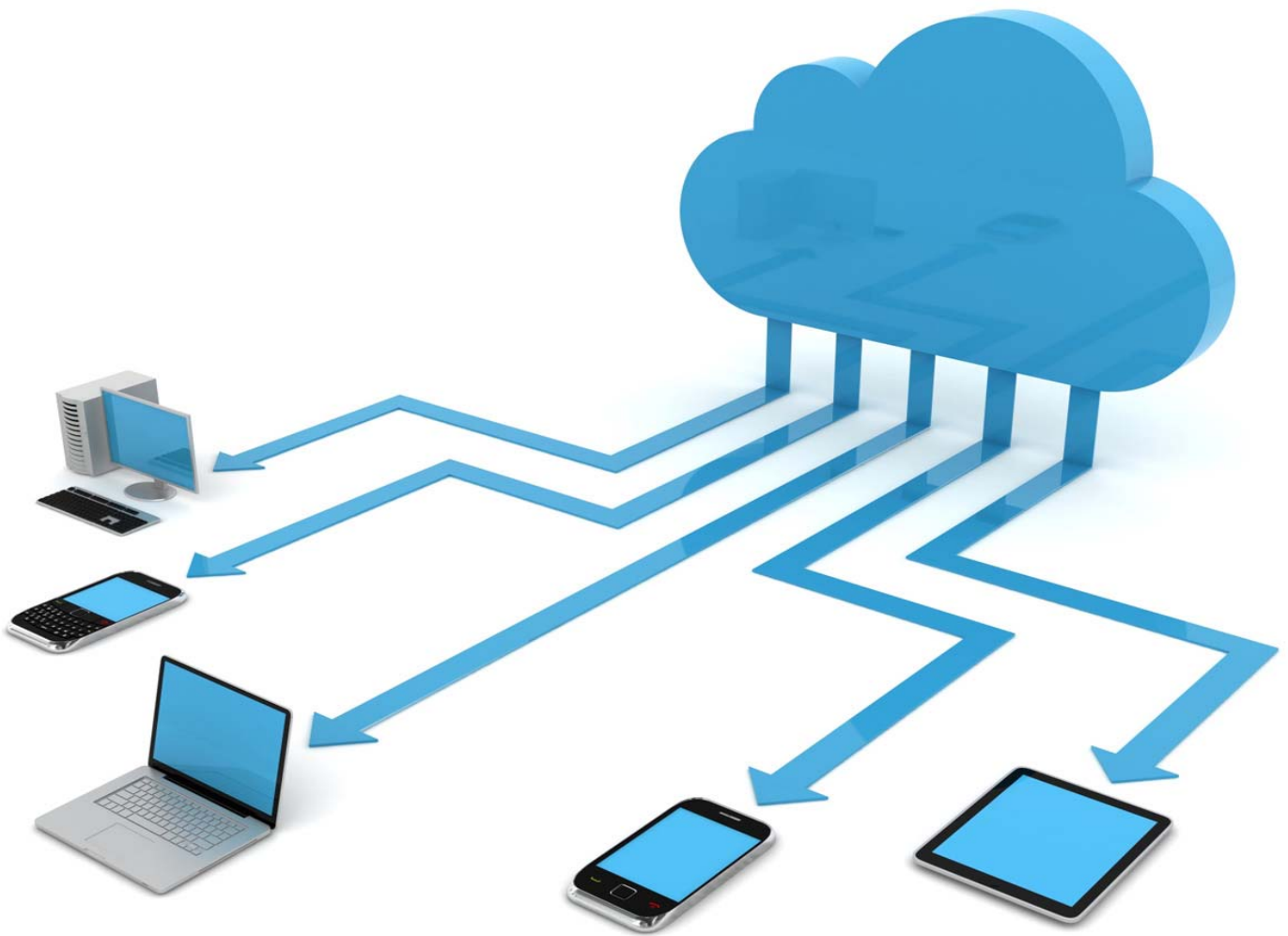


# INCISOR™

for the  
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warrior

Video enabled  Issue 171

July 2012



## DOES WI-FI OWN THE HIGH DATA RATE WIRELESS MARKET?

**PLUS**

INCISOR INTERVIEW: WI-FI ALLIANCE

WILL WI-FI DOMINATE IN WIRELESS HEALTHCARE?

SEMICON SUPPORT FOR WI-FI MIRACAST STANDARD

# wherefore art thou, wi-fi?

Wi-Fi is everywhere and all around us. In fact, where would we be without Wi-Fi? I certainly couldn't afford the mobile phone bills if I had to rely on using the cellular networks to keep in touch with my email and web needs while I am travelling – and it's just getting more expensive, not less! How do the operators get away with it?

So Wi-Fi is essential to me, and to most people I know.

And Wi-Fi is spreading its net. No longer must it be considered purely a wireless version of a networking protocol. Wi-Fi now does many more jobs, is embedded in an ever-broader set of products, and is even challenging Bluetooth in the WPAN and low energy sectors. Not to mention being a connectivity backbone for today's super-trendy cloud computing bandwagon.

Why, then, does Incisor not have more Wi-Fi content? The honest truth is that we don't really know. We've reached out many times to the Wi-Fi community, and although the Wi-Fi Alliance was a regular contributor to our monthly WPANel feature, we've yet to buddy up with the Wi-Fi guys.

We want to change this, and this month we're looking at Wi-Fi. I had a conversation with Edgar Figueroa, CEO of the Wi-Fi Alliance, and he helped me get a better understanding of the current state of the Wi-Fi market.

Of late I've also been talking to other Wi-Fi-centric companies, such as Ozmo Devices. That company is doing interesting things with Wi-Fi Direct in the PAN.

There will be more Wi-Fi content in months to come. If your company has an interesting story, get in touch.

**Vince Holton**

**Publisher & editor-in-chief, Incisor / IncisorTV**

## INCISOR.TV FOCUS THIS MONTH



Managing Bluetooth and Wi-Fi coexistence throws up many challenges. Frontline demonstrates how to avoid conflict in the short range wireless world.

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## EDITORIAL CONTACTS

### INCISOR IS PRODUCED/DISTRIBUTED BY:

Click I.T. Limited  
www.incisor.tv  
Hampshire Gate, Langley, Rake  
Hampshire GU33 7JR, England  
Tel: +44 (0)1730 895614

### CONTACT DETAILS:

Publisher/Editor-in-chief:  
Vince Holton · vholton@incisor.tv  
Telephone: +44 (0)1730 895614

Sales & Business Development:  
All enquiries – sales@incisor.tv  
Telephone: +44 1730 895614

Contributing writers:  
Rebecca Russell, Manek Dubash,  
Dean Anthony Gratton  
Paul Rasmussen, Mads Oelholm.

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## Apple positioned to enter the indoors

Apple announced its own mapping solution at its worldwide developer's conference in June, ending its partnership with Google; a far cry from the collaborative relationship once found between these two companies in the early days of the iPhone. The focus has been on the 3D maps in Apple and Google's recent mapping-related announcements, however, 'the indoors' is also likely to emerge as key in future developments. A recent report from IMS Research, covering the area of indoor positioning, including mapping, forecasts that almost 120,000 indoor venue maps will be available to the consumer in 2016.

Alex West, research director of IMS Research's connectivity and location group told Incisor, "The announcement of Apple providing its own mapping solution comes as no surprise, with rumors of this circulating for some time, as a result of the firm's previous acquisitions in the area. Apple has been trying to wean itself off of its dependence on Google. The release of Siri with the iPhone 4S represented a different way to search the internet, bypassing Google entirely, and its recent iPhoto application utilized OpenStreetMap data."

These announcements may have wider implications as competition in this area begins to increase, with the two major mobile platform giants going head-to-head. In creating their mapping solution, Apple acquired Placebase, Poly9 and C3 Technologies, whilst also making use of data from TomTom and potentially others. With 3D maps and turn-by-turn navigation appearing to have been included in the new iOS Maps application, the indoors may represent the next challenge.

Both Google and Microsoft have already begun mapping venues such as shopping

malls and airports, with this being included in Microsoft's Bing Maps in December 2010 and Google Maps in November 2011.

## Low power = high growth

A whole host of new and emerging markets are set to drive longer term growth in wireless connectivity technologies, says ABI Research. Applications, including home automation systems, sports, medical, retail, and more, are driving the need for low power wireless technologies to enable remote devices with minimal maintenance. ABI predicts that 1.5 billion ZigBee and Bluetooth Smart (v4.0) devices will ship per annum in 2016.

Peter Cooney, ABI's practice director, semiconductors told Incisor, "Wireless sensors are enabling a wide range of new and exciting products. Low power is all important, allowing minimal maintenance and therefore low running cost."

ZigBee and Bluetooth v4.0 are expected to be the two major technologies used, but continued development is needed to reduce power consumption further, with the ultimate aim of achieving batteryless sensors where possible. The recent release of an open standard from EnOcean will help with the uptake of more sensors powered by energy harvesting, but ABI suggests that what is needed is a more widespread push from a fully open standard body, such as the Bluetooth SIG or ZigBee Alliance.

"We expect further announcements from the Bluetooth SIG on lower power solutions, pushing v4.0 to new power levels," added Cooney. "This coincides with work being done by the ZigBee Alliance on the ZigBee Green Power standard, a technology that has been in the pipeline since 2009."

