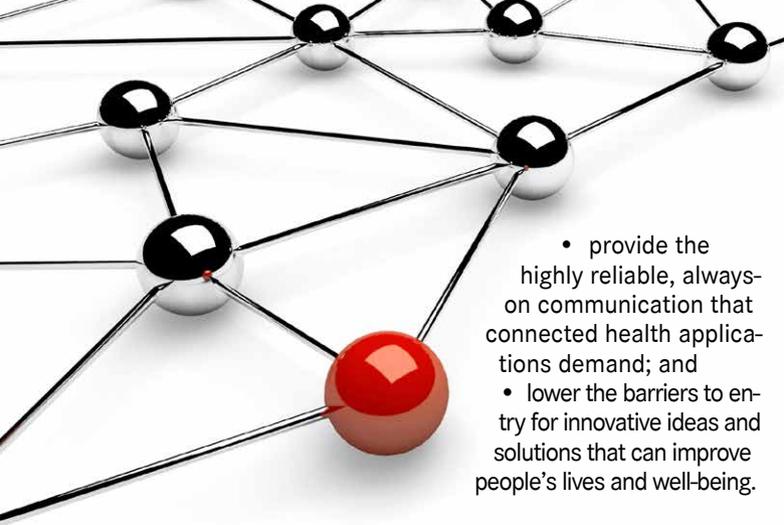
health information, which was not only time consuming, but prone to error. Connected medical devices can now automatically and accurately track information about glucose levels, sleep patterns, medical implant status, and other information, and transmit that data instantly to the patient's doctor.

Cellular solutions also are being used to connect sports monitoring devices that provide real-time results to analyze and enhance athlete training. Even for everyday fitness, cellular devices embedded in wristbands or clothing can power applications that capture location, heart rate, distance, elevation, and other metrics to help runners and bikers track and optimize their workouts. Competitive athletes, both professional and amateur, will also be able to benchmark and compare their performance to their peers' anywhere in the world, and in real time.

One of the most exciting possibilities of cellular-connected health devices is just now beginning to be explored: providing personalized, real-time services to help people with disabilities. An example would be an application that could track people with cognitive difficulties like dementia or Asperger's Syndrome, and provide reminders to help them manage their daily routines. With connected applications providing alerts to personal accidents or abnormal vital signs, medication reminders, as well as other services, people suffering from a variety of disorders could accomplish more on their own, vastly improving the quality of their life.

In all of these cases, cellular connectivity addresses a difficult health care challenge and enables a number of important benefits. With M2M connectivity, organizations can:

- create innovative mobile health applications to efficiently collect, aggregate, and share real-time health information;
- give doctors the ability to more accurately track and monitor their patients;
- extend caregivers and medical services and equipment to more places than previously possible;
- make it easier for patients to comply with medication instructions, therapies, and self-reporting with in-home connected medical devices;
- empower individuals to more effectively track and take charge of their own health;
- take advantage of remote monitoring solutions that lower overall operating costs by decreasing patient re-admissions and visits, a key factor in streamlining health care costs for insurance providers, governments funding health care programs and the population as a whole;
- maintain and protect patient records securely and comply with health care regulatory and privacy requirements;



- provide the highly reliable, always-on communication that connected health applications demand; and
- lower the barriers to entry for innovative ideas and solutions that can improve people's lives and well-being.

### Leveraging an M2M Platform

Clearly, cellular connectivity provides a number of valuable benefits for many kinds of health applications and organizations. But how do health care institutions and companies design solutions to take advantage of it?

In concept, the architecture of a cellular M2M infrastructure is simple. It starts with connecting a remote device – be it a glucose monitor, a mobile MRI system, an onboard diagnostics device on an ambulance, etc. – to a cellular-connected modem or module. That cellular gateway interfaces with the connected asset and communicates with the back-end application infrastructure, allowing the organization to monitor and control all of its assets and collect data from them anywhere they may be operating, securely and remotely, in real time.

While the concept behind an M2M solution is straightforward, a great deal of complexity exists beneath the surface. An M2M infrastructure must include a redundant, fault-tolerant wireless messaging system, deployed with connection to the mobile network operator. It requires redundant back-office hardware, including database servers, disk arrays, load balancers, etc.

Designing a connected health application is an extremely complex task. Building these types of applications requires extensive

software development, including application development tools, user interface development tools, embedded development tools, etc., and can take thousands of hours of custom integration and development. When you add wireless communications into a device, you also need to consider many applications that can be overlooked, yet are nonetheless vital to a remote communications and control infrastructure, such as mechanisms to subscribe wireless devices to the network; mechanisms to control and update wireless devices; systems to collect information from the wireless devices, and other systems to acquire and visualize that data; and systems to manage and control the assets being monitored.

Other key considerations that are sometimes overlooked in the initial planning stages of integrating wireless technology into a health care device relate to the many different approvals required by different carriers from country to country. The process is further complicated by the many different cellular technologies in play, including varied frequency allocation across state borders.

Fortunately, organizations developing connected health applications in the current marketplace no longer have to start from scratch or go it alone. Today, they can take advantage of mature, comprehensive M2M platforms, software libraries, wireless modules and development tools to accelerate the integration of the wireless communications system into their equipment and back-end systems. Modern M2M platforms include standardized application development tools that make it easy and inexpensive to connect and interface with remote assets, and they also incorporate comprehensive management portals that make connecting devices over cellular networks, in effect, a virtual plug-and-play solution. **M2M**

*Olivier Pauzet is vice president of marketing and market strategy of M2M at Sierra Wireless ([www.sierrawireless.com](http://www.sierrawireless.com)).*



# The M2M Billing Balancing Act

**B**y 2017, there will be more than 19 billion global network connections from fixed and mobile personal devices, and M2M devices. That's up from about 12 billion connections in 2012, according to Cisco's latest Visual Networking Index. The company forecasts that Wi-Fi and mobile-connected devices will generate the bulk of Internet traffic – 68 percent – at that point. So it would seem that the addition of a rapidly growing number of M2M devices – or, as some prefer, the Internet of Things – would only expand opportunity for service providers.

That's certainly possible. But it's not that simple.

The more connected devices and applications used by businesses and other organizations, the more these users will need to control costs, and expect economies of scale. And because individual M2M devices frequently send relatively small amounts as compared with endpoints like smartphones and tablets, businesses understandably expect them to be very affordable.

Meanwhile, wireless connectivity providers want to be able to move on the M2M opportunity. Indeed, they already are. But they need to do it in a way in which their costs are in line with the revenue, noted Steve Hudson, chief development officer and mobile thought leader at Omnilink, which offers asset tracking solutions.

M2M started out with Kindle, for which connectivity is part of product, Hudson adds. And now there are other M2M devices out there for which connectivity is provided as a specific service; these often entail fixed monthly billing.

But the M2M space needs more flexible models to take into consideration the amount of use on the devices and other factors, he says, adding that more flexibility in numbering would also be helpful so that you don't need to lock up a phone number to every M2M device.

Carriers are already having heartburn for how low the ARPU is on M2M, added John Horn, president of RACO Wireless, who adds that's why Verizon Wireless is launching everything that sells.

"The challenge you face is if you build a model that is not revenue positive for the carriers, why would they even support it?" he said.

