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May 2012



DEVELOPMENTS IN PUBLIC SAFETY COMMUNICATIONS

PLUS

2012 BLUETOOTH SIG ALL HANDS MEETING REVIEW
WORLD'S FIRST CITY-WIDE WHITE SPACE NETWORK
ANT+ v BLUETOOTH SMART IN SPORTS & FITNESS

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 Cambridge
Consultants

end of an era...

I attended the Bluetooth Special Interest Group's annual All Hands member meeting this month. Nothing new there – I've attended many of the 12 that have taken place so far.

What was different about this year's event was the fact that, for all of the good and positive news that the SIG was able to tell, the whole event was over-shadowed by an air of melancholy. Why was that? Well, it was because this was the last time that SIG executive director Mike Foley would preside over the event. Mike has worked directly with the SIG for 10 years – the first two as Microsoft's representative and in the position of chairman of the board of directors, and then 8 more years as a SIG employee, and in the exec director's job. Now he is stepping down.

Be in no doubt that Mike is going to be very much missed by the Bluetooth community. My review of the All Hands meeting in this issue will give you something of the flavour of the event, but you had to be there to feel the atmosphere. If you weren't there, don't worry. Incisor.TV has recorded a farewell interview with Mike, more details of which are included in the review feature. The movie will be published in a week or so, and we will be sure to let you all know as soon as it can be viewed.

In the meantime, the SIG board has a very tough job to fill Mike's shoes.

This month's issue also includes a very interesting article from Cambridge Consultants. We don't give much thought to push-to-talk radios, despite the fact that they are relied upon by our police, security and emergency services. We know push-to-talk works well for voice communications, but our agencies now need data too. Do you know how the networks will cope? If, like me, you don't, then this article is a valuable read.

Vince Holton

Publisher & editor-in-chief, Incisor / IncisorTV

INCISOR.TV FOCUS THIS MONTH



James Collier talks us through the world's first city-wide white space network.

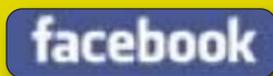
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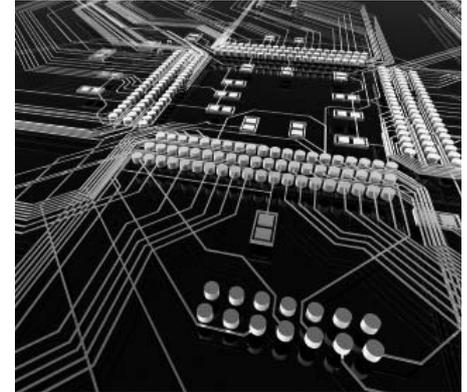
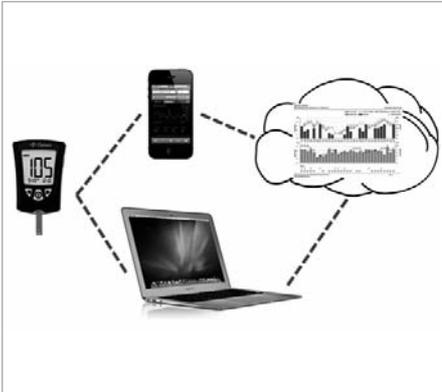
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Bluetooth SIG launches resource for app developers

At its annual member summit in Vancouver (see '2012 Bluetooth SIG All Hands Meeting' report in this issue), the Bluetooth SIG launched its Bluetooth Developer Portal. This helps developers and engineers learn the basics of Bluetooth device and application design, allowing them to tap into what the SIG hopes will be a huge new market for software applications that integrate with hardware running Bluetooth low energy technology.

The Bluetooth Developer Portal houses a collection of resources including training tools, interactive forums, quick-start guides, and webinars to help developers create new applications using standardized Bluetooth data profiles.

As part of its developer education and training initiative, the SIG is also offering a series of free Bluetooth developer webinars that begin April 30. The webinars will provide practical training on Bluetooth application and device design and implementation.