## Nokia sells Vertu lux mobile division to investment co

Nokia's travails continue. Incisor learns that the Finnish phone company has agreed terms for EQT VI, part of a private equity group in Northern Europe, to acquire Vertu, Nokia's flagship luxury mobile phones division.

Nokia's public position is that this move 'is the best option for the next step in Vertu's journey of delivering excellence, enabling the brand to focus on increased opportunities for growth in the luxury category'. Of course.....

Having delivered double digit sales growth over the past few years, albeit in a market that is has pretty much to itself, Vertu has continued to push a portfolio of high end mobile phones, increasingly led by its smartphones combined with the brand's concierge-style services. This must be a lucrative market, but it is presumably tiny, and therefore has obvious limitations when it comes to propping up the mothership.

Vertu is headquartered in Church Crookham, UK – just down the road from Incisor's global HQ, actually - and employs approximately 1,000 people worldwide. The transaction, the terms of which are confidential, is expected to close during the second half of 2012, subject to customary regulatory approvals and closing conditions. Nokia will, apparently, retain a 10% minority shareholding in Vertu.

So, Nokia continues to shed staff – another 10,000 just announced – and to sell off its assets. Can it really continue, or should it go back to chopping down trees and making rubber boots?



## Improvements for license-free digital wireless audio

A new technology platform from Cambridge Consultants is enabling wireless devices such as radio microphones and intercoms to deliver high-quality audio within international licence-free radio bands – even in mega-stadiums. It means Digital Enhanced Cordless Telecommunications (DECT) can now provide the same range in a large arena as it does in open spaces – typically more than 100 metres – without the problem of interference when there is a high concentration of devices.

Hundreds of millions of DECT products are sold annually – the DECT wireless standard is the basis for more than 80% of cordless telephones worldwide, as well as things like intercoms, hearing assistance systems and simultaneous translation facilities. Unlike some technologies that Incisor has covered, DECT is robust with a dynamic channel allocation scheme, moving seamlessly to a new channel if it encounters interference. But, until now, the technology has had some limitations. While it worked very well in standard office buildings and homes, in very large enclosed spaces its range was limited because of interference as a result of multipath propagation – the radio equivalent of reverberation.

Cambridge Consultants has told Incisor that its new platform resolves these issues. The ‘large space’ problem has been solved using a low-cost signal processor and some innovative integration with low-cost DECT silicon. Advanced low-latency audio codecs have also been developed so that stereo or mono full-bandwidth audio can be transmitted. Unique to Cambridge Consultants is the use of DECT to broadcast from one frequency-agile central unit to multiple receivers for distribution. The receivers automatically provide signal-quality feedback so that the central unit can move channel seamlessly when needed.

Tim Whittaker, System Architect at Cambridge Consultants explained, “As well as providing reliable communications, DECT has another



feature unique at its cost level. The DECT standard includes seamless cell handover functionality as a mandatory feature, so all DECT chips can do it. This means that a radio microphone, intercom or distribution system can be provided with multiple base stations, and automatically connect to the one offering the best performance.”

## Apple and Samsung hold 50% of smartphone market and 90% of profits

Although smartphone shipments grew 41% year-over-year to 144.6 million as of the quarter ending March 2012, many smartphone OEMs are not enjoying the benefits of a rapidly expanding market, observes ABI Research. Samsung and Apple captured 55% of global smartphone shipments in 1Q’2012 and over 90% of the market’s profits. The question remains: can anyone break away to become a strong third in this market?

Of the top ten smartphone OEMs, only Samsung and Sony experienced sequential growth in shipments over 4Q’2011. Nokia witnessed a 40% sequential decline in shipments and may soon be passed by ailing RIM in shipments despite the BlackBerry maker’s 20% sequential decline in shipments. “At this point in the year, Nokia will have to grow its Windows Phone business 5000% in 2012 just to offset its declines in Symbian shipments,” said Michael Morgan, ABI’s senior analyst, devices, applications & content.

|         |      |
|---------|------|
| Apple   | 35   |
| Huawei  | 6.8  |
| Nokia   | 11.9 |
| RIM     | 11.1 |
| Samsung | 43   |
| Sony    | 7    |
| ZTE     | 4.9  |

Table: Select Smartphone Vendor Shipments, 1Q’2012 (Millions of units)



As the smartphone markets of North America and Western Europe pass 50% penetration, smartphone OEMs should seek growth in key markets, such as China, which continues to show strong shipment growth of over 80%.

## Your chance to tell the EC what to do

How would you envisage the “governance” of “Internet of Things” (IoT)? Well, you can have your say, because the European Commission is running an online public consultation on the Internet of Things. All citizens, organisations and public authorities are welcome to contribute to this consultation, which runs from April 12th to July 10th 2012.

The Internet of today offers access to content and information through connectivity to web pages and to multiple terminals (e.g., mobiles, TV). The next evolution will make it possible to access information related to our physical environment, through a generalised connectivity of everyday objects.

Access to information relating to our surrounding environment is made possible through communicating objects able to interact with that environment and react to events. This makes possible new classes of applications such as smart homes with automated systems to monitor many aspects of daily living, smart grids and intelligent energy management, smart mobility with better control of traffic, or smart logistics with the integrated control of all processes in the entire distribution chain. There are endless examples of this evolution of networked devices, also known as the Internet of Things (IoT).

So you want to have your say? Then here’s the link: [Give your opinion](#)

# new Bluetooth products



## Bluetooth low energy proximity key fob smaller than a credit card

Hong Kong-headquartered Dayton Industrial - an OEM/ODM (Original Equipment/Design Manufacturer) of wireless monitors and associated products such as watches and bike computers for sports & fitness consumer brands - has announced a Bluetooth low energy proximity key fob based on Nordic Semiconductor's  $\mu$ Blue nRF8002 System-on-Chip (SoC) that is less than half the size of a credit card.

The Dayton Bluetooth low energy proximity key fob will run for around a year from a regular 3V CR2025 lithium coin cell battery under typical daily usage conditions, while featuring a slim (0.5cm-thick) and compact (4.9 x 3.2cm) plastic sensor housing that features a single push button and two submerged LED status lights (one red to signal alerts, and one green to signal pairing status) within a product that weighs less than 40g. There are also additional micro-vibrator and buzzer alert options.

Within the latest Bluetooth v4.0 specification there are currently two profiles applicable to proximity-based property location and security:

- The Bluetooth low energy Find Me profile that targets smartphone applications and allows users to pair small - but commonly misplaced - everyday objects with their smartphone in order to locate them via, for example, a Bluetooth low energy proximity key fob that could be used to find a misplaced phone (by pushing a button on the fob to make the phone sound an audible alert), or a misplaced key fob (by pushing a button within a smartphone app to make the key fob sound an alert).

- The Bluetooth low energy Proximity profile targets smartphones and other portable devices such as computer laptops and tablets, and further extends the functionality of the Find Me profile to include more advanced in- and out-of-range functions. This could include, for instance, the ability to trigger an automatic security lock-down if a smartphone or laptop/tablet is separated from its owner by more than a certain threshold distance, or wake a sleeping desktop computer as soon as the user sits down in front of it.

Dayton's Tony Chung told Incisor, "Our Bluetooth low energy key fob design platform will support practically any proximity, property location, or security application an OEM or app developer can come up with - above and beyond the standard Bluetooth v4.0 profiles and use cases. This could include, for example, monitoring pets to ensure they don't stray too far away from home by adding GPS functionality to the standard Find Me profile, or developing an assistance alarm that sends a signal to a smartphone to alert someone that the user is in need of help. And the low cost nature of this device means it could also be bundled free-of-charge with higher value Bluetooth v4.0 products such as smartphones and tablet computers to attract customers."

## Bluetooth speaker rocks

Incisor featured the foxL (wierd name, that) portable Bluetooth speaker a while back, and we're now told by the company behind foxL - Soundmatters - that this Bluetooth portable speaker is becoming the preferred portable travelling musical instrument practice "amp" used by leading rock musicians. Now, it seems a bit unlikely, but Soundmatters is adamant that foxL is increasingly being used by professional musicians at home and on the road for its audio performance quality and portability as a personal practice amp.

Jordan Rudess, keyboardist of the progressive rock band, Dream Theater, apparently used foxL on his band's recent Asian and European tours. Using his GeoSynth and SampleWiz apps to turn his iPad and iPhone into instruments, Rudess piped music through his portable foxL. "I was on a search for a speaker like this for a long time. Something I can keep in my bag, something I can take out at any time, whether I am on the street and want to jam with a street musician, or when I'm on my Steinway piano and want to simultaneously on my iPad play along...It's something I have with me everywhere I go."

Meanwhile, we're told that Guns N' Roses guitarist Richard Fortus uses foxL as a portable guitar amp. He uses foxL in conjunction with IK Multimedia's iRig, which he featured on a [YouTube video](#) (see minute 6:10). "Using foxL and the iRig in my hotel room or in the bus...I am sitting here in my back yard, so wherever you are, you can have your amp setup," said Fortus.

If our musically inclined readers want to get in on this act, the foxLv2 Bluetooth is priced at \$199. Sadly, we can't tell you any more about it, as really nerdy Incisor readers will remember that when we talked about this speaker the first time around, we told you that we couldn't review it because the Soundmatters PR machine wasn't able to send review samples outside of the USA. With a few sales now made to rock legends, perhaps that might have changed.....