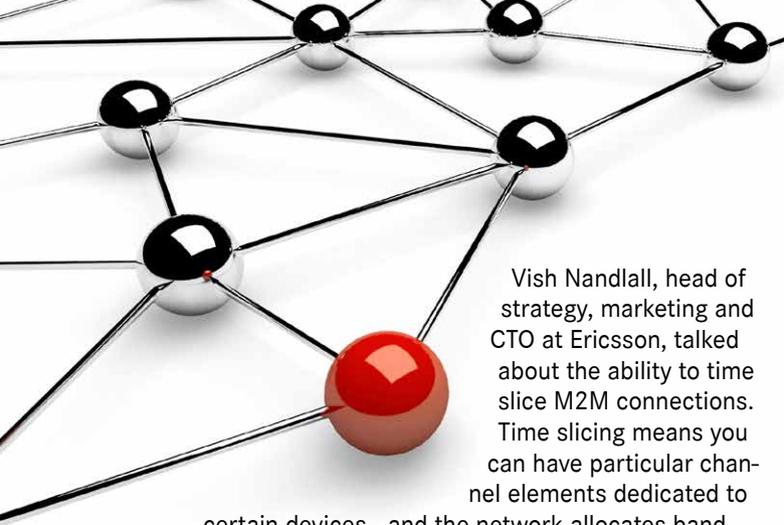
Carriers have spent billions on their infrastructure, which they need to monetize.

"You just can't expect the carriers to do that for free," he said.

KORE CEO Alex Brisbane in his 2Q2013 M2M Evolution magazine column wrote: "Carriers also offer different billing rates for M2M applications, helping applications providers and end users select the option that is most ideal for their business needs. However, before jumping into a billing plan, it is important to ensure that you are getting the most appropriate network connectivity for your dollar, as a number of carriers still offer very consumer-focused services that are not as effective as commercial and support models offered by dedicated M2M network service providers."

When asked whether the practice of carriers offering consumer-focused pricing even for M2M applications is starting to change, Brisbane replied no.

He went on to say that M2M applications are polarizing into very low use and very high use applications. An example of the former is stolen vehicle recovery. An example of the latter is digital signage. In any case, very rarely do all devices in a deployment use the network equally over a period of time, so users don't want to have fixed prices on certain device, he said. That said, there's a desire by many customers to have large pools of data to which many devices can attach so the organization using the M2M applications doesn't have any wastage.



Vish Nandlall, head of strategy, marketing and CTO at Ericsson, talked about the ability to time slice M2M connections. Time slicing means you can have particular channel elements dedicated to certain devices, and the network allocates band-

width resources based on time or other parameters. This is not an entirely new concept, he added, saying Ericsson does something similar for VoLTE.

M2M Evolution sent requests for interviews on M2M connectivity packaging and billing to AT&T, Sprint, Telenor and Verizon. AT&T and Verizon did not respond. Telenor responded after deadline. See the sidebar story for Sprint's feedback. **M2M**

## Sprint Offers Its Two Cents on M2M Billing

M2M Evolution recently did an interview via e-mail with Chris Ferguson, director of product management for Sprint's Emerging and Wholesale Solutions organization, about M2M billing. Here's what Ferguson had to say.

### How does Sprint bill for M2M?

**Ferguson:** Generally, Sprint billing for M2M customers offers several different options depending on the solution. Ensemble is Sprint's primary billing system for wireless services including a number of machine-to-machine solutions. Multiple M2M solutions are available with Sprint billing customers for the monthly recurring data access and partner's data application, including one-time activation fees. Some partners bill customers directly for their monthly recurring data application services. Currently most solution equipment is directly invoiced as one-time charges by the M2M partner, however, for selected solutions equipment, data access and applications can be billed by Sprint.

### What kind of different M2M billing options does Sprint offer?

**Ferguson:** Sprint's Ensemble Billing System offers several billing options including:

SmartCD+: an electronic billing, management, and reporting solution for customers with multiple accounts and relatively large data volumes

Electronic Billing & Analysis tool (eBA): a web-based tool that supports viewing invoice and supporting billing data for multiple users in a hierarchy-style format

Electronic Data Interchange (EDI): the computer-to-computer exchange of business documents in a standard format that automates business processes and replaces paper documents with electronic ones

DataDirect: supports customers with easy to provide summary, detail, and usage data in an ASCII text format

Manual Invoicing: bridges the gap between the production Ensemble invoice and a future enhancement scheduled for an upcoming release or solution launch

Consolidated Invoice: a paper invoice for National, Public Sector, and Major customers with more than one account.

### Has that changed recently? If so, how?

**Ferguson:** Sprint continues to evolve the Ensemble Billing System for M2M and other products and solutions offered in the M2M portfolio. Per the M2M strategic roadmap, more and more Sprint partners have been added to the growing list of Sprint-billed applications. There are already a number of Sprint-billed applications that are billing through Ensemble, while others are targeted to be added in the near future.

### Do you see the network provider business models/billing options evolving relative to M2M? If so, when, why and how?

**Ferguson:** Yes, more and more Sprint customers are requesting single-billed solutions, especially in competitive situations or requirements from request for proposals. Sprint's awareness with other M2M carriers billing capabilities also drive future Ensemble billing options. Sprint has a number of planned billing system requirements specifically for M2M that are targeted for future Ensemble releases.

### How does Sprint balance the cost of delivering M2M connectivity and services with the need to make them affordable?

**Ferguson:** Sprint's M2M customer experience is the most important aspect in achieving success. Additionally, Sprint is committed to evaluating the pricing models for each of the M2M solutions within the portfolio to ensure pricing is competitive in the marketplace, but also brings value to our M2M customers.



by Tony Rizzo

# Gemalto Dives Deep into M2M

**G**emalto is a €2.2 billion (\$2.88 billion) public company with more than 10,000 employees. In 2012, the company reported profits of €306 million (\$400.28 million). It delivers both software and hardware across a number of vertical businesses, with financial services, government, transportation and telecom as some of its key industries. Digital security sits at the center of everything Gemalto does, but the company also has moved aggressively to grow its machine-to-machine business, a space in which it has been involved for more than a decade.

Cellular service providers, banks, governments and enterprises are the four key customer targets for Gemalto, which brings its products to market both direct and via reseller agreements through such companies as Ericsson. Half of Gemalto's revenue comes from telecom, the other half is split pretty evenly between banking and government, Vallee said.

Benoit Jouffrey, Gemalto's vice president for M2M value-added services, who M2M Evolution spoke with at the recent CTIA event, notes that Gemalto is adding a new module – based on Qualcomm's QSC 6270-Turbo chipset – to the company's Cinterion portfolio of cellular-based modules and devices. The new module delivers support for Java and for the company's SensorLogic cloud-based SaaS platform. With the new device in hand, Gemalto believes it will be able to launch a next generation of embedded solutions and services that will both simplify M2M deployments and expedite customized application development.

The Cinterion M2M end-to-end solution portfolio will also provide, Jouffrey points out, secure wireless connectivity

for many types of applications in a variety of verticals, among them automotive telematics, tracking and tracing, alarm systems and mobile health.

“The Cinterion modules utilize application processor power to host customer application software directly on board the module itself, which eliminates the expense of additional processing and memory chips,” Jouffrey says. “This in turn reduces overall cost, complexity and space. Multiple applications can run in parallel, and the rich application environment allows the vast Java global developer community to reuse existing resources and to speed up complete system integration.”

Also important – especially for M2M applications – is that the architecture simplifies over-the-air provisioning and remote updating. This allows for managing M2M applications that often remain in the field for more than 10 years, a scenario that would definitely prove annoying for anything other than OTA updating and provisioning. Further, because the Cinterion modules and solutions are seamlessly integrated with the SensorLogic application enablement platform, it

becomes possible to transform all sorts of devices into manageable assets that optimize business performance.

Gemalto also recently announced it has partnered with Encore Networks, which will utilize Gemalto's Cinterion technology to provide wireless connectivity for Encore routers deployed in mission-critical applications. The routers are used in applications ranging across a diverse set of markets that include government, electrical, oil and gas, waste and water, transportation and various enterprises.