Mike Foley, executive director of the SIG told Incisor, "Because Bluetooth technology is a cross-platform global standard, the opportunity for app developers is bound only by their imagination. The Bluetooth Developer Portal aims to help unleash some of this creativity. For example, SIG member company Wahoo Fitness already has more than 80 smartphone applications that work with the company's heart rate monitor. This is just one device. Imagine the possibilities when you consider there are seven billion Bluetooth devices."

The launch of the Bluetooth Developer Portal comes on the heels of another significant milestone for the SIG – an all-time high membership of 16,000. SIG membership is growing at a record pace, having surpassed 15,000 just five months earlier. Foley

suggested that this unprecedented member growth has been spurred on by the quick adoption of Bluetooth v4.0 by member companies in the sports, fitness, health and medical fields, as well as the technology's continued stronghold and steady growth in the automotive and consumer electronics markets.

Suke Jawanda, chief marketing officer at the SIG added, "With 16,000 members and five million Bluetooth enabled products shipping daily, the ubiquity of our ever-growing network of devices is what separates Bluetooth technology from other wireless technologies. Now, with the launch of our Developer Portal we expect to see more innovative products and applications from our members, adding new functionality to the gadgets we use daily and making them better with Bluetooth technology."

The link for more information is <http://developer.bluetooth.org>

...And adds Google as an Associate Member!

As this issue of Incisor went to press, we were doing some last minute research on the bluetooth.org site for the story above, and happened to notice in the 'New Associate Members' window that amongst the new companies to have joined the SIG at this level, was a certain organisation going by the name of 'Google, Inc.'

Now, quite why Google has joined the Bluetooth SIG as an Associate Member (there's a fairly steep membership fee to become an Associate), we just don't know at the moment. If you're not part of the SIG, and you just want to know what is going on, you can become an Adopter-level member. However, if you really want to get under the hood, and to 'gain the ability to influence the direction of Bluetooth technology' (we quote from the SIG web site!), then you need to be an Associate. It's also the case that in the last year the SIG opened up positions on the Bluetooth SIG board of directors to Associate

members. That's how Apple and Nordic Semi got to be on the Bluetooth SIG board, and we know that two additional new directors are to be added in July 2012. They will come from the Associate membership too.

So, what is going on between the Bluetooth SIG and Google? Is this just about app development, or what? Interesting, eh? We will try to find out for the next issue.

Semicons benefiting from \$8 billion wireless connectivity IC bonanza

ABI Research has calculated that the value of the wireless connectivity IC market exceeded \$8 billion in 2011 and will produce revenues close to \$40 billion for Bluetooth, Wi-Fi, NFC, GPS, and combo ICs through 2016.

ABI suggests that Broadcom continues to dominate, owning 30% of the worldwide connectivity IC shipment volume due to its success in the rapidly growing combo IC market. Qualcomm's market share reached almost 20% due to its strength in the GPS market. CSR, with its acquisition of SiRF technologies, is still a major presence in the worldwide market, despite losing its leading position in the Bluetooth market many years ago. Texas Instruments is in fourth position, narrowly behind CSR with 10% share

Mergers and acquisitions continue to shape the market. Qualcomm's purchase of Atheros significantly improved its wireless connectivity offering, says ABI, and it is in excellent position to control the integrated platform SoC market it is developing to serve the burgeoning low to mid-end smartphone and media tablet markets. Analyst Peter Cooney commented, "If Qualcomm's S4 platform dominates this market with integrated Bluetooth, Wi-Fi, and GPS, it is likely to be an increasing threat to suppliers such as Broadcom, CSR, and TI."



Neul selected as a 2012 Red Herring Top 100 Europe

Media company Red Herring has announced its Top 100 award in recognition of the leading private companies from Europe, celebrating these startups' innovations and technologies across their respective industries. White space pioneer Neul made it into the Top 100 list.

Red Herring, not known for shyness and modesty, suggests that its [Top 100 Europe](#) list has become 'a mark of distinction for identifying promising new companies and entrepreneurs', and claims that Red Herring editors were among the first to recognize that companies such as Facebook, Twitter, Google, Yahoo, Skype, Salesforce.com, YouTube, and eBay would change the way we live and work.