# new Bluetooth products

## Apple expands range of Bluetooth Smart Ready hubs

**The Bluetooth SIG is celebrating the fact that Apple's next generation MacBook Pro will be a Bluetooth Smart Ready hub device, utilizing Bluetooth v4.0 and its low energy feature. Apple's entire mobile device product line now supports and uses Bluetooth technology for connectivity.**

Bluetooth Smart Ready hubs like the iPhone 4s, MacBook Air, new iPad, and now, next generation MacBook Pro are ready to connect with enabled products in market today including speakers, televisions, watches, sports and medical equipment and forthcoming smart energy thermostats for the home.

Suke Jawanda, CMO, Bluetooth SIG told

Incisor, "The fact that an industry bellwether like Apple is 'all in' for Bluetooth technology is just the latest example of the massive growth we're seeing across multiple industries. Increasingly, Bluetooth technology is being used to allow billions of diverse products from countless manufacturers to speak the same language. This results in unmatched convenience for the consumer, flexibility for the product manufacturers and, now, access for application developers."

Industry giants like Microsoft, Google, Samsung, Panasonic, Nintendo, and Nike are also utilizing Bluetooth technology to connect everything from operating systems for developers to phones, TVs,

and shoes for the consumer. Jawanda added, "we are also seeing amazing concepts from our smallest member companies. Bluetooth's accessibility means we are just as likely to see the next big thing developed out of a private garage as a massive R&D department."

### Other Bluetooth Smart Ready Devices

The Bluetooth Smart Ready MacBook Pro joins a growing ecosystem of Bluetooth Smart Ready devices. For the 'it's all talk' sceptics and, perhaps, supporters of rival technologies, here's a selection of Bluetooth Smart Ready products that are available now, and [currently on show at the Bluetooth.com web site](http://www.bluetooth.com).



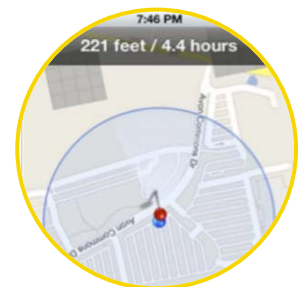
Apple iPad



Wahoo Blue HR heart-rate monitor



Polar H7 heart strap



Find my car smarter Bluetooth dongle and iPhone 4S app



Casio G-Shock smart watch



Motorola Droid RAZR Android smartphone



Motorola MOTOACTV fitness tracker and smart music player



Apple iPhone 4S



Mac mini



MacBook Air



Dayton heart-rate strap



Incisor interview

# Does Wi-Fi own the high data rate wireless connectivity market?



Wi-Fi Alliance, Edgar Figueroa.

Vince Holton talks to Edgar Figueroa, Wi-Fi Alliance president and CEO

**As I admitted in the intro text for this issue, I feel that Incisor hasn't had enough Wi-Fi related content. We're accused of having a bias towards Bluetooth, but that really isn't the case. We've been covering all short-range wireless technologies since 2003, and any coverage imbalance is really more about the relationships we developed with Bluetooth companies in the early days. We still receive more contact from companies wanting to talk about Bluetooth developments, but we'd like to change that.**

And with that in mind, I thought it was time for an update from the Wi-Fi Alliance, the US-based organisation that manages Wi-Fi's interests. I spoke to Edgar Figueroa, the Alliance's president and CEO.

**VH:** For our readers who aren't familiar with the history, could you give us a brief overview of the Wi-Fi story to date?

**SF:** The Wi-Fi Alliance certified its first product in 2000, shortly after we coined the term Wi-Fi to designate our certified technologies corresponding to the 802.11 family of IEEE standards. The history since then is one of the most interesting technology success stories out there – the range of device types and usages continues to expand rapidly, and industry sales have continued to grow at double-digit rates over most of the industry's lifetime. The technology has really grown from a fairly basic PC networking tool into a much more versatile technology connecting computing, mobile devices and consumer electronics to each other and to larger networks.

One of the things we are most proud of is that while we have seen data rate improvements exceeding an order of magnitude over that time, we have managed to preserve backward compatibility. The 2.4 GHz Wi-Fi CERTIFIED product of today can work with the first set of Wi-Fi CERTIFIED products.

**VH:** Can you clarify for us what you see as Wi-Fi's role in life? Is it about device connectivity? Wireless networking? Content streaming? Or all of these – and perhaps more?

**EF:** We don't constrain Wi-Fi to a single networking topology, or use case, or even to a

single market segment. For us, Wi-Fi is all about connectivity – which is of course a big canvas. This extends to a huge – and growing – range of usages and devices. Sometimes it means we are connecting people to each other and keeping the technology out of the way as much as we can. Sometimes it means connecting devices and keeping the user involvement to a minimum.

**VH:** Is Wi-Fi a consumer technology, or for business and the enterprise?

**EF:** There's really no question that Wi-Fi is both a consumer and enterprise technology. Most people are familiar with the innovations around Wi-Fi performance that have happened over the years, as the technology has evolved into a real solution for multimedia. And most people are also aware that the technology has become standard in devices like smartphones and tablets.

What people who aren't industry insiders might not know is that over the last 12 years, the industry has worked hard to make sure that Wi-Fi is business-grade. This has meant ensuring that it has the most robust security protections possible, that it is a manageable technology, and that its performance profile meets the increasing demands of enterprise environments. The latest example of that commitment is our new Voice Enterprise and Admission Control certification programs. Voice Enterprise certification means a device has passed rigorous tests to demonstrate that it can support good call quality. With Admission Control, IT managers will be better able to manage network resources and set up ways to redirect incoming network traffic that can't be supported on a particular node.

The vertical markets for Wi-Fi don't stop at the enterprise, either. Now more than ever, Wi-Fi is a service provider technology. With the introduction of Wi-Fi CERTIFIED Passpoint, which streamlines hotspot connectivity, operators can count on Wi-Fi to help them meet critical business needs for things like data offload, Wi-Fi roaming, and subscriber loyalty. Operators are one of the fastest-growing and most active segments in our membership today.

**VH:** What do you see as the key functions of the Wi-Fi Alliance?

**EF:** The Wi-Fi Alliance is a powerful collaboration forum. We provide a place where some of the most important work in our industry happens, where member companies ranging from service providers to silicon vendors to device and infrastructure makers can collaborate effectively. One trend we see now is growth in stakeholder involvement. So we see specifying organizations such as service providers, auto makers, and utilities taking an interest in becoming more active in the Alliance. We are also seeing the scope of the organization expand – the best example is that our members initiated 60 GHz certification planning a couple of years ago. Member companies coming in and saying "We want to do this work in the Wi-Fi Alliance" is a testament to our effectiveness.

This has been the secret to our continued growth and health as an organization, and when we make decisions about the organization's operations or strategy or future, the health of the collaboration forum remains a key priority.

**VH:** Wi-Fi is increasingly being enabled in consumer products, and not just PCs and the networking environment. Has this been a specific goal that the Wi-Fi Alliance and its members have been targeting?

**EF:** This has absolutely been intentional. When you look at our member roster and our history, many consumer electronics heavyweights have been involved for a very long time. The industry has been marching toward this goal since its inception. We've reached a point now where fully two-thirds of our certifications come from the consumer electronics and mobile device categories.

**VH:** The low power wireless market has become extremely competitive. The Wi-Fi industry wishes to be part of this market, and is promoting Wi-Fi Direct and a selection of other solutions. Is Wi-Fi Direct intended to address all low energy markets, or simply to provide Wi-Fi with a foothold in the WPAN sector?

**EF:** Wi-Fi Direct was conceived for a very wide range of applications. We were



seeing so many instances where traditional network connectivity was either unnecessary or might not be available, but where people would nevertheless want to connect. Wi-Fi technology was adapted to those types of connections fairly easily. We know that Wi-Fi Direct will prove useful for things like synching, sharing, printing, and display, and we also expect to see vendors implement it for usages we haven't even yet conceived.

**VH:** Can Wi-Fi ever truly compete in markets such as healthcare, smart energy, M2M etc with low energy wireless solutions such as ZigBee, Bluetooth low energy, Z-Wave and the many proprietary systems on offer? And do you really want to?

**EF:** One thing that is very clear is that areas like healthcare and smart energy are destined to be multi-technology market segments. Each of the technologies you mention contributes some unique attributes and speaks to a slightly different subset of those markets. Factors ranging from installed base, to geographic differences, to regulatory requirements - just to name a few - will impact decisions about which technology is deployed in particular implementations.

What's also clear is that Wi-Fi's huge presence in homes, hospitals and industrial environments means that it will play a big role in connected healthcare, appliances, and more. Much of our work, particularly in the smart energy space, focuses on making sure the devices can "talk" to each other, even when they use different connectivity solutions. Our work with several other organizations to form the Consortium for SEP2 Interoperability supports this goal.

**VH:** The Wi-Fi Alliance was formed in 1999, one year after the Bluetooth Special Interest Group. In the ensuing years, the Bluetooth SIG has gathered more than 16,000 members, while the Wi-Fi Alliance has 500. Both Wi-Fi and Bluetooth are very widely implemented, and widely appreciated technologies. To what would you subscribe the difference in membership numbers between the two organisations?