The Encore routers, in combination with the Cinterion multimode M2M solution, enable the creation of applications that wirelessly gather mission-critical data from legacy customer premises equipment and rapidly transmit it to centers around the country. In other words, gathering critical data at the edges of networks and bringing that data back for analysis, alerts generation and numerous other applications. The Encore routers are also ruggedized, and provide cellular IP connectivity using the Cinterion modules in applications that require withstanding high temperature, humidity, vibration and shock.

The solution enables secure 3G connectivity on both CDMA and GSM mobile networks, and allows integrators to develop one product design for any mobile network, and reduces development costs and time to market. With a footprint that matches Gemalto's other 3G and future-oriented M2M modules, the Encore Networks router can also be easily customized or upgraded without major design changes as technology requirements and networks change and evolve. **M2M**

*Tony Rizzo is senior editor at TMCnet, the online entity of M2M Evolution magazine parent TMC. Paula Bernier, executive editor at TMC, also contributed to this report.*



[www.m2mevolution.com](http://www.m2mevolution.com)

August 26, 2013  
Mandalay Bay  
Las Vegas, Nevada  
2:00pm



# 3rd M2M Evolution Battle of the Platforms

## Don't Miss this Live Las Vegas Event!

Demonstrate your cutting-edge platform solution to your target audience.

### Don't Let Your Competitors Get All the Attention!

Contact Matthew Gleeson for more information at [mgleeson@tmcnet.com](mailto:mgleeson@tmcnet.com) or 203.852.6800 ext. 145.

### Past Participants Include:



The event is free but requires registration.

[www.m2mevolution.com/conference](http://www.m2mevolution.com/conference)



### **AT&T Launches Digital Life**

Available as of April in 15 markets, AT&T Digital Life offers remote access and security for the home. It is a customizable application that gives customers control over cameras, door locks, lights, thermostats, small appliances and more by setting alerts or programs to manage their homes. Customers can purchase Digital Life regardless of their wireless or wireline broadband provider. The Digital Life application is available on most web browsers and apps are available for iOS, Android smartphones and Windows Phones. AT&T Digital Life cities include Atlanta; Austin, Texas; Boulder, Colo.; Chicago; Dallas; Denver; Houston; Los Angeles; Miami; Philadelphia; Riverside, Calif.; San Francisco; Seattle; St. Louis; and select areas of the New York and New Jersey metropolitan area. AT&T plans to introduce Digital Life in up to 50 markets by the end of 2013.

### **Broadcom Delivers Development Kit**

Semiconductor outfit Broadcom Corp. now offers the WICED Smart Development Kit through strategic distribution partners. It provides access to a low-power client device with an integrated Bluetooth Smart (formerly Bluetooth Low Energy) software stack and application profiles, offering OEMs an easy-to-use, cost-effective embedded wireless solution with a small footprint, according to the company.

### **Cableco, Sylvania Get Bright Idea**

Comcast and OSRAM SYLVANIA are collaborating to offer energy efficient light bulbs that can be controlled remotely via the Xfinity Home platform. Sylvania's new energy-saving LED smart light bulbs can be plugged into any standard light bulb socket, and that can save up to 83 percent in energy costs and last up to 17.5 times longer than standard incandescent light bulbs. Pricing and availability for the SYLVANIA bulb will be announced at a later date.

### **CradlePoint Unveils New Network Management Platform**

CradlePoint has introduced its Enterprise Cloud Manager, which it says is a next-generation network management platform for the rapid deployment, dynamic management, and enhanced intelligence of CradlePoint enterprise network solutions. It offers secure, real-time management, configuration, and monitoring of enterprise network devices over a wireless 3G/4G connection. "Enterprise Cloud Manager represents the advancement of CradlePoint's work with customers and partners over several years to develop and hone its existing cloud-based management solution, WiPipe Central," said

George Mulhern, CEO and chairman of the board. "Enterprise Cloud Manager builds on the WiPipe Central solution integrating a new application-based architecture, open API, improved user interface, and secure, real-time wireless access to devices to increase network reliability and improve IT productivity." Justin Montalto, network and wireless communications administrator for YESCO, one of the world's largest digital signage manufacturers, which has deployed thousands of signs across the country, said: "In evaluating Enterprise Cloud Manager, we are very pleased with the ability to deploy, configure, and manage our networks in real-time. We now have the ability to create accounts and sub-accounts for network administrators across different regions. These administrators have complete access to the CradlePoint devices for intelligence like signal strength, data usage, connection speeds, specific carriers, and downtime. With this information, administrators can more effectively manage the fleet of service trucks in their respective regions. Our field technicians also rely on CradlePoint to connect their trucks and power their Wi-Fi tablets to facilitate troubleshooting with our regional network administrators."

### **Monnit Releases M2M Cellular Gateway for Wireless Sensors**

A new machine-to-machine oriented cellular gateway for use with wireless sensors was recently unveiled by Monnit. The MonnitLink Cellular Gateway model CGW2 is described as a low-cost solution for those in need of remotely monitoring various aspects of their business, without the need of an existing Internet connection.

### **Novatel Tells Its Story of M2M Innovation**

Novatel Wireless is all about defining new markets with groundbreaking products. That's the word from Rob Hadley, chief marketing officer of the company, which specializes in mobile computing and machine-to-machine communications. The company invented the MiFi mobile hotspot, was the first to introduce an LTE USB, and is moving M2M forward with the introduction of more complete solutions, Hadley explains. In addition to the MiFi solution, Novatel's mobile computing group provides embedded modules to such customers as Dell, Google and HP. And at CTIA, Novatel also announced that Mesh Systems is using its embedded M2M module inside the Mesh gateway and that Sprint is using the Novatel embedded module to further expand its solutions to the M2M ecosystem and customers. Novatel also recently unveiled a new telemetry and telematics solution called the SA 2100, which leverages the company's intellectual property related to Mi-Fi, made it ruggedized, and added a variety of connectivity options.



## Here's a way to make business decisions.

**May we suggest another?**



If your M2M application doesn't integrate directly into your enterprise IT systems, you're rolling the dice when it comes time to make critical business decisions. That's why ILS Technology developed the deviceWISE M2M Application Platform with enterprise IT in mind.

Whether you depend on SAP, Oracle, IBM, or countless others, deviceWISE speaks the language like a native, giving you the information you need to make better choices about the future of your business.



It's the only ready-to-use, off-the-shelf cloud service for efficient, secure connectivity between your business systems and your assets. So don't gamble with the future of your business. Visit [deviceWISE.com](http://deviceWISE.com) today and be certain of your next decision.



**Get the data you need to be sure.  
Go to [www.devicewise.com](http://www.devicewise.com).**

by Carl Ford

# Telehealth: What You See is What You Prescribe

**U**nlike other M2M opportunities where the solutions scale to a universal approach (e.g., fleet and asset management), telehealth has the challenge of having to match the human condition. This results in a wide array of solutions using similar systems in very different ways. And while in most cases the buyer for these products are hospitals and their networks of doctors, the lack of focus on the back end of these systems may explain why the government thinks that e-health can reduce costs.

Without the drive to fix the back-end billing anomalies illustrated in the March 2013 issue of Time, the selection of telehealth services by hospitals seems quite random. Cardiac is always near the top of the initiatives, of course; however, there are a great many services, strategies and symptoms hot on its heels.