Alex Vieux, publisher and CEO of Red Herring told Incisor, "Choosing the companies with the strongest potential was by no means a small feat. After rigorous contemplation and discussion, we narrowed our list down from hundreds of candidates from across Europe to the Top 100 Winners. We believe Neul embodies the vision, drive and innovation that define a successful entrepreneurial venture. Neul should be proud of its accomplishment, as the competition was the strongest it has ever been."

Red Herring's editorial staff apparently evaluated the companies on both quantitative and qualitative criteria, such as financial performance, technology innovation, management quality, strategy, and market penetration. This assessment of potential was complemented by a review of the track record and standing of startups relative to their peers.



TRaC CTO-Telecoms appointed to HomeGrid Forum workgroup

Testing and compliance consultancy TRaC Global has announced that one of its senior technical team has been appointed as the vice-chair of one of the HomeGrid Forum's technical workgroups.

As vice-chair for the Certification and Interoperability workgroup, Karim Sharf, chief technical officer for TRaC's Telecoms & Radio division, will be involved in all worldwide test and certification events for the HomeGrid Forum. He will assist the workgroup chair in developing specifications and test programs for certifying home networking products for market release, ensuring devices from different manufacturers successfully work together.

Paul Russell, director of TRaC, commented: "It's a great coup for TRaC to have one of our senior technical team selected as the vice-chair of the Certification and Interoperability workgroup. TRaC has worked closely with the Forum over the past couple of years and were successful in being selected as the accredited testing laboratory. I believe this new role will strengthen the relationship and no doubt bring further opportunities."

Karim has over 18 years of extensive experience in certification and regulation and has a primary specialism in digital telecoms. He is actively involved in a number of international forums and standard development projects and is chair of the Small Cell Forum (formerly Femto Forum) Interoperability Workgroup.



One in four Smart TVs never connected to the Internet

A survey of the UK's TV habits carried out by YouGov reveals that only one third (37%) of Britons planning to buy a Smart TV said that connecting to the internet through it – the "smart" part of a Smart TV – was a factor in buying one. The most common reason for intending to buy a Smart TV is simply having a more up-to-date TV – cited by 50% of potential purchasers.

The most important feature of Smart TVs amongst people who already own one is the picture quality (cited by 96% of owners) followed by the size of the screen (93%) then sound quality (89%).

Dan Brilot, YouGov's Media Consulting Director told Incisor, "The 'smart' part of a Smart TV is not yet the main reason people are buying them; it's more about future-proofing their TV set in the same way that lots of people bought HD TVs even before HD channels were available. I think many early adopters of Smart TV are buying them for the sake of owning the latest gadget. We see the profile (in terms of tech adoption) as very similar between iPad and Smart TV owners at the moment. These are the kind of people who are willing to make a big ticket purchase without quite realising what they've bought."

Furthermore, only half (53%) of Smart TV owners correctly identified a Smart TV as a TV that directly connects to the Internet without the need of another device; while one in four (25%) Smart TV owners have never used it to connect to the internet.



Parrot adds steering wheel controls to Asteroid

Parrot is releasing a software update for the Parrot Asteroid, its car receiver that works on the Android operating system.

The Parrot Asteroid is, according to Parrot, and as far as we know, the first car receiver working on the Android operating system. It enables access to web services including iCoyote, Orange Liveradio, online music library Deezer, Maps and Fuel for Less, via a 3G key, or a tethering phone connected by Bluetooth or USB.

Users can connect the Parrot Asteroid to the systems of steering wheel commands in their car, so benefiting from an extended way of sharing a 3G connection. The free software update 1.5 makes the Parrot Asteroid compatible with the systems of steering wheel commands in the majority of vehicles available on the market. The connection between the Parrot Asteroid and the steering wheel commands is carried out by installing the Parrot UNIKA universal interface. Once this has been done, drivers can access a range of Parrot Asteroid features including hands-free telephony, management of the radio, adjustment of the volume and selection of musical sources without taking their hands off the steering wheel.