**EF:** Membership count is not really an accurate measure of technology acceptance in this case. Our two organizations have different membership structures and requirements, and the differing roster sizes reflect that fact. Both organizations, and their respective technologies, have enjoyed enormous success.

**VH:** The headline topic for Incisor's Wi-Fi feature this month is 'high data rate wireless connectivity - does Wi-Fi own this market?'. Bearing in mind other technologies that are competing with Wi-Fi in the 2.4, 5 and 60GHz high speed sector, how would you answer this question?

**EF:** Wi-Fi Alliance has a compelling roadmap that continues the technology's evolution toward high data-rate connectivity. The portfolio of technologies we are certifying will expand over the next couple of years in some significant ways.

The first is the introduction of Wi-Fi CERTIFIED 802.11ac next year. This is a 5 GHz technology that will interoperate with older forms of Wi-Fi that use 5 GHz, and we expect that most devices and equipment supporting 11ac will be dual band 2.4 and 5 GHz. So this is tried-and-true Wi-Fi - whole-home coverage, networking and Wi-Fi Direct use, and so on, with another jump up the performance curve.

The technology is sometimes referred to Very High Throughput (VHT), and with good reason. Expect to see raw data rates exceeding a gigabit per second, as well as some nice features for robustness and reliability of the link. This means streaming a handful of lightly-compressed HD video streams, higher-performance enterprise networking, and support for a range of more demanding applications.

The other huge development on the horizon is 60 GHz technology - which we think of as an incredibly exciting companion to traditional Wi-Fi. We have been working to define a certification program for 60 GHz. With 60GHz you get data rates that approach 7 Gbps - albeit over a shorter distance of course.

I've had the opportunity to see a few demonstrations of early implementations of 60 GHz and found them to be quite compelling. Here is a terrific solution to transmit uncompressed video, a truly compelling solution for wireless docking, the promise of virtually latency-free video game experiences, and more. End users want the Wi-Fi Alliance seal of approval to buy a technology with confidence and we are tremendously excited about the potential of 60 GHz.

**VH:** OK, then let's finish by looking at what new ways consumers will use Wi-Fi in the next 3-5 years?

The next three to five years will bring lots of innovation. Analysts we work with frequently paint a picture of the Wi-Fi family of technologies - Wi-Fi CERTIFIED 802.11n, 802.11ac, and our certified 60 GHz solution - as a compelling unified portfolio to reach a wide range of applications on more than a billion new devices a year. We believe this roadmap is going to take users to places they really haven't even envisioned quite yet, ranging from Wi-Fi-connected cars and appliances, to notebooks and mobile devices with no need for bulky I/O ports, to incredibly fast multimedia connectivity. The future is bright for our industry and it's a thrill to be a part of it.

*Under Edgar Figueroa's leadership, the Wi-Fi Alliance has steered an unprecedented period of market growth, and Wi-Fi has become the most popular and diverse connectivity technology. Edgar defined the Wi-Fi Alliance program development framework, and forged numerous strategic partnerships to facilitate the penetration of Wi-Fi into mass markets worldwide. He is a tireless champion of the power of collaboration. Previously, Edgar was involved in telepresence at Ridgeway Systems (now the Tandberg division of Cisco), and held product management and engineering roles at 3M Company. He is a veteran of the United States Navy, and taught at the University of Texas and at Austin Community College. Edgar is a graduate of the University of Texas at Austin and holds degrees in Mathematics, Mechanical Engineering, and Technology Commercialization.*

## INCISOR TV

### Video presentations

When it comes to assessing what is really going on in the market, there is no substitute for seeing products in action and hearing 100% accurate information from the people at the sharp end. Incisor TV provides that insight.

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- [Ofcom speaks out for white space](#)
- [Incisor.TV Ultra Low Power Roundtable](#)
- [CES 2012 - Best Bluetooth of CES](#)
- [4iiii Innovations shows ANT-based sports and fitness solution](#)
- [New industry SIG - Weightless for white space](#)
- [Neul whitespace launch event](#)
- [Bluetooth SIG All Hands, Mike Foley keynote](#)
- [Bluetooth SIG AHM, Bluetooth Ecosystem teams](#)
- [Bluetooth SIG AHM, Board of Directors panel](#)
- [IncisorTV at CES 2011 - Bluetooth Best of CES](#)
- [IncisorTV at CES 2011 - Day 2](#)
- [IncisorTV at CES 2011 - Day 1](#)
- [Rococo discusses LocalSocial](#)
- [Bluetooth High Speed Technology](#)
- [Frontline - Interoperability testing](#)
- [Bluetooth SIG BETS programme](#)
- [Frontline - BPA500 protocol analyser](#)
- [Aftermarket Bluetooth versus Factory fit](#)
- [Who needs stress? Says Jabra](#)
- [EnOcean Alliance - energy harvesting technology](#)
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- [WiMedia special - UWB - a high performance solution / part 1](#)
- [WiMedia special - UWB - a high performance solution / part 2](#)
- [WiMedia special - WiMedia and Bluetooth](#)



# Keep taking the tablets

By Tim Phipps, Wireless Business Developer, Cambridge Consultants  
Jon Edgcombe, Digital Security Lead, Cambridge Consultants

**With one of the largest independent wireless development teams in the world, Cambridge Consultants has a pedigree of creating 'world firsts' in wireless communications, including the healthcare sector. In this edition of Incisor, we look at what is happening with wireless connectivity in healthcare – and whether Wi-Fi will go on to dominate this market.**

The most dramatic uptake of wireless in healthcare has been in the area of electronic health records, with doctors and physicians being given 'tablet' computers like the iPad and its Android and Microsoft equivalents. This allows wireless access to the hospital information system for browsing data about patients whilst working on the move within the hospital building. There are great benefits to be gained from workflow efficiencies and the ability to care for more patients more accurately. So, the simple winner seems to be Wi-Fi for ubiquitous access throughout hospitals.

There is, however, a tradeoff to be made between ease of wireless access and the associated security risk. The risk of security breaches becomes particularly sensitive because wireless attachment does not come with any physical barriers to prevent access to networks, and the data is especially personal and important to the individual patient. The key question is one of how to authenticate the user, so that you don't have to trust the device. Imagine the situation where a casual hacker can arrive at a hospital with their own tablet device and gain access to the wireless network.

One industry which has run up against this problem is the finance sector, where they have succeeded in ensuring a bank does not have to trust the machines that are used with its cards – and secure websites where the website owner does not have to trust the consumer's router. Given the universal nature of healthcare provision,

will the usual answers from these other industries still apply?

Once disruptive digital technologies have been rolled out, the 'state of the art' in security assurance is remarkably consistent across all industries – a two-factor approach to authentication. What this means is that, to authenticate a user, two options are picked from the usual suspects: something you have (a smartcard or secure token), something you know (a password, pass-phrase or an answer to a question) or something you are (a biometric such as a fingerprint or iris scan).

In the healthcare environment, especially in home health, you can imagine some new security scenarios which will be raised by the need for non-professional and vulnerable users to access the system. For example, if you would like a dementia

patient to have authenticated access to their healthcare records, these standard pillars of security might turn into the rather less useful 'something you've lost', 'something you knew once' or even, for a patient who's just had a cataract removed, 'something you were'. While the concept of two-factor authentication still stands, perhaps some new options are required.



A couple we suggest that are becoming increasingly possible with new technologies:

- 'Something you want' – exemplified by the gesture made when you actively extend a short-range 'near field communication' (NFC) device to another (as in mobile payments). The important security change is that this signifies 'user intent', which removes some of the security problems traditionally associated with promiscuous wireless pairing.
- 'Somewhere you are' – with the increased possibilities of indoor location tracking, it could be a simple step to say 'you've made it into the home of the patient, so you can see the schedule for the patient's medication'.

While these two new mechanisms both rely on underlying solved problems in digital and physical security (end-to-end digital authentication and swipecard, or even lock-and-key access), they and others like them might be the ticket to keeping healthcare universal for all in the digital age.

So what's the winning technology? Well, obviously Wi-Fi has a big part to play, but look for a short-range wireless technology (like NFC) for authentication.

The other emerging issue for healthcare is the cost of drugs and the need to gain greater control over the benefits of putting a patient on a drug regime. Traditionally drug delivery has been based around paper prescriptions and mechanical drug delivery devices. Change in this highly regulated field is just emerging but it is already obvious that the new winners in this valuable market sector will be the companies that best use electronics to manage the whole of the drug ecosystem from prescription, through drug delivery, to the monitoring of compliance. And wireless will have a part to play in these potentially high-volume applications.

Firstly, we can see that prescriptions are likely to become electronic. The obvious benefit would be an easy-to-read-and-understand description of what you're meant to do. There are some nice additions like the ability to schedule reminders and prompt for action at the right time. Secondly, the monitoring of compliance will become electronic. Currently doctors have very little information about what patients actually do in response to a prescription. The doctor can ask but evidence suggests that patients are not able to give accurate feedback when reporting their compliance.

There is still uncertainty in this market about the best wireless device to run the

electronic prescription and monitoring service. We see two choices – a smartphone or a custom-designed wireless device.

The smartphone is a device the patient already understands and wants to own and use. The smartphone will always have the latest wireless connectivity built in, and we've even seen remarkable progress towards Food and Drug Administration approval of medical applications on the iPhone. But how do you maintain medical software applications for a fragmented and fast-moving set of technology platforms?