Two major patient care themes are dividing telehealth into subcategories: the use of voice and videoconferencing in a variety of ways to visit the patient, and the use of devices to monitor the patient. Now, in theory, these systems could complement each other,

but the reality is that very few systems do both diagnostic/prescription and serve as platforms

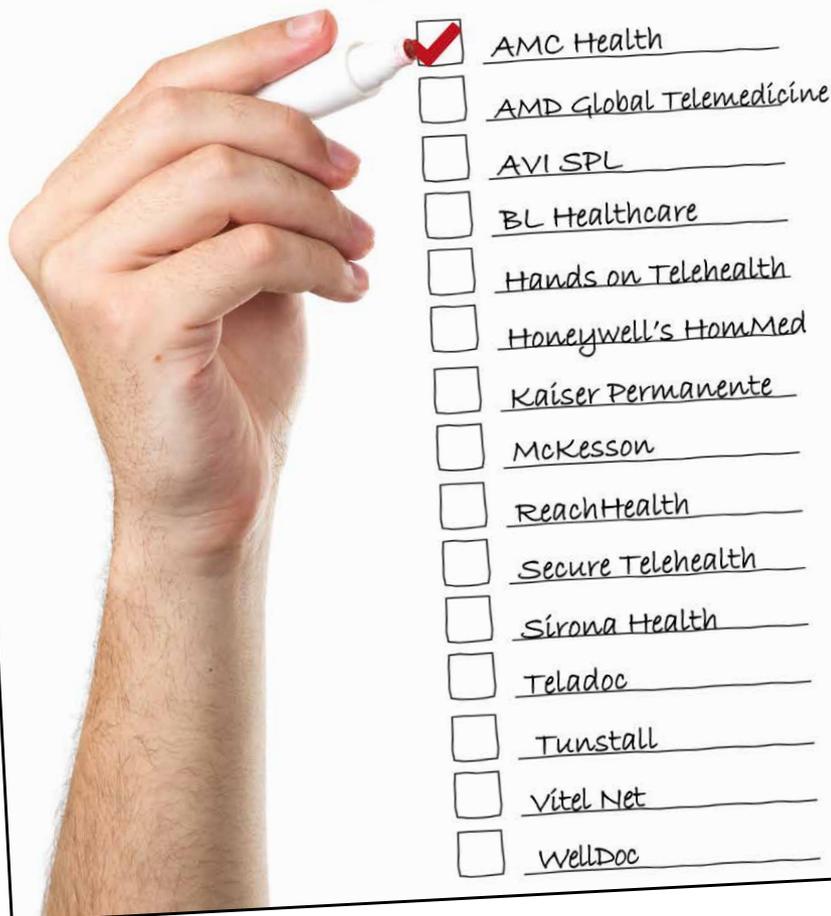
for recording keeping. Or, in other words, either the solution is focused on patient monitoring or doctor efficiency.

**It will be hard to establish a single channel to capture markets, and so the carriers will need to take on the role of systems integrator for larger scale solutions. At least, that's what I would prescribe.**

While all telehealth solutions are about controlling the cost of health care, remote patient care solutions are diversified by devices that are well matched to the reporting process while doctor consultation with videoconferencing varies use case by use case. For example, the AMC Health white paper "Effects of TeleCare Management When Layered onto Home Healthcare Case Management Provided to a Chronically Ill Medicare Advan-

tage Subpopulation" shows that having devices monitoring cardiac care customers not only im-

## From Simple to Complex



proves health but also reduces precautionary false visits to the hospital.

The Hawthorne Effect may factor into the results: Patients who know they are being monitored causes them to monitor themselves better. An unintended result is that monitored patients display a drastic reduction in unnecessary hospital visits when compared to other returning patients. From an insurance standpoint alone, that may demonstrate and justify the ROI.

On the doctor side of the equation, much of telehealth is consultative, with teleconferencing of everything from second opinions to monitoring patient care with eye-in-the-sky doctors (e.g., Reach Health's ceiling camera). Thus, when it comes to the hospital itself, we end up with a small TV station of solutions that includes everything from digital signage to bedside entertainment. And, of course, there is opportunity for folly in these strategies as Nirav Desai, CEO of Hands on Telehealth, suggests in his free e-book "The Ten Secrets of Telehealth Success". Nirav makes the point that a telehealth strategy should not be a field of dreams, believing that "If you build it, they will come." Knowing the market and pain point you are trying reach is critical to understanding and incorporating your strategy.

### The Hot List (In No Particular Order)

#### 1 AMC Health

[www.amchealth.com](http://www.amchealth.com) has been documenting its success

on reducing costs associated with readmission of patients, in conjunction with Geisinger Health Plan. This is a good starting point from which to talk about the value of remote patient care monitoring as the reduction of costs is associated with an improvement of health.

#### 2 AMD Global Telemedicine

[www.amdtelemedicine.com](http://www.amdtelemedicine.com) has a virtual geekfest of medical devices on display; however, when it comes to discussions on use cases they clearly understand that uses cases go beyond the hospital and extend to other remote locations, including correction facilities and oil and gas riggings.

#### 3 AVI SPL

[www.avispl.com](http://www.avispl.com) can be tricky to navigate as it is primarily a videoconferencing systems integrator with a lot of information that is general to any video use strategy. However, in the market section under health care there exist a number of use cases that can be helpful to many hospitals, particularly the use case on neonatal intensive care units.

#### 4 BL Healthcare

[www.blhealthcare.com](http://www.blhealthcare.com) has a broad vision, from the use of apps on tablets with Verizon's LTE network to

remote triage devices, resulting in a state-of-the-art experience that can be delivered to the field regardless of how remote the location.

#### 5 Hands on Telehealth

[www.handsontelehealth.com](http://www.handsontelehealth.com) is the home of Nirav Desai and for that reason alone it is a good site to visit (and from which to download his free e-book mentioned earlier). Essentially a consultancy, Hands on Telehealth is the team that can help you determine whether you have stakeholder buy-in.

#### 6 Honeywell's HomMed

[www.hommed.com](http://www.hommed.com) illustrates the advantages of large corporate vision. Analytics and project management come into play, which makes Honeywell's clientele some of the largest hospital networks in the world. And if your company is not on their clientele list and is too small to work with them, you still can learn a lot from their site about how broad the opportunity can be.

#### 7 Kaiser Permanente's KPonCall

[www.kponcall.com](http://www.kponcall.com) has been providing a version of telehealth services for over a decade, the result being that they have insight to patient care and to scripting the flow for a variety of services. Once again, you may not be on their clientele list, but you can still learn from them.

#### 8 McKesson

[www.mckesson.com](http://www.mckesson.com) is a distributor of hospital and health care products, and though they currently offer just a small

## THE HOT LIST

number of telehealth offerings, we can expect that to increase, and thus tracking the group can provide insight as to what equipment is changing to support burgeoning remote patient opportunities.

**9 ReachHealth**  
**www.reachhealth.com** offers a product that I actually saw featured on “Grey’s Anatomy”

where it was used for physician oversight. Its eye-in-the-sky camera can be used in a variety of ways, including the Reach Access Cart (essentially, a teleconferencing system on wheels). Back-end interfaces to hospital systems are embedded in ReachHealth solutions too, making them one of the few videoconferencing companies that have a full solution strategy.

**10 Secure Telehealth**  
**www.securetelehealth.com** is strictly a video conferencing telepsychiatry solution. The company webpages definitely predate web 2.0; however, the company made the list because it put a lot of useful information behind that frame on the left-hand side of the page and it has achieved HIPPA compliance.

**11 Sirona Health**  
**www.sironahealth.com** is an outsourced call center of health care specialists and nurses that is focused on reducing patient readmissions via a mix of inbound and outbound telehealth services. The resources seen on the side may help train your own team.