To access the various web services available on the Parrot Asteroid, users can currently connect it via a 3G key or tethering from a mobile phone via Bluetooth. To complement these two means of connection, the software update 1.5 includes the connection's sharing of a Smartphone via a USB cable - a method of connection especially adapted to Smartphones working under Android operating system.

Other features of the Asteroid include:

- Playing music from various sources including iDevices, USB keys, MP3 players, SD cards, Bluetooth A2DP-enabled devices and online radio.

- A dedicated button activates voice recognition to search for the name of an artist or an album without using the wheel button of the car receiver. The Parrot Asteroid will automatically search for your request in the connected peripherals.
- Advanced functionalities of hands-free telephony. Paired with a mobile phone, it synchronizes and automatically updates its phonebook via a training-free system of voice recognition. Phone calls can be handled verbally, without any manipulation of the mobile phone.

There's no doubt that the Parrot Asteroid, which has a UK recommended retail price of £299, is a very advanced system. We have a review sample here at Incisor, and will feature this soon.

Anritsu previews new generation of signal generators

The wireless industry is moving at its fastest ever pace with the rapid introduction of LTE, LTE-Advanced and new technologies in Wi-Fi. To match this pace and provide effective test solutions designers have to keep ahead so that they can test new technologies such as MIMO, carrier aggregation (CA), multi band radio, and co-ordinated multi point transmissions. Achieving this requires a new generation of signal generator to create all of the required new reference signals in a compact and manageable integrated environment. This is needed to meet the technology and measurement challenges of Multi Standard Radio, Carrier Aggregation, and MIMO with multi-carrier transmissions

Test equipment supplier Anritsu is claiming to be the first to release the new generation equipment that is following these market demands. The MG3710A supports new

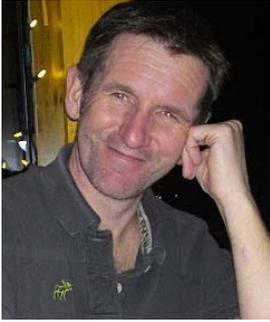
measurement techniques and enables RF designers to verify that their products are also able to meet the challenges of next generation wireless technology. The features include 'waveform combining' to enable an engineer to create more complex signal combinations from libraries of signals, and the dual RF capability that addresses the future needs of Carrier Aggregation and multi-carrier transmissions that are being developed for higher speed data links.

Murata Electronics buys RF Monolithics

Murata Electronics North America, Inc. and its parent company Murata Manufacturing Co., Ltd. have signed a definitive agreement to acquire RF Monolithics, Inc. in an all cash transaction. Targeted to close in the third calendar quarter of 2012, the deal will pay the holders of RFM common shares \$1.78 per share.

RF Monolithics (RFM), headquartered in Dallas, Texas, is a provider of wireless connectivity for a broad range of wireless applications, from individual standardized and custom components to modules for industrial wireless sensor networks and machine-to-machine (M2M) technology.

Commenting at the time of the announcement, David Kirk, President and CEO of Murata Electronics North America, Inc., said, "RFM's proven success in developing business in the healthcare, energy and industrial, markets compliments Murata's growth strategy. Additionally, leveraging RFM's expertise in design and development of production ready RF modules, SAW based & RFIC short-range radios, stand-alone radio systems and platforms for M2M applications will enable Murata to increase the value of the wireless module solutions delivered to Murata's existing and future customers in the global marketplace."



Vince Holton.

2012 Bluetooth SIG All Hands Meeting

Vince Holton heads West

The SIG's annual All Hands member meeting took place this year in Vancouver, British Columbia, Canada, just about 140 miles North of the SIG's home town of Seattle. And, what a beautiful city Vancouver is. Downtown Vancouver features stunning modern architecture and glorious views across Vancouver Harbour to North Vancouver and – frustratingly for your correspondent – the ski resort on Grouse Mountain! What's more, it is spotlessly clean. There must be hordes of Canada's equivalent of the Wombles cleaning the streets.

But this isn't Trip Advisor, so on with the job of reporting the AHM.

Sadly, the Bluetooth SIG chose not to have the AHM captured on video this year. Incisor.TV has done this for the two previous years, but this year it was not to be. That's not to say that our cameras weren't there. We did indeed film an interview with Mike Foley, more of which below.