As an alternative, a dedicated wireless device can be tailored to meet a very specific set of user requirements, giving a well-understood path to medical approvals. But the manufacturers will have to commit to an expensive product development without any certainty about what requirements the market will ultimately expect.

Which technology will win? The likely winner in this sector is around Bluetooth low energy (BLE) – its ultra-low power consumption matches the application area well. But the big news is the recent inclusion of BLE on the iPhone, which gives the option to connect wireless medical devices to applications and the internet.

Wireless is gaining acceptance rapidly in the healthcare sector. Wi-Fi will be one of the key technologies but we still need to pay particular attention to the need for secure authentication and the need for low-power connectivity.

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## Cambridge Consultants Blogs

**Why are we blogging?** We believe that the technology market is much better when it is highly connected, and social media is a fantastic tool that instantly connects people who face similar challenges, irrespective of whether they are budding entrepreneurs running their first high growth start up company or a captain of industry in charge of a global bluechip company. So, if you'd like to add to the debates, please feel free to comment on any of our blogs. It would be great to hear from you.



Patrick Portage  
Marketing  
Communications  
Director  
Cambridge Consultants.

### Corporate Blog

Our corporate blog covers new product development, open innovation, accelerating start up companies and other topics that involve using innovation to achieve market leadership, along with technology stories that we hope you will find interesting/

### Consumer Products Blog

Topics include connected devices, beverage dispensing, eco innovation, new product introduction (NPI), open innovation, novel control interfaces and other topics related to our development of innovative consumer electronics, domestic appliances and fast moving consumer goods.

### Wireless Medical Blog

Examining mobilehealth and telehealth technology ad market challenges, this blog provides insight from implantable and hospital communications to consumer health applications.



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# Marvell introduces 802.11ac mobile MIMO combo wireless solution

**Marvell has announced the Avastar 88W8897, a low-power 802.11ac combination radio chip that the company says will improve the mobile computing and high-definition multimedia experience for consumers. Marvell claims that the Avastar 88W8897 is the industry's first 802.11ac 2x2 combination radio chip (TI might disagree – see story below), pairing near field communications (NFC) and Bluetooth 4.0 with mobile multiple input multiple output (MIMO), transmit beamforming and support for the new Wi-Fi Certified Miracast standard - the Wi-Fi Alliance's certification program for Wi-Fi devices to support display applications - once it becomes available. Marvell is aiming the new chip at ultrabooks, tablets, gaming consoles and smart TVs.**

For those not up to speed with Miracast, this latest offering from the Wi-Fi Alliance, based around 802.11ac, uses two channels – a conventional 2.4GHz channel to manage network packets, and a separate 5GHz channel that will allow users to stream the display of a laptop or tablet onto a large screen at the same time as surfing the web, doing email etc.

Miracast, by the way, won't be published until August, but both Marvell and TI are out and about pushing their solutions.

Unlike TI, which is majoring on Miracast as a phone technology, Marvell is focusing on an Always On, Always Connected (AOAC) wireless experience, stating that this is what consumers want. When paired with

ultrabooks, the 88W8897 is designed to enable this constant connectivity, keeping e-mail, social media and digital content up-to-date even when a device is in standby mode – a capability lacking in legacy notebooks. Marvell is suggesting that by coupling its full Wi-Fi offload solution with Windows 8 features such as Wake On Wireless functionality and connected standby, the 88W8897 chip will deliver the AOAC computing experience.

Weili Dai, Co-founder of Marvell told Incisor, "Wireless connectivity is a critical pillar in supporting the always-on lifestyle. Optimized for the next generation of smart devices in the home and office, the Avastar 88W8897 not only enhances the performance of current consumer electronic devices, but also enables a plethora of new applications and innovative products in mobile commerce, digital entertainment, healthcare and electronic security. I believe the world's first 802.11ac mobile MIMO combo solution with NFC from Marvell will fundamentally change the wireless landscape and truly enable the entire spectrum of always-on consumer products."

Dai claimed that the 88W8897 is the only chip that increases throughput with 802.11ac technology while simultaneously leveraging NFC to enable tap-and-go wireless capabilities. Additionally, he suggested, the 88W8897 system-on-a-chip (SoC) offers the highest level of integration available, which enables a rest of bill of materials (RBOM) footprint

reduction of 40-to-50 percent and cost reduction of 75 percent compared to previous wireless solutions.



## TI's adds support for Miracast experiences with display over Wi-Fi

Texas Instruments (TI) has also announced availability of a complete solution for mobile devices designed to support Miracast, based on the Wi-Fi Alliance Wi-Fi Display Specification, enabling users to display full high definition (HD) content from a mobile device onto a larger screen over a secure, low-latency, wireless network connection.

As we mentioned in the Marvell story above, TI's take on Miracast sees it expanding on the wired HDMI external display and Wi-Fi

Direct capabilities in Android. TI told Incisor that it's plan is to deliver a rich experience for the Android platform that will enable mobile device manufacturers to rapidly integrate wireless casting into products. TI will deliver the hardware and software resources to Android device manufacturers to fully leverage Miracast capabilities into differentiated user experiences.

TI is apparently participating in the creation of the Wi-Fi Alliance Wi-Fi Display

Specification and is taking a role in making it the de-facto casting technology of mobile screen content to larger displays. In standard Wi-Fi industry practice, TI is working with customers to introduce Miracast-certified products to the market now, and expects its solution to be Wi-Fi Certified for Miracast when certification is available later this year.

# high speed wireless news



## Wi-Fi ANT+ bridge

Developed by U.S. electrical engineering specialist North Pole Engineering and targeting OEM sports & fitness and wellness product manufacturers, the WASP is a portable standalone unit that aims to bridge the gap between Wi-Fi networks and ANT+ devices by allowing data from up to 60+ ANT+ sensors (which can be further increased by using more WASP units) to be collected and transferred to the Internet via a low cost Wi-Fi link in applications such as gym classes, group sports, and remote home health monitoring

The WASP employs a Nordic nRF24AP2-8CH 8-channel ANT Connectivity IC (integrated circuit or 'chip') and essentially receives data from connected ANT+ devices at up to 1Mbps and translates the data into Wi-Fi packets, making it available to any Wi-Fi (IEEE 802.11 b/g/n) connected device. The WASP can also create its own 11Mbps Wi-Fi network and so can, according to Nordic, be used outdoors powered by an internal rechargeable lithium-ion battery for up to 6-hours even in its most power-hungry continuous scan mode.

Joe Tretter, VP of Engineering at North Pole Engineering told Incisor, "ANT+ wireless sensors are usually only designed to communicate out to about 3m so have traditionally had to be tied to some kind of hub device such as a sports watch or USB stick to collect data. With the WASP you can move that ANT+ data straight to the Internet or some other end-point - such as a smartphone or tablet - using a low-cost Wi-Fi network."

In operation the WASP has a single (screen) button on its interface that users push to join a pre-configured Wi-Fi network and if, for any reason, the WASP can't join that network (a possible scenario in real-world operating environments) - they simply push the button again to instruct the WASP to create its own Wi-Fi network.



It will then receive data automatically from any ANT+ device within the vicinity and send that to the Internet. And if it can't connect (another real-world possibility) it will store the data within its 16-Mb internal memory and transmit it once it regains Internet access.

## Netgem expands into the mobility market

Netgem, which provides connected home entertainment solutions to multiservice operators, has acquired PlugnSurf, a Paris, France-based company that has developed and marketed the WOBE. This is claimed to be the first mobile connectivity device to incorporate a patented technology for automatic off-loading between mobile data (3G/4G) and Wi-Fi networks.

Netgem told Incisor that the integration of PlugnSurf will expand its existing product portfolio and allow the company to help telecom operators optimize their investments in mobile data networks. The Wi-Fi off-load technology patented by PlugnSurf is intended to alleviate the growing congestion on mobile networks, particularly for video streaming.

Netgem will finance this transaction on its own balance sheet. Christophe Aulnette, Netgem's CEO told us, "With the acquisition of PlugnSurf, we welcome a dynamic and experienced team, with first-hand knowledge of the needs and expectations of mobile operators. This team has developed and brought to market with limited resources an innovative solution which is a natural extension of our offer to telecom operators".

A PlugnSurf spokesperson commented that that acquisition was timely, as the main global mobile operators are finding that mobile data consumption is skyrocketing, and the need for offload technology is becoming acute.



## Redpine Signals gains gong

Redpine Signals is a recipient of Red Herring's Top 100 Americas Award, an accolade honouring the year's most promising technology companies from the Americas.

Redpine is an established wireless and machine-to-machine technology company that creates chipsets and modules for emerging RF environments at home, in the enterprise and on the go. It's recently announced Quali-Fi 802.11ac is intended to enhance the user experience in the multimedia streaming, cloud-based services and "Internet of Things" markets.

Red Herring's editorial staff evaluated the companies on both quantitative and qualitative criteria, such as financial performance, technology innovation, management quality, strategy, and market penetration.

Venkat Mattela, Chairman and CEO of Redpine told Incisor, "By focusing on our R&D instead of developing silicon over the past decade, we're able to provide highly differentiated products. This recognition validates the effectiveness of our market strategy. We feel privileged to be selected as a winner of this award, and look forward to continuing to expand into new markets by delivering the cutting edge wireless solutions."