**12 Teladoc**  
**www.teladoc.com** delivers on just what it means, providing one of the few direct-to-patient services and thus effectively taking on the role of primary care physician.

**13 Tunstall**  
**www.tunstall.com** provides call center services and diagnostic devices for remote patients. The level of support from Tunstall is fairly broad; however, its website does not indicate strong IT integration capabilities.

ReachHealth offers a product that I actually saw featured on “Grey’s Anatomy” where it was used for physician oversight.

**14 Vitel Net**  
**www.vitelnet.com** is one of the most complete services, offering more than 10 telehealth solutions as well as back-end integration. The company’s focus is on institutions and government sales.

**15 WellDoc**  
**www.welldoc.com** is the first mobile app that can write a prescription. Its development included a complete clinical

trial that demonstrated it to be capable of emulating doctor analyses. Given the fact, however, that the app is constantly getting updates from the user (and, potentially, his glucose monitor), the app can help refine drug use to manage type 2 diabetes. A doctor from the National Institute of Health monitored the WellDoc clinical trial, and the team expects that the trial will serve as a model for future mobile application testing. Also, considering that so many apps out there have no real value, some certification or insurance reimbursement will need to be in place before the consumer notices the distinction.

So, as I stated at the beginning of the piece, the group is quite diverse and with little effort to support back-end intelligence. Perhaps the insurance agencies will start to guide some of the implementations; however, as it stands today, the top of the food chain would appear to be hospitals and other such health care institutions.

We previously tried to determine if predictive systems could be applied to health, the problem being that patient feedback was so simple that doctors were left asking basic questions. Looking at telehealth, though, a lot of innovations could have been included (e.g., diagnostic devices and swallowed sensors); however, the goal was not to highlight endpoints but end results. And while the carriers are focused on enabling opportunities in telehealth, the wide diversity of potential services suggests that it will be hard to establish a single channel to capture markets, and so the carriers will need to take on the role of systems integrator for larger scale solutions. At least, that’s what I would prescribe. **M2M**

# AMPLIFY Your SALES

The number of  
**B2B marketers**  
using content  
marketing in  
**2013...**

Source: Content Marketing Institute



**91%**

## Why Aren't You Using Content Marketing to Enhance SEO and Drive Additional Traffic to Your Site?

- Limited resources to craft custom copy?
- Lack of budget to hire dedicated writers?
- Inability to hire, train and manage a team of subject-matter experts?
- Lack of interesting content to feed your social media strategy?

## Content Boost is Your Solution:

- Let our team become your team by leveraging our arsenal of writers for your content needs
- Supply your site with frequently updated, relevant content
- Say goodbye to the timely training associated with an in-house team
- Pay one monthly fee for your content, proofing and posting
- Enjoy the results you need!

**Content  
Boost**  
Amplify Your Sales



To Find Out More Call (203) 295-0195  
[www.contentboost.com](http://www.contentboost.com)

# The Intellectual Property Land Rush

## And Its Impact on the M2M Space

**P**roperty values are going up, but that's not necessarily all good news. We're talking in this case about intellectual property.

Patent cases have popped up all around us. There was the lengthy throw down between Apple and Samsung. Reports indicate patent troll litigation costs tens of billions of dollars annually. And mergers and acquisitions are sometimes driven by the desire to snap up intellectual property in efforts to strengthen businesses or, at least, help them fend off legal challenges.

All this helps explain the growing number of patent applications and grants. The total number of patents granted in 2000 was 175,979. That jumped to 247,713 in 2011 and to 276,788 in 2012. And, according to the Boston Business Journal, the number of new patent applications increased five fold in early March, just before a new patent rule went into effect. Before March 16, U.S. patent law favored the first person who can prove he or she invented a product. Now it favors the first inventor who submits a patent application.

Intellectual property has become such an important issue that the Obama administration has been talking about its intention to unveil new rules to address the patent troll problem. Patent trolls, as you probably know, are outfits that generate revenue by threatening patent lawsuits to get settlements rather than creating anything of value. However, a June 4 piece in The Washington Post suggests that rather than focusing solely on patent trolls, the government should reform the entire patent system.

Timothy B. Lee, who authored The Washington Post piece, explains that various federal circuit appeals court rulings in the 1980s and 1990s made it easier to get and enforce patents, which in turn created a patent filing rush, during which time hundreds of thousands of patents were doled out that probably shouldn't have been granted.

"Trolls have taken advantage of these rules, but so has everyone else with a patent portfolio," writes Lee. "For example, Microsoft has struggled to gain traction for its smartphone products. But the firm has tens of thousands of patents - so many patents that it's effectively impossible to build a smartphone OS without accidentally infringing numerous Microsoft patents. And Microsoft

has used its 'patent thicket' to force most firms selling Android phones to pay licensing fees.

"The vast patent portfolios of incumbent technology companies such as Microsoft acts as a tax on innovation," Lee continues. "The most innovative start-ups are increasingly being forced to make payments to their more established competitors, whether or not the latter continue innovating. That actually discourages innovation, the opposite of the effect the patent system is supposed to have."

In an effort to help the M2M space survive and thrive the dicey intellectual property landscape, there's been talk of an M2M patent pool, which could allow various intellectual property stakeholders to throw their patents into a heap in an effort to better fight legal challenges. Meanwhile, a handful of standards organizations have joined forces to develop specifications around M2M in an effort that some believe could help ease the IP problem. But such efforts tend to have a limited effect.

What companies often do these days is file a patent and then appear at an industry standards committee, says Tony Dutra, an inventor, lawyer and software industry veteran. If that technology is accepted, he says, the company holding the patent signs something saying that it will license the solution to others in the industry at a fair price. But it often doesn't work that way in the long run, says Dutra, who writes and co-hosts an intellectual property law podcast for Bloomberg BNA.

For example, Motorola Mobility had patents on standards and sued Microsoft, requesting more than \$2 on every Xbox Microsoft sold, he says. The judge said it should've been more like 12 cents, Dutra explains, adding the case is ongoing but that Motorola is now in a difficult position because it asked for more money than it probably deserved.

Dutra adds that companies used to be able go to district court and file a patent lawsuit, and those challenged were so scared they agreed to pay as part of a settlement. Now the court makes it difficult for companies that have a patent but not a product to do that, he adds, so more organizations now approach the International Trade Commission, which has authority to bar a company from importing articles that infringe a patent.

Of course, wireless is so hot today that much of the intellectual property action is happening in this part of the in-

dustry, Dutra notes. Wireless service provider giants AT&T and Verizon are involved in a steady stream of intellectual property disputes, he says, and InterDigital is almost infamous now in the patent world. InterDigital devices are often made overseas, adds Dutra, so it has two ITC cases in the works, one against LG and one against Nokia. InterDigital's goal is to get the ITC to ban the export of the products in question, according to Dutra.

As for M2M-specific intellectual property concerns, this area is now heating up.

"Internet of Things time is just now taking off in earnest, and we think it's a massive opportunity for services and the patent side," says Allen Proithis, executive vice president of the InterDigital Solutions Group, the company's technology commercialization and strategic engineering services unit.

InterDigital earlier this year formed a joint venture with Sony Corporation of America that aims to help, according to the Convida website, "lay the groundwork for a future where everything, in every home, business and industry, is connected." Proithis describes the Convida joint venture as a way to pool resources to accelerate InterDigital and Sony's capabilities, part of which involves aggressive intellectual property building.

When it comes to intellectual property related to M2M, you need to separate out connectivity from everything else, Proithis says, adding that there's a lot of overlap between intellectual property on connectivity between cellular and M2M. But, he adds, there's rich potential for intellectual property related to services platforms. It's early days yet for M2M, he continues, but as thinking about M2M shifts from connectivity to a rich set of services "people are waking up."