Approximately 200 people attended the 2012 AHM event. This is a fair number, bearing in mind the global economic environment, but, when you consider that a number of companies sent quite big groups along – we understand that Intel and CSR each had about 8 people at the AHM, for example – and that the SIG was promoting that it had just broken through the 16,000 member barrier, then you do wonder why the number isn't higher? It's never going to get back to the heady days of 2001, say, when the official announcement made immediately prior to what was then called Bluetooth World

Congress said that more than 1600 participants had registered to attend the event, representing 474 companies, and that the final tally of people attending the event – including exhibitors and event staff – was said to be near to 2500, but the current AHM attendance doesn't really seem to reflect the apparent ongoing growth in companies participating in Bluetooth development.

Presentations but no exhibition

One significant difference between the current member event and those of the earlier years is the fact that there is no exhibition element. This used to be an important part of the SIG's annual meeting. Perhaps, in years gone by, people really did appreciate the opportunity to either exhibit their products and services, or to tour around the stands of the companies that were doing so. Here at Incisor we know only too well how hard it is to get companies to spend money on marketing at the moment, and it's presumably just as difficult for the SIG. That said, the Bluetooth market is pretty mature now, and so it may be the case that there would never be sufficient interest to run an event as big as the early Bluetooth conferences.

So, for those that don't attend the AHM, what happens there, and what announcements were made this year? Well, meetings, keynotes and presentations are what it is all about. The event ran over three days this year, though the first day was effectively pre-AHM meetings, with the opening keynotes actually taking place on the second day.

It's a little hard to identify major announcements at this year's AHM. The event ran under the strapline "Faster, Stronger, Smarter" and it is probably correct to say that the main messages all orbited around Bluetooth's increasing presence in the low energy market. Whether by design and intent, or by good fortune, Bluetooth low energy is gaining traction, and Apple's support for Bluetooth 4.0 in the iPhone 4S is generally seen to have been the single biggest boost the technology could have received.

There remains an elephant in the room, and that is high speed. At various points throughout the event, the great and good of the SIG were dragged back to confronting the uncomfortable fact that this aspect of the Bluetooth proposition was not addressed completely by the – somewhat cursory – solution delivered by Bluetooth 3.0. There are those in the SIG – no names mentioned, but they know who they are – who believe that 3.0 completely answers any need for a high speed data solution. And then there are those who will admit that high speed has been a real pain in the jaw, and that the matter remains unresolved. This debate seems destined to continue.

The subject of high speed was brought up in the Board of Directors panel session. At the 2010 and 2011 AHMs I chaired this event, and it could be relied upon to be lively and, well, a little edgy! That's because I was prepared to throw awkward questions at the board, and this seemed to encourage the audience to do the same. Perhaps wary of this, the SIG had decided to moderate the BoD panel itself, and the session was rather



AHM 2012
Vancouver, Canada

FASTER. STRONGER. SMARTER.



subdued and restrained, with less audience participation than in other years.

Celebrating the great and good

Each year the All Hands Meeting sees new inductees added to the Bluetooth SIG Hall of Fame. Hearty congratulations are sent to two of this year's new HoF-ers, these being Robert (Bob) Hughes of Intel, perhaps best known for his work for the Medical Working Group, and Robert Hulvey of Broadcom who, amongst other things, is credited as the inventor of Bluetooth-based 3D glasses synchronisation technology that has been adopted by a number of TV manufacturers, and who has been active in various roles in the BARB, core specification, HID and security experts working groups. Guys like these really do keep things moving along at the SIG.