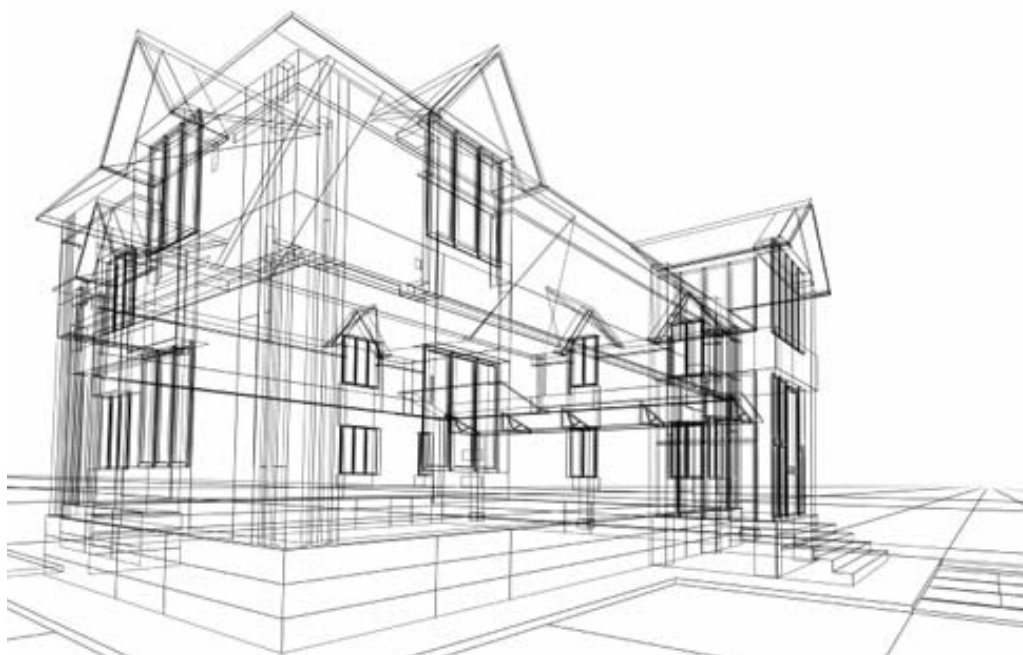
# Home energy management market will exceed US\$9billion within 5 years

**More than 100 million smart meters will be deployed with integrated HAN ('home area network') gateways in the next five years, according to IMS Research.**

An integrated HAN gateway enables communication between the smart meter and devices within a home energy management system (HEMS), such as an in-home display or smart appliance (once these are more widely available), generally using a communications solution which is discrete to the WAN/HAN solution. For example, in the United States, where integrated HAN gateways have become commonplace (despite many not being activated/enabled by the utility company), most smart meters are deployed with a fixed RF mesh solution for the backhaul network (e.g. smart meter to concentrator) and often ZigBee (a standardized RF mesh technology based on IEEE 802.15.4) for the HAN solution.

Like the approach to the deployments of smart meters themselves, the inclusion of a HAN gateway is typically very country-specific and legislation-driven. Even where there is a common framework, actual deployment strategies vary. For example, EU regulations require the deployment of smart meters to most consumers within the next eight years (EU regulation 2007/72/EC). However, it is up to EU Member States to determine their own implementation strategies. As a result, approaches vary widely.

Lisa Arrowsmith, senior analyst with IMS Research, told Incisor, "At one extreme, there are countries such as Italy, the first in Europe to start to deploy smart meters full-scale. Here, there's been a penetration rate of more than 90 percent of households for a number of years. However, the main focus at this stage was not on developing HAN solutions, and the smart meters were deployed without integrated HAN gateways. As a result, the Energy@Home Initiative (formed by Electrolux, Enel, Indesit and Telecom Italia) is working to develop a common system which can 'retrofit' these smart meters with HAN gateways, most likely via a powerline-ZigBee gateway, to give home energy management systems access to consumption data and other information available via the AMI network. This is an example of a very commercially-



driven approach to deploying HAN solutions and home energy devices."

Conversely, in countries such as the United Kingdom, the Government has not only required that smart meters be deployed with integrated HAN gateways, but also compatible in-home displays (IHDs) are set to be deployed concurrently. Similarly, the other side of the world, the Victorian Government in Australia has mandated the inclusion of integrated HAN gateways, and is set to offer subsidized IHDs to smart meter customers. Arrowsmith continued, "As a result of legislation such as this, IMS Research' recent study The World Market for Smart Home Energy Management Systems projects that annual global shipments of IHDs will grow from around two million units last year, to more than 13.5 million units in 2015. However, where there isn't legislation, IHDs are set to face competition from 'soft' displays, where electricity consumption information is instead displayed on existing screens, such as tablet PCs, cellular handsets, and even TVs."

Elsewhere in Europe there are difference approaches to integrated HAN gateways. France is an interesting example, where the smart meters (or 'Linky' meters, as they are

termed in France) are deployed without an integrated HAN gateway, but with a common port to enable the retrofit of a communications module.

Arrowsmith concluded, "There is growing momentum behind not only deploying smart meters with integrated HAN gateways, but also towards retrofitting existing smart meter installed bases with the functionality to participate in energy management systems. Yet there are still a number of barriers stopping the widespread uptake of home energy management systems to communicate with these HAN gateways. These include the lack of widespread incentives, such as dynamic pricing tariffs, the immaturity of utility plans for demand-response programs, and the fact that many utility companies – particularly in the United States – have not enabled HAN gateways, even where they are installed in the field. Despite this, a range of factors, including the growing availability of dynamic pricing, as well as the involvement of a range of commercial organisations, such as telecommunications companies, consumer goods providers and even security providers, are set to drive the market for home energy management systems to over US\$9 billion over the next five years."

## Z-Wave Alliance announces 650th certified product

The quixotic burghers of the Z-Wave Alliance tell Incisor that they have certified their 650th product. The ZRC-100 Portable Controller from Remotec Technology Limited provides control of door locks, lights, alarm systems and other home control devices without requiring a smart phone, tablet, Wi-Fi, or an Internet gateway.

The ZRC-100 utilizes the same AES128 encryption standard used for on-line banking, as well as in Z-Wave enabled alarm panels, door locks and other secure devices. This feature, we're told, makes the ZRC-100 suitable for any application where security and ease of use are essential, such as care for the aging and mobility impaired, as well as small businesses, hospitality environments and remote/local alarm management.

Remotec Managing Director Paul Cheng told Incisor, "The ZRC-100 portable controller seamlessly controls any and all Z-Wave certified devices from any manufacturer – door locks, window shades, lighting, sensors and more".

If our readers are wondering why we label the 160 member Z-Wave Alliance 'quixotic', it is because it fills its press releases with super-confident, 'we rule the world' statements such as '... extends leadership of wireless control market', '... the world's largest interoperable ecosystem for wireless home control products and services' and '... the rapid worldwide growth of the Z-Wave wireless control ecosystem as the key enabler in the "Internet Of Things"', and yet, when Incisor and it's writers invite the Alliance to help promote Z-Wave technology, it backs away. It's hard to fathom why the rhetoric isn't supported beyond the 2 dimensional press release. Perhaps the press release writer ought to offer confidence lessons to his client?

## TI demos ZigBee Light Link at Computex

Texas Instruments (TI) is supporting the first demonstrations of the new ZigBee Light Link standard on its CC2530 ZigBee system-on-chip (SoC). ZigBee Light Link standardizes wireless networked LED lighting systems, aiming to make them easier to install, manage and operate than previous closed proprietary systems. TI's CC2530 is a certified Golden Unit for ZigBee Light Link.

TI's ZigBee Light Link demonstrations during Computex Taipei showcased a complete LED light management system using a smartphone, low cost gateway and LED devices. Direct lighting controls were shown using an Android smartphone outfitted with a microSD card that integrates the CC2530 SoC to control lighting directly. The second demonstration used an Android smartphone connected to a low-cost gateway (a CC2531 ZigBee USB dongle attached to a BeagleBone, the Sitara AM335x ARM Cortex-A8 processor-based open-source community board) to control and monitor ZigBee lighting and other devices.

The CC2530 ZigBee SoC is available now from TI and through authorized distributors.



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# white space/4G/m2m news



## Small cells and Wi-Fi to dominate mobile traffic

A new report from Juniper Research has found that while the level of data delivered to mobile devices is expected to continue to expand dramatically over the next five years, service providers will offload nearly 60% of traffic in that period. According to the report, service providers are increasingly seeking to reduce the strain on their network caused by the proliferation of connected smart devices by deploying their own Wi-Fi hotspot networks and offering small cell solutions to end-users.

The report notes that while small cells were developed primarily to enhance network coverage, service providers are increasingly offering them as an offload solution and integrating them with Wi-Fi technology within a single unit.

Additionally, the report observed that major public events would result in significant "spikes" in mobile data usage in those areas, requiring service providers to provide substantial extra capacity on an ad hoc basis. In this regard, Juniper cited the high-density Wi-Fi networks being deployed at sporting venues and tube stations for the London 2012 Olympics as a critical pre-emptive measure to alleviate potential problems.