"People are starting to get very, very concerned about it," Proithis says. "I'm personally surprised" at the rate this is happening.

Mobile resource management firm Spireon has been one of the more active M2M companies on the patent infringement lawsuit front. It has filed suits against CalAmp, CallPass, Skypatrol LLC, and Star Sensor.

Spireon didn't respond to M2M Evolution magazine's request for comment on its intellectual property disputes, but the company's website has a link dedicated to its intellectual property holdings. It lists eight patents, a few of which address asset location tracking. The most recent one listed is U.S. Patent 8,368,561, which was granted on Feb. 5, 2013, and pertains to the apparatus and method for simulating a vehicle tracking device in a vehicle.

However, Spireon on April 20, 2012, issued a press release announcing it had filed "the second lawsuit of its kind" regarding patent infringement. The first suit was filed against Star Sensor, Skypatrol and others. The second was filed against CallPass and was related to U.S. patents 6,249,217 B1 and 6,025,774, which are not among those listed on the patent part of the Spireon site. These two patents, according to Spireon, involve "an innovative system that applies Global Positioning Satellite (GPS) technology, cellular networks, and information systems to monitor loan status for a default condition on a vehicle and to enable tracking to aid the confiscation and repossession process for dealers and finance companies." Spireon in its press release states that: "Early estimates are the damages caused by infringing companies could exceed \$10,000,000. Spireon, Inc. will also seek injunctive relief to prevent infringers from providing unlicensed products and services."

Also of note is the fact that ProconGPS Inc., one of the companies that merged to form Spireon, in a July 24, 2011, press release announced "the acquisition of the patents governing the repossession of automobiles in the Vehicle Finance Industry from CalAmp Corp."

When asked for comment on intellectual property and its dealings with Spireon, CalAmp responded that it "would rather not comment on IP related matters."

Dan Murphy of Axeda tells M2M Evolution magazine that his company holds 34 U.S. patents. That includes patents on managing distributed devices with limited connectivity, adaptive device-initiated polling, retrieving data from a service, and much more.

Jeff Smith, CTO of Numerex, which sells M2M technology and services on a subscription basis for the enterprise and government markets worldwide, says his employer files a ton of patents for a company its size. That's especially important at this point in time, when the whole patent landscape is dysfunctional, he indicates. The good news, however, is that Numerex has a patent portfolio that goes back 20 years.

M2M patent challenges are helping drive mergers and acquisitions in the M2M arena, adds Smith. For example, he says, Verizon recently purchased Hughes Telematics at a premium, but the acquired company's only two valuable assets were the fact that it had General Motors as a customer, which Verizon has since lost, and Hughes Telematics' interesting patent portfolio.

That comment is backed up in a press release issued by Hughes Telematics on Nov. 16, 2006. It notes that the company's "approach to the market is anchored by patented technology as well as unparalleled resources." **M2M**

# An Oracle Executive Interview

## Standardized Architectures Bring Simplicity, Flexibility to M2M

**T**he connected device market is poised to make giant leaps. Estimates indicate there will be billions of connected devices, most of which will be used in M2M applications, in just a few years.

All these devices will be collecting data, and then pumping it up to the mother ship. Getting all that data from all those devices to where it needs to go – and in a reasonable amount of time, so it’s still useful – will be no small feat.

None of that data will amount to anything, however, if it’s not leveraged to meet the goals for which it was intended. So organizations will be doing a fair amount of not just data collection, but also data aggregation and analysis. And that will require significant event processing and information management.

Ultimately, business stands to benefit in a big way from machine-to-machine communications. Indeed, GE last year issued a report about what it calls the Industrial Internet, saying that enabling Internet-connected machines to communicate and operate automatically can bring substantial efficiency gains. It went on to say that if the Industrial Internet boosted annual productivity growth by just 1 to 1.5 percentage points in the U.S., it could add \$10-15 trillion to the global GDP. And it said that if M2M could be used to enable just a 1 percent increase in efficiency related to jet fuel costs, it could save the company \$30 billion over 15 years.

Of course, the first order of business is to get M2M solutions in place that are comprehensive enough to move the needle on business results. To get M2M solutions up and running quickly, keep them flexible so they can address new requirements as they arise, and scale them efficiently, it’s important to adopt a standardized architecture and standardized products, said Chris Baker, senior vice president of Worldwide ISV, OEM and Java Sales at Oracle.

Standardization engenders simplicity, said Baker, and M2M could certainly benefit from some simplification.

“The M2M and D2D (device-to-data center) space is incredibly complicated now,” he said.

At the moment, M2M applications, which are written in a variety of coding languages, are typically created for a specific device, noted Baker. A more efficient method is to use Java so developers write once and the applications can work on multiple device types, he said. That’s not to mention that by embracing Java you’re also embracing an existing community of some 9 million Java developers.

Once the data is ready to come out of the gateway or the intelligent device, it’s time to do the D2D, or device-to-data center, handoff. Again, Java can allow for more efficient operations on that front, Baker said. Oracle offers Java middleware to make those connections.

“We are simplifying the architecture because it’s always the same – it doesn’t matter what the device is,” he said. “When you get to the gateway level, you’re writing once, running many times. In the data center you can use the same equipment and architecture to get the performance you need – again, it’s always the same and that makes it more supportable and more agile.”

Customization works reasonably well when you don’t have that many devices connected, said Baker. But as things proliferate and you start connecting larger numbers of devices to the Internet, you need a more simple architecture and set of tools that can act as an efficient launch pad from which to create, introduce and update new applications; get the device data where it needs to go in a secure and efficient manner; and handle all the back-end processing so you can make the best use of the M2M data you’ve collected.

“The level of complexity is high for M2M and D2D (device-to-data center), and it’s understandable why it’s high,” said Baker. “Oracle can take the IT part of the problem and simplify it. Why reinvent it? Simplifying it means lower costs, less work, and faster time to market.” **M2M**



# Webinar Schedule



**ARCHIVED • VIEW TODAY!**

The Need for Speed: 4G Enables a New Wave of M2M Applications

Sponsored by:

<http://www.tmcnet.com/webinar/cradlepoint/cradlepoint-8-13-13.htm>

**ARCHIVED • VIEW TODAY!**

Modular M2M Architecture

Sponsored by:



<http://www.tmcnet.com/webinar/systech/systech-8-14-13.htm>

**ARCHIVED • VIEW TODAY!**

Heavy Equipment Asset Management – Beyond Track and Trace

Sponsored by:



<http://www.tmcnet.com/webinar/att-axeda/heavy-equipment-asset-management.htm>

**ARCHIVED • VIEW TODAY!**

Catch the wave of Wireless HD Video Surveillance

Sponsored by:



<http://www.tmcnet.com/webinar/proxim/catching-wave-hd.htm>

**ARCHIVED • VIEW TODAY!**

24/7 Asset Monitoring: Do you know where your inventory is?

Sponsored by:



[http://www.tmcnet.com/webinar/sprint/sprint\\_asset.htm](http://www.tmcnet.com/webinar/sprint/sprint_asset.htm)

# With the Money Supply ‘Tapering’ Off, What Should the Boardroom M2M Strategy Be?

It is no stretch to say that the government has a real knack for convoluting words and phrases, employing them in ways that usurp their true meaning for one that is the exact opposite. For example, fundamentally the Fed’s “tapering” of the money supply is increasing the cost of money, so while this may decrease the dollars available it also means that there is a limited window of opportunity. Now in the government’s defense they could be using the word taper as it relates to candlewicks, and thus companies right now feel they have money to burn.