But I'm sure that these two wouldn't mind me saying that their entry to the Hall of Fame, and perhaps the whole AHM event this year, was over-shadowed by the attention granted to the third inductee. This was Mike Foley, the SIG's executive director for the last 8 years. It wasn't long before the AHM that Mike announced that he was stepping down from the exec director position, and the 2012 AHM was rather dominated by the news and views surrounding Mike's departure. Both Mike's keynote on Wednesday morning and his participation in the AHM closing session on Thursday afternoon were heady and emotional affairs for both Mike himself and many at the AHM who know him well. Nobody could ever hold down a job such as Mike's for 8 years without bumping heads with a few people along the way, but Mike has undoubtedly steered the SIG well during his time. When he took over in 2004, the SIG had 3,500 members – already an unprecedented amount for a wireless industry organisation – and yet the number has continued to grow, now

exceeding 16,000 and still climbing. And shipments of Bluetooth devices have climbed from 200 million per annum in 2004, to 2 billion today.

Mike is well-liked by SIG members and SIG staff alike, and will be missed. There is no doubt that he brought a great deal of commitment to the SIG, and that he really cared about making a success for the technology. Talking to people at the AHM, it's apparent that I'm not the only one that worries that whoever replaces Mike (I understand that the search for a replacement has reached the stage where there are now just a handful of final candidates) may not have the same degree of passion, experience and commitment.

And it was/is Mike that Incisor.TV was there to film at the AHM. We took the cameras to record what will probably be our last ever interview with Mr Foley in his role as executive director of the SIG. I was also able to interview a really great selection of people as part of this movie, including (and these names will mean something to those people who, like me, have been around Bluetooth for a loooong time) Intel's Jim Kardach and Simon Ellis, Orjan Johansson and Anders Edlund, both formerly of Ericsson, CSR founder James Collier and Frontline's David Bean. Sadly, there hasn't been time to complete the edit of this video for Incisor's publication this week, but as soon as the movie has been completed, we will send out an announcement to the our readers that it is ready to be watched, and we will link to it from our next issue. I enjoyed doing this interview, and I hope that when you see it you will agree that it is a warm, enjoyable and fitting summary of Mike's career with the Bluetooth SIG, and Bluetooth's achievements along the way.

So, the All Hands Meeting is over for another year. Next year it will take place in Shanghai, China. Albeit without Mike Foley.

Snippets

HTC smartphones use aptX codec

HTC Corporation has licensed the CSR aptX audio codec to deliver CD-quality wireless Bluetooth audio in the first three models of the new HTC One series of smartphones, the HTC One X, One V and One S. All three devices in the HTC One series feature aptX technology, which promises to deliver CD-quality Bluetooth stereo audio, and, claims CSR, a more authentic sound experience when users listen to their favourite music.

EnOcean appoints Future Electronics as distribution partner

Energy harvesting wireless business EnOcean has entered into a strategic relationship with Future Energy Solutions (FES), a division of Future Electronics. EnOcean selected FES as its distribution partner to open new markets for its energy harvesting wireless sensor solutions. The partnership will add EnOcean's products to FES's growing portfolio of smart metering, solar, home area network, and energy harvesting solutions. The agreement covers key geographical markets in North and South America, Europe as well as Asia.

Cambridge Consultants strengthens surgical and interventional products team

Cambridge Consultants has appointed Simon Karger Associate Director, Surgical & Interventional Products with the remit to lead and grow Cambridge Consultants' business in the global surgical arena.

Karger will work with a transatlantic team of consultants, engineers and developers based out of the company's Cambridge, UK and US offices. The team's focused mission will be to design and engineer active implantables and surgical devices for cardiovascular, neurology and general surgery clients that range from leading start-ups to Fortune 500 companies. Prior to joining Cambridge Consultants, Karger was a VP at Sagentia where he worked for 10 years and was responsible for helping to build its operating consulting practice in the US market and opening up US offices in Boston and Washington, DC.



Chairman of the Bluetooth SIG Board of Directors Chris Hansen expresses the SIG's thanks to Mike Foley.



Tim Fowler,
Cambridge Consultants.

Developments in Public Safety Communications

By Tim Fowler, Commercial Director,
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. In this edition of Incisor, we look at how recent developments in mobile and wireless technology could rescue the emergency services from the problems of limited bandwidth.