Other key findings included small cells accounting for a steadily increasing proportion of offloaded data over the forecast period, reaching over 12% by 2016, and North America and Western Europe accounting for over 75% of global mobile data offloaded throughout the five years



## Cellular M2M connections in the retail industry surpassed 10 million in 2011

The number of cellular M2M connections in the retail industry reached 10.3 million worldwide in 2011, according to a new research report from Berg Insight. Cellular M2M technology enables devices such as POS terminals, ATMs and ticketing machines to be used at new locations where fixed line connectivity is unavailable or impractical. The technology has a more transformational effect on markets such as vending and parking, where machine operators need to reorganize their operations in order to benefit from the availability of real-time information. Berg Insight forecasts that the number of cellular M2M connections in the global retail industry will grow at a compound annual growth rate (CAGR) of 21.6 percent during the next six years to reach 33.2 million connections in 2017. Shipments of cellular M2M devices for retail applications will at the same time increase at a CAGR of 10.7 percent from 5.2 million units in 2011 to 9.6 million units in 2017.

Lars Kurkinen, Telecom Analyst, Berg Insight told Incisor, "POS terminals will constitute the lion's share of cellular M2M connections in the retail sector throughout the forecast period" says. "But the penetration rate for cellular connectivity is today actually highest in the multi-space parking meter segment where it is well above 30 percent."

## Weightless SIG blog

### Government investment in infrastructure



By William Webb, CEO, Weightless Special Interest Group

There has recently been discussion in Government and financial institutions as to whether the UK should make a greater investment in infrastructure in order to boost growth within the country. When infrastructure projects are mentioned most think of roads, bridges and train tracks, but communications infrastructures are just as important a component of the country as are transport infrastructures – indeed perhaps more so. This has not gone unnoticed by all, and some have suggested that the UK should invest more in high speed broadband connectivity, both fixed and increasingly mobile. However, these infrastructures already exist, at least in part, and are actively being rolled out by fixed and mobile operators. The case for Governments intervening to speed this rollout is unclear, although subsidies for extending deployment to rural areas may be sensible.

An alternative would be to invest in an Internet of Things (IoT) network covering the UK. This might start out as localised smart city deployments and then potentially extend to the rest of the country. The case for doing this is strong. Firstly there is no such infrastructure or any immediate plans for deployment hence government investment would not be competing with private investment. Secondly, a smart city is inherently a Government project in just the same way as a new sewer system for the city would be, so without government investment it may never happen. Thirdly, an IoT would do more to stimulate growth and innovation than many other forms of investment, especially as much of the technology such as Weightless is being developed by UK companies. Finally, the investment required might be quite modest. Providing a network covering a city might only cost a few millions of pounds, much less than the billions typically required to build a new train line.

If the funding was not directly available then the Government might consider using some of the likely proceeds from the forthcoming spectrum auctions. Predictions suggest that over £1bn might be raised from the 800MHz auction. Recycling some of these proceeds back into telecoms to deliver a better infrastructure for all would seem a fitting way to make use of part of the revenue.

Infrastructure projects need not all involve heavy lifting – some could be Weightless



*Weightless is the body behind the industry-leading Weightless machine-to-machine communications standard for white space spectrum. White space is the unused and underused parts of the wireless spectrum. For example, around the world many TV channels are left vacant in most locations. White space technology opens up these channels and will also allow underused frequencies within other UHF licensed and unlicensed bands to be used efficiently for wireless communication.*

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# white space/4G/m2m news



## Telefonica UK and Jasper Wireless partner for M2M connected devices

While the Weightless community promotes white space as the de facto spectrum choice for machine-to-machine (M2M) connectivity, others are continuing to develop around the traditional cellular networks. Incisor has learned that Telefonica UK, which operates the O2 cellular network and brand, has partnered with Jasper Wireless to deploy a new platform for the management of M2M connections. The cloud-based management platform will enable Telefonica UK customers to roll out connected devices, manage them in real time and deliver global support. The platform is already operational and is currently being utilised in a number of projects.

Jasper Wireless' Control Centre is a software-as-a-service (SaaS) platform that provides customers with global visibility of all SIMs connected to the mobile network. It allows customers to distribute connected devices with self-service tools for provisioning, real-time diagnostics and usage controls. It also provides intelligence with a live view of how devices are connecting to and using the mobile network.

This new capability will allow both organisations to bring to market M2M applications and services - including vehicle telematics and smart metering. The partnership is part of a global strategy, started in Spain, where Telefónica already provides global M2M connectivity thanks to this agreement.

Gilli Coston, Head of M2M at Telefónica UK told Incisor, "The UK is seeing strong M2M growth as the Telefonica UK M2M team supports the development of the ecosystem and the development of new solutions within the "Internet of Things" such as Smart City deployments. As a result, we are witnessing a myriad of new connected devices from vendors and partners across every industry. With Jasper's platform we can capitalise on this growth, providing our customers with enhanced services, such as instant activation, real-time diagnostics tools, and detailed billing and usage reports, which in turn allows us to guarantee exceptional customer support."

The two companies are offering a Telefonica UK M2M "Try and Play" kit, more details of which can be found at their respective web sites.

For the non-cellular M2M option, check out Incisor's recent [white space special feature in our April issue](#), and also [the series of Incisor.TV movies created on behalf of the Weightless Special Interest Group](#).

## 7Layers selects Anite for LTE device testing in the USA

Anite, which deals in wireless device testing technology, has announced that the 7Layers group of independent test laboratories has selected Anite's LTE device test solution for its conformance and operator acceptance testing in the U.S.

7Layers' customers, targeting the U.S. market, apparently expressed their preference for the test laboratory to use Anite's LTE device test solution as it offers test coverage for both PTCRB/GCF conformance and carrier specific testing. This is of special value for the North American operators presently driving the roll-out of LTE services. 7Layers selected an Anite LTE system to extend the capability of its testing laboratory in Irvine, California. Anite's LTE protocol system will help 7Layers ensure that its customers qualify for and comply rapidly with the certification programs of North American LTE operators. 7Layers has been working with Anite for over ten years, providing validation endorsements for Anite's test systems to industry bodies such as PTCRB and GCF, and using Anite's 2G and 3G device testing solutions at a range of its global facilities.

David Bissonette, CEO at 7Layers Inc told Incisor, "7Layers has been instrumental in driving forward the industry test regimes in North America, working at the forefront of LTE device certification. The LTE market in the U.S. has exploded and there is a huge increase in demand for conformance and operator acceptance testing. By adding Anite's LTE device test solution to our current range of LTE test-equipment, we can enable our customers to have their mobile devices tested much more quickly and consequently accepted earlier by leading carriers".

## Snippets

### Average price of tablet PCs declining

According to recently released figures in the IMS Research quarterly tablet PC tracker, tablet ASPs (average selling prices) have declined by 21 percent in a single year to \$386 in the first quarter of 2012.

The decline in price reflects intense competition in the tablet PC market. With the release of the new iPad, Apple reduced the entry price of the iPad 2 to \$399. This lower price has meant greater price pressure on its rivals, forcing them also to reduce price to make their products competitive.

### Smart TV Surges in Popularity Worldwide

Over one-quarter of TVs shipped during Q1'12 were equipped with internet connectivity, as reported in the new NPD DisplaySearch Quarterly Smart TV Shipment and Forecast Report, which tracks connected and smart TV shipments by brand, region, display technology and screen size. Approximately 27% of TV sets shipped worldwide had internet connectivity, led by Japan, where 46% of sets had networking capability, and Western Europe with 36%. In a good example of how internet entertainment is developing rapidly in emerging markets, China followed closely behind Western Europe with 32% of sets that shipped having internet functionality.

### Microsoft to produce its own tablet, compete against its own customers?

As this issue was going to press, a rumour was circulating that Microsoft was about to tell that world that it will manufacture its own tablet PCs, the intention being to allow it to compete with Apple's iPad. This may well position Microsoft better in its race with Apple for global domination, but doesn't this also put the company into direct competition with its customers, the ones that make PCs that run on Windows?

### ZigBee vendor sees rapid growth

GreenPeak Technologies, an ultra-low power RF semiconductor company, boasts that its 2012 year-to-date shipments have already doubled the volumes from 2011, and that it is one of the fastest growing technology providers for the ZigBee market, addressing an overall multi-billion market opportunity. GreenPeak's ZigBee-based gateways and set-top boxes are being sold to operators to offer new services in the Internet of Things market like security, home care and energy management.



# white space/4G/m2m news



## Small cell cellular base stations mushroom

According to a new research report by Berg Insight, the installed base of small cell cellular base stations increased to about 2.2 million units in 2011. Growing at a compound annual growth rate (CAGR) of 44.8 percent, the installed base is forecasted to reach 14 million units in 2016. Small cells encompass a range of low power cellular base stations including femtocells, picocells and microcells with gradually higher output power and capacity in terms of simultaneous users. Small cells are designed to complement the base stations forming the cellular macro network by providing enhancements in coverage and capacity in locations such as homes, offices and public venues.