Are you looking to execute a growth strategy?

If so, right now is the time to think about doing so. Quite a few companies are currently doing so, with Verizon trying to figure out how to say goodbye to Vodafone, Softbank trying to make sense of Sprint’s spectrum spread (including Clearwire), and Dish...well, expect it to find its sights set next on AT&T. And the consolidation concepts do not stop there, as Michael Dell is this time weighing just how much of his own money he wants to associate with his corporate namesake.

A great many M&A discussions are taking place behind the scenes that will no doubt be reported later as synergistic and having economies of scale. One phrase common on Wall Street is “Bulls make money, bears make money and hogs get slaughtered.” So,

according to such thinking, should the takeaway be that if you are in the boardroom you should evaluate synergies when it comes to M2M opportunities?

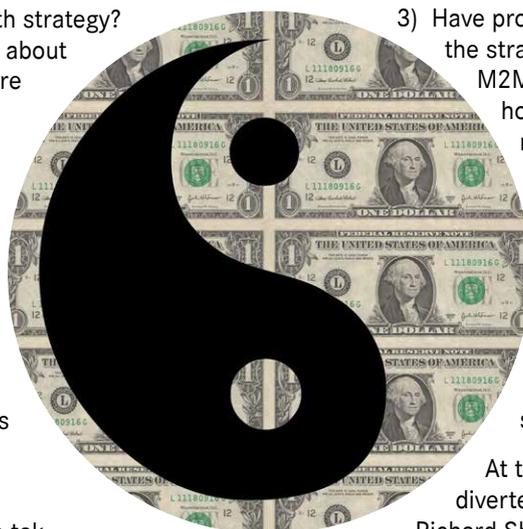
Let’s start with some simple questions.

1) Are the merging companies compatible? Obviously, the reason to merge or acquire is an acceleration of opportunity over building from scratch, but in cases in which the companies’ M2M styles are very different (e.g., one that adheres to standards versus a hard-coded company) the synergies are going to be more elusive, and may also result in issues between corporate cultures.

2) Assuming synergies are found in a full service robust offering, is the focus on the business intelligence side of M2M? Problems can be encountered in finding an agreed-to unit of measure, with an on-point example being how the ILECs once they were allowed back into long distance continued to refer to subscriber counts, this despite the fact that long-distance companies live and die by minutes of use. It took some time for the ILECs to come around, and when it comes to M2M determining the measure that represents a full service, it is probably more about maintenance than sales to start.

3) Have process flows been considered? If the strategy of M&A is diversification, the M2M stories can be very divergent; however, process flows can reveal real opportunities for determining primary supplier strategies or ways in which to make R&D, product development and opportunities to reduce costs through reengineering. Again, this brings us to business intelligence and culture requirements; however, the units of measure can be isolated to specific organizations.

At the end of the day, boards are often diverted by delusions of opportunities, as Richard Shockey’s Law states “Money is the answer, now what is your question?” Regardless, though, of how cheap the money is today, adding an analysis of how M2M will apply to the workflow may be the best way to validate M&A assumptions. **M2M**



# The M2M Evolution Conference & Expo— Get Actionable M2M Ideas You Can Implement Now



August 26-29, 2013

Mandalay Bay • Las Vegas, Nevada



M2M Total Market Revenue to hit  
a massive \$4.5 trillion by 2020 with  
the majority of this growth coming  
from early adopters.

—Source: Deloitte

Join enterprise executives, service providers,  
developers, end users and IT professionals at  
the ultimate M2M business networking event.

## The M2M Evolution Conference is the only M2M Event to:

- Provide content for every layer of the IT Infrastructure
- Present end user companies with M2M solutions to improve their day-to-day operating procedures
- Highlight platform solutions that allow you to manage and deliver M2M solutions
- Utilize real life case studies to show how M2M can transform a business
- Show the value of M2M within specific vertical applications

## Register Today!

[www.m2mevolution.com/conference/registration](http://www.m2mevolution.com/conference/registration)

@m2mevolution  
#m2mevolution



Keynote Address  
by Apple Co-founder  
**Steve Wozniak**

[www.M2MEvolution.com/conference](http://www.M2MEvolution.com/conference)

Platinum Sponsor:



Gold Sponsors:



at&t



ThingWorx

# As M2M Gains Momentum, Is Your Organization Ready?

**A**s big data continues to explode, M2M applications are adding fuel to the fire. Everyone from network service providers, to vertical application providers and end user businesses will face challenges extracting rich, real-time insight from the onslaught of machine-generated data streaming in from devices, sensors, smart meters, operational equipment and other sources.

But extracting insight is exactly the point. Now that technology makes it possible to capture and connect data from a growing array of things (whether a smart phone, sensor on a power transformer, or a package on the way to your home), it's the meaning of the data that has value. What, for example, do the sensor readings reveal about the health and reliability of the transformer? (Will it need to be serviced soon?) How about the RFID tag on the package? (When was it shipped? When is it likely to arrive?)

The amount of data generated by machines is already far greater than the amount of data created by individuals. And as M2M gains further momentum, the volume and pace will be unlike anything we've seen before. Here are several key considerations that organizations need to be thinking about as they prepare their data infrastructure for M2M.

## Investigative Analytic Capabilities

Raw data, whatever the source, is only useful once it has been transformed into knowledge through analysis. When there's more and more data to mine (as is the case with M2M), analytic solutions must be able cut through all the clutter with precision.

An ability to ask all kinds of questions is also important. In fast-paced business and operational environments (smart grids are a great example), intelligence needs change quickly and analytic tools can't be constrained by data schemas that

limit the number and type of queries that can be performed. This is where traditional data solutions like standard, row-based relational databases fall short. Designed to handle single-record, structured data, they just weren't built to do the kind of dynamic, ad-hoc, investigative analysis that's so important in an M2M environment. This deeper analysis requires a flexible and simple-to-adapt solution that doesn't require a lot of tinkering or time-consuming manual configuration (such as indexing and building data partitions) to create and change analytic queries.

## A Need for Speed

M2M data often has a fairly short expiration date. For example, a mobile carrier may want to automate location-based smartphone offers based on incoming GPS data, or a utility company may want smart meter feeds that show spikes in energy usage to trigger demand response pricing.

If it takes too long to process and analyze these categories of data, or if applications have to work within the confines of pre-defined queries and canned reports, the resulting intelligence is simply not going to be very useful. Data solutions for M2M must be able to quickly and easily load, dynamically query, analyze and communicate machine-generated information in real-time.

## Getting the Bytes Right

As demand for investigative analysis of M2M data increases, businesses also need efficient, highly scalable solutions that can help them handle current and future data growth. At some point, traditional, hardware-based infrastructure will run out of headroom in terms of storage and processing capabilities. But adding more data centers, servers and disk storage subsystems is expensive, both from an equipment and maintenance perspective. Costs can begin to outweigh the benefits.