It is very easy to think that push-to-talk radios are old-fashioned when compared with cellular phones, especially smartphones, but these devices are essential to many organisations – not least the emergency services. The technology tackles some very specific requirements that make a significant difference to the users. And, like cellular, public safety mobile communication technology has gone through a technology revolution over the last 15 years, transitioning from 'open' analogue radios that transmitted and received on fixed radio 'channels', where each operational group of users needed their own channel, to fully digital cellular systems where channels have been replaced by secure closed user group calls that require very fast (near instantaneous) call set-up but use channels dynamically.

Public safety organisations are based on a command and control structure. Co-ordination of people is key to their effectiveness. Imagine the case of police officers entering a building (or set of buildings). The instruction to enter needs to come from one individual, to all, very quickly. They simply cannot wait for dial tone and ringing and answer – they must be able to press and talk. As such, many calls – unlike phone calls – are often a single sentence of a few seconds in length (an 'over'). Even when a conversation runs, these will typically be just a few 'overs' of a few seconds each. The entire call will complete in less time than the typical connection time for a cellular system.



The most successful technology serving this requirement is TETRA, standardised by ETSI. TETRA is probably not that well known outside of the industry. It uses very narrow (by modern cellular standards) channels of 25KHz to deliver four time slot TDMA operation. TETRA provides for all the voice communications needs of public safety users, especially the most demanding users of the police and homeland security organisations. Many

European countries now run a national TETRA cellular network to provide the excellent coverage and performance needed by public safety users – the largest being in Germany and the UK.

Two key performance differentiators for public safety communications are coverage and availability. Emergencies can happen anywhere and at any time. When an emergency does occur,



effective communication is needed at the scene to ensure the emergency services can effectively respond. Sometimes, emergencies occur that disrupt commercial communications – natural disasters such as floods, earthquakes or even wide area power outages due to extreme weather – but we expect the emergency services to be most effective in these scenarios. TETRA's narrow channels, lower frequency allocations (~400MHz) and relatively high effective transmit powers for terminals gives TETRA large cells when compared with mainstream cellular systems, which delivers better coverage from fewer cell sites – essential to economically build national networks for relatively small user communities.

But, just as with the rest of us, public safety users have a growing demand for mobile broadband data. The TETRA standard defines a higher data-rate specification: the TETRA enhanced data service (or TEDS, aka TETRA 2). This requires marginally wider channels of 50, 100 and 150kHz. There is a downside, however, that as the channels get wider and modulation order increases, cell sizes reduce, so compromising the high coverage performance of national networks unless a significant increase in cell sites is considered, which is uneconomical for the small user communities.

The public safety organisations are therefore, not surprisingly, using commercial mobile broadband services to meet their needs – as for data, their requirements are more similar to those of the rest of us, except for the coverage and availability needs. And while public safety users enjoy their own network for voice, they have to compete with the rest of us when accessing public data networks. At least when they drive on shared roads they get to use their blue lights when they need priority access. There is no equivalent for data networks.

So how might public safety organisations bridge this gap? Well, there are a number of approaches being adopted. In some areas, private broadband data networks are being deployed for public safety use, such as in New York State where Northrup Grummen is deploying a TD-WCDMA based system. Others have deployed private WiMAX networks. And there's the recent emergence of LTE as the globally adopted mobile broadband technology for the future – this has achieved front-runner status.

But what spectrum is available? The narrow channels used by TETRA means that a national voice and narrowband data service cellular network can be built from less spectrum than is needed for one LTE channel. Building a private LTE network seems unlikely for most countries. So we see developments in providing 'extension' technologies that can supplement the commercial cellular networks when operational and replace them when they are unavailable. These include use of satellite communications, unlicensed spectrum (both where Wi-Fi currently operates and in the TV white spaces), and increasing adoption of small-cell technology into the public safety market. Together, these supplemental technologies can help extend the services offered by both the private TETRA networks and the public cellular networks for emergency services users.

Snippets

Tickets find a place in the mobile wallet

A new report from Juniper Research has found that the number of tickets delivered to mobile phones worldwide will more than quadruple to 23 billion by 2016, compared with 4 billion tickets estimated to have been delivered during 2011. The report warns, however, that mobile ticketing

applications must be simple to use and win the confidence of the user both in terms of the security and reliability of the mobile ticketing service. Other findings from the report include the forecast that 1 in 8 mobile users in Western Europe will use their phone as a contactless metro ticket by 2016, and that by 2016, NFC mobile tickets will represent more than 50% of all mobile ticketing revenue.