Mobile operators are experiencing fast growth in mobile data and signalling traffic, says Berg, as customers increasingly use mobile computing devices. Adoption of smartphones is rising and more subscribers use multiple connected devices such as PCs and tablets. André Malm, Senior Analyst, Berg Insight told Incisor, "Total mobile data traffic in cellular networks have more than doubled every year since 2007 and is forecasted to grow at a compound annual growth rate (CAGR) of more than 60 percent from 2011 until 2016." He added that mobile operators need to use a combination of approaches to meet the rising demand for data traffic, including acquiring more spectrum, using increasingly advanced radio air interfaces, making the macro layer denser by installing more base stations in traffic hotspots, as well as introducing heterogeneous networks (HetNets). HetNets are composed of multiple radio access technologies, architectures, backhaul solutions and base stations of varying transmission power.

Using Wi-Fi technology that relies on unlicensed spectrum is an increasingly attractive option for mobile operators. Virtually all new smartphones now have Wi-Fi connectivity as standard and a majority of smartphone owners use Wi-Fi at home. However, using Wi-Fi in smartphones to access public hotspots can often be difficult. Mobile operators can facilitate Wi-Fi offloading by introducing connectivity management software that identifies Wi-Fi hotspots and authenticates the user automatically. "The user experience will soon improve as new standardisation and interoperability efforts aim to make the network selection and user identification process seamless" Malm concluded.

## Huawei and ZTE remain on top of 2011 mobile broadband modem market

The computing and mobile consumer electronics world is decidedly more connected after 2011, says ABI Research, which reports that more than 132 million modems shipped worldwide in 2011 for use in personal computing (PC) and consumer electronics (CE) applications.

These modems utilize mobile broadband technologies (commonly marketed by network operators as 3G and 4G) and come in four distinct form-factors: PC cards, USB sticks, embedded modem modules, and mobile hotspot routers.

PC cards, which used to be the primary way to attach a modem to a laptop computer, have all but been supplanted by the convenience and ubiquity of the USB port interface. USB modems have driven mobile broadband modem volumes since 2006 and continued to

lead with more than 97 million shipped during 2011.

Embedded modem modules experienced the largest year-over-year form-factor growth at 58%. The rapid uptake of media tablets by early technology adopters has pushed the module segment forward compared to the sluggish attach rates from laptop computers. Mobile hotspot routers that enable multiple Wi-Fi devices to connect to a single mobile data radio are holding their own with 45% year-over-year growth in 2011.

ABI practice director Jeff Orr told Incisor, "A handful of countries, led by Japan, saw an industry first in 2011: more mobile hotspot router shipments than USB modems. We expect this trend to continue in the Asia-Pacific region and be joined by North America and Western Europe starting in 2012."

China's Huawei led all modem vendors in 2011 with 47% of all worldwide shipments. The company has retained its lead since 2007. Fellow China-based supplier ZTE continued to hold the number two market share for the fourth straight year at 30%. The rise of always-connected mobile computing and CE devices was reinforced with module vendors Apple (iPad family of media tablets) and AnyDATA (Amazon Kindle e-reader) holding the number three and four rankings, respectively. The mobile broadband modem market remains poised for continued success through 2017 with ABI forecasting a CAGR of 15%.

# low energy wireless news



## Shipments of NFC-ready POS terminals doubled in 2011

Berg Insight is reporting that the market for NFC-ready POS terminals grew 'fiercely' in 2011 with annual shipments doubling to an estimated 2.5 million units worldwide. The rapid growth was driven, Berg believes, by a transition in the NFC-payments ecosystem from performing trials to accelerating the rollout of NFC-ready payment infrastructure, in preparation for the arrival of NFC-based mobile payment services. Berg forecasts that the global installed base of NFC-ready POS terminals will grow at a compound annual growth rate (CAGR) of 49.4 percent from 3.9 million units in 2011 to 43.4 million units in 2017. This corresponds to an increase in the penetration rate from 8 percent in 2011 to 53 percent in 2017. The penetration rate is projected to be highest in North America where an estimated 86 percent of the terminals will be NFC-ready by 2017. The penetration rate in Europe and the rest of the world will be 78 percent and 38 percent respectively.

Berg Insight predicts that the emergence of mobile wallet services will be the most significant development in the payments industry during the next few years. The analyst firm also looked at the use of mobile payments in market segments such as vending and parking, and observed that in the parking market a growing share of transactions are initiated from mobile phones instead of parking meters. This development is pushing major parking meter vendors to diversify into the pay-by-phone parking market. Berg believes that SMS-based payments for vending are gaining momentum in some parts of Europe. An example is Selecta, the leading European vending operator, which

recently rolled out SMS-payments to all of its public vending machines in Switzerland.

## Catchwell and Stollmann bring NFC to industrial ecosystems

German company Stollmann, which builds protocol stacks and communication products for NFC, Bluetooth, and ISDN is integrating near field communication (NFC) in upcoming product solutions and devices from Catchwell. NFC will be used as a smart extension to the product line, enabling either payments with mobiles/cards or security access.

Stollmann told Incisor that the modular concept of its NFC stack, which supports different OS and NFC controllers, enables Catchwell to deliver a flexible solution to its customers using standard NFC Forum operations or full access to legacy services. The solution is based on the Android operating system as well as Microsoft's mobile version of Windows, Windows Mobile 6.5. The main goal of the project is apparently to deliver field proven NFC operational modes on an easy to adapt and abstract API, while Catchwell in turn is focusing on compatibility and quality in support a broad range of devices and smart cards.

Christian Andresen, head of Stollmann's NFC business unit told Incisor, "With the Catchwell project, NFC is moving into industrial use, where no NFC subsystem is present today. This project is a reference for NFC in other ecosystems like mobiles, dealing with all existing challenges starting from antenna design up to API access for the applications."

## G&D and NXP Sign Mifare licensing agreement

NXP Semiconductors and security specialist Giesecke & Devrient (G&D) have announced an agreement enabling G&D to integrate NXP's Mifare technology into its portfolio of secure SIM products. With the new Mifare DESFire and Mifare Plus based SIM cards, including backward compatibility to Mifare Classic, G&D can support mobile network operators with NFC solutions for mobile ticketing as well as mobile payment capabilities.

NXP claims that Mifare is the most widely used technology platform for contactless applications on the market today, and that it is accessible through more than 50 million contactless readers and terminals across the globe. Public transport operators of more than 650 cities worldwide have selected Mifare's open architecture platform, reaching 1.2 billion people that experience the convenience of Mifare every day.

Axel Deininger of G&D's Secure Devices division told Incisor, "The strong presence of Mifare in public transit and other key applications mandates that G&D enhances its SIM offering with highly demanded functionality. With the Mifare functionality, we can provide a broad variety of instantly deployable use cases for our MNO customers."

NXP and G&D are both members of the Mifare4Mobile Industry Group and contribute to the development of a uniform concept of managing Mifare based contactless applications on NFC enabled secure elements, such as SIM cards.

## events



| DATE                   | EVENT                               | LOCATION  | NOTES   | LINK  |
|------------------------|-------------------------------------|---|---|---|
| August 7 - 8<br>2012   | Wi-Fi Smart Energy Forum            | Hyatt Regency Chicago O'Hare, Rosemont, Illinois, USA | This event is devoted exclusively to the applications of Wi-Fi technology in the smart energy market. | <a href="http://www.wi-fi.org/2012-wi-fi-smart-energy-forum">http://www.wi-fi.org/2012-wi-fi-smart-energy-forum</a>             |
| Sept 11 - 12<br>2012   | 5th Annual NFC Congress             | Hagenberg, Austria                                    | -   | <a href="http://www.nfc-forum.org/events/">http://www.nfc-forum.org/events/</a>   |
| Sept 25 - 26<br>2012   | Smart Cities Industry Congress 2012 | London, England                                       | -   | <a href="http://www.wi-fi.org/smart-cities-industry-congress-2012">http://www.wi-fi.org/smart-cities-industry-congress-2012</a> |
| October 9 - 11<br>2012 | Smart Homes 2012                    | Rai Convention Centre, Amsterdam, The Netherlands     | -   | <a href="http://www.smarthomes-europe.com/">http://www.smarthomes-europe.com/</a>   |
| Nov 13 - 16<br>2012    | electronica                         | Messe Munchen, Munich, Germany                        | -   | <a href="http://www.electronica.de/">http://www.electronica.de/</a>   |
| Jan 8 - 11<br>2013     | 2013 International CES              | Las Vegas, Nevada, USA                                | -   | <a href="http://www.cesweb.org">www.cesweb.org</a>  |
| Jan 29 - 30<br>2013    | DECT & CAT-iq World Conference      | Hotel Fira Palace, Barcelona, Spain                   | -   | <a href="http://www.dectconference.com">www.dectconference.com</a>  |
| March 5 - 9<br>2013    | CeBIT                               | MesseGelande, Hanover, Germany                        | -   | <a href="http://www.tradefairs.com">http://www.tradefairs.com</a>   |
| April 9 - 11<br>2013   | Bluetooth SIG All Hands Meeting     | Shanghai, China                                       | -   | <a href="http://www.bluetooth.org/Events/">http://www.bluetooth.org/Events/</a>   |

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**Click I.T. Ltd**  
Hampshire Gate  
Langley, Rake,  
Hampshire GU33 7JR, England  
Telephone: +44 (0)1730 895614

Incisor provides commercial and promotional opportunities in the short range wireless sector.

Contact: Vince Holton  
Email: [vholton@incisor.tv](mailto:vholton@incisor.tv)  
Tel: +44 (0)1730 895614

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