Fortunately there are a number of emerging technologies focused on this issue, from columnar databases that compress and store data more compactly, to distributed data processing capabilities supported by frameworks like Hadoop. Technologies that facilitate data compression and data loading optimization are particularly important, as this is key to enabling more efficient M2M data analysis using fewer resources, whether information sits on a network node, a smart device or a massive data center cluster. **M2M**

*Don DeLoach is CEO of Infobright ([www.infobright.com](http://www.infobright.com)).*

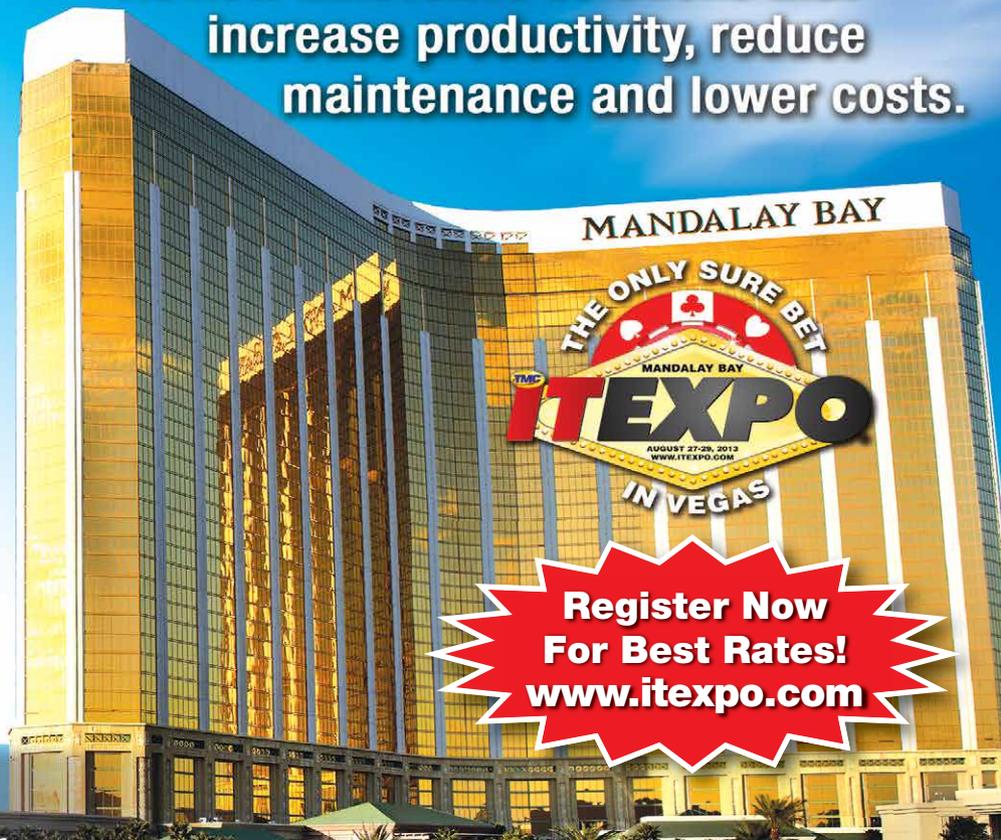
# ITEXPO®

Mandalay Bay | Las Vegas, Nevada | August 27-29, 2013

## The Business Technology Event

Review innovative solutions that increase productivity, reduce maintenance and lower costs.

- Attend Educational Sessions Focused On Cloud, UC, Customer Experience, Social
- Meet 250+ Exhibitors
- Network With 1,000s Of Attendees
- Free Workshops Focused On SDN, Asterisk, WebRTC, SIP And More!



Register Now  
For Best Rates!  
[www.itexpo.com](http://www.itexpo.com)

## The One and Only Event For

- Enterprise/SMBs
- Government
- Reseller/Channel
- Service Providers
- Developers

@ITEXPO/ #ITEXPO



Apple Co-Founder  
**Steve Wozniak**  
to Keynote  
ITEXPO Las Vegas!

Admission Included with Any Conference Pass



### Platinum Sponsors:



INTERACTIVE INTELLIGENCE®

VoIP Made Simple

### Gold Sponsors:

SAGEMCOM



VITELITY



VOXBONE



Distributing Success



by Rich Tehrani

# Fashion and International Intrigue

**M**any believe wearable technology will do to tablets and smartphones what it did to laptops and PCs. There is certainly a high probability that, at a minimum, today's mobile devices will lose large amounts of share to computers you wear. The problem for tech a company, however, is making a computing device you want to place on your person. Some believe Google's Glass product is too ugly to wear, for example.

This explains why Google is working with Warby Parker, and why Apple just hired Yves Saint Laurent CEO Paul Deneve to manage "special projects."

It seems highly likely that Apple is working on a number of wearable technologies such as the much-rumored and recently trademarked iWatch.

TMC on July 24 and 25 launched Wearable Tech Expo in Manhattan, and it will be very interesting to hear what the industry thinks about this Apple news.

I would be remiss if I didn't use this space to also talk about the NSA Prism program, which dominated the news, and many personal conversations, this summer.

Now that the world is aware of the Prism program, through which there seems to be unfettered access to the servers of American web firms, I believe we can expect a brave new world of communications and technology competition.

Although it isn't accurate to say there is free trade in the world due to tariffs and fees imposed across the borders of various countries, for the most part, com-

panies easily can sell their wares across the world without having to worry about excess nationalism.

Yes there are exceptions, but over time, consumers worldwide are OK with buying products from companies located virtually anywhere. Perhaps this is best exemplified by the popularity of American cars in China and the popularity of German, Japanese and recently Korean cars in the U.S. This situation may change in the future as heads of state across the world are beginning to advise their citizens to stay clear of American tech companies if they don't want to be snooped on.

This, of course, reminds many in the U.S. of how difficult it has been for Huawei to do business with carriers in the U.S. because the government isn't too keen on having potential backdoors in their communications networks which China could potentially use to eavesdrop.

In fact, German Interior Minister Hans-Peter Friedrich this summer issued a blunt warning to avoid American websites while speaking with reporters in Berlin. "Whoever fears their communication is being intercepted in any

way should use services that don't go through American servers," he said.

"The Googles and the Facebooks, I don't know how they cope with this issue," said Gary Hufbauer, senior fellow for trade and economics at the Peterson Institute for International Economics. "There will always be that suspicion."

This is not only a challenge for these consumer-facing companies but those courting businesses – Amazon, Rack-space, Salesforce, etc. The international threats to U.S. tech firms could grow quite rapidly if countries become more nationalistic in their purchasing decision as a result of the Prism leak.

There is good and bad news for customers if this initial sentiment becomes a trend. On the plus side, companies with monopolistic strangleholds on the market like Amazon and others will see stronger competitors emerge. This is the case because as Amazon's cloud solutions have grown in size, it has been able to lower prices based on economies of scale. If they lose share to others, they won't be able to use pricing which others in the market may consider predatory. The downside is, these companies may lose share not because of better competitors but because of something that is beyond their control. This hurts employees, investors and the U.S. economy.

It is too early to see if any serious market share will be lost. In some cases like Facebook there is a critical mass that is so absolutely huge, it will be difficult to compete effectively with the social networking leader. Still, there will be damage. If there isn't, it will be miraculous. I believe this unforeseen leak will have repercussions in the tech market for years to come. **M2M**

# 3 Billion Devices Run Java

Computers, Printers, Routers, BlackBerry Smartphones, Cell Phones, Kindle E-Readers, Parking Meters, Vehicle Diagnostic Systems, On-Board Computer Systems, Smart Grid Meters, Lottery Systems, Airplane Systems, ATMs, Government IDs, Public Transportation Passes, Credit Cards, VoIP Phones, Livescribe Smartpens, MRIs, CT Scanners, Robots, Home Security Systems, TVs, Cable Boxes, PlayStation Consoles, Blu-ray Disc Players...



Java™

#1 Development Platform

**ORACLE®**

**[oracle.com/goto/java](http://oracle.com/goto/java)  
or call 1.800.ORACLE.1**

See why more and more  
M2M customers are going our way.



Give your M2M customers extensive network reach across Canada.  
Offer them speed, reliability and solutions that are easy to manage and simple to deploy.

Learn about the TELUS M2M advantage at [m2m.telus.com](http://m2m.telus.com)