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
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Corporate Blog

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Neul launches world's first city-wide white space network

In previous issues of Incisor we have reported on Neul's push to realise technologies for the Internet of the Things. Well, the British company is not letting the grass grow, and has announced the deployment in Cambridge of what it is claiming is the world's first city-wide, fully-functional wireless network in white space, enabling Smart City applications. To demonstrate this network Neul, in collaboration with Bglobal Metering, is showcasing a smart electricity meter reading over a white space network. This is the first step towards smart electricity grids that will allow electricity supply to be more efficiently matched to real-time demand.

Neul's network builds upon the completion of the first phase of the Cambridge White Space Consortium's network. The Consortium's phase one network used Neul's equipment and cloud interface, together with the Weightless communications standard, to prove that its white space network co-exists perfectly with televisions and wireless microphones without causing interference or disruption. Neul's network will now build upon that foundation for commercial trials later this year with full roll out anticipated in 2013.

In addition to the smart grid, Neul's network opens up several possibilities for the Smart City of the future, enabling smarter transport and traffic management, city lighting and other municipal services.



Glenn Collinson, co-founder and Board Member at Neul told Incisor, "In a world of Smart Phones and mobile broadband it is easy to imagine that wireless connectivity has

now been solved. It hasn't. Mobile broadband is too expensive for 'things' in the Smart City. Also mobile broadband means battery powered devices would need changing far too often. And all those sensors would load the cellular networks to such a level that there would be little network capacity left.



"Mobile networks are great for people but terrible for machines. At Neul we are demonstrating that the Smart City can happen now with a new wireless standard called 'Weightless' specifically designed for embedding in electricity and gas meters, air quality sensors, recycling points, street lighting, parking spaces, traffic lights and ... well ... 'things' rather than people."

Neul's network comprises

- Five base stations around the city of Cambridge.
- One base station in a rural community south of Cambridge.

- A cloud-hosted network Operational & Management Centre (OMC) that manages the communications between the internet and the 'Things'.
- Support for multiple geo-location databases that ensure wireless microphones, TV transmission and reception is not disrupted.

Incisor is continuing to track developments in white space, and so we took our cameras to Cambridge and spent some time talking to Neul's CEO James Collier. Click on the movie screen to hear what James had to say about this first white space network, and his thoughts on future developments for the technology.



Cambridge Consortium completes trial of next-generation wireless

Following more than 10 months of testing in urban and rural areas in and around Cambridge, England, the Cambridge TV White Spaces Consortium, which comprises international and UK technology and media companies, claims to have successfully demonstrated the potential of television white spaces. The consortium explored and measured a range of applications — rural wireless broadband, urban pop-up coverage and the emerging "machine-to-machine" communication — and found TV white spaces can be successfully utilised to help satisfy the rapidly accelerating demand for wireless connectivity. The consortium members are recommending that the UK regulator Ofcom complete its development of the enabling regulatory framework in a manner that protects licensees from harmful interference and encourages innovation and deployment.

The consortium included Adaptrum Inc., Alcatel-Lucent, Arqiva, BBC, BSkyB, BT, Cambridge Consultants, CRFS, CSR plc., Digital TV Group (DTG), Microsoft Corp, Neul, Nokia, Samsung, Spectrum Bridge Inc., The Technology Partnership plc. (TTP) and Virgin Media, and collaborated with Ofcom to ensure that the technology can now be harnessed through a regulatory framework.

The consortium issued this statement: "With the rapid rise of mobile broadband and the desire to enable remote areas to enjoy the benefits of broadband, the need for more efficient spectrum use has never been greater. The UK is playing a leading role by exploring the use of licence-exempt access to TV white spaces and developing a model regulatory framework."

Commenting on the TV White Spaces trial, the UK's Communications Minister Ed Vaizey said, "I welcome the success to date of the Cambridge White Spaces Trial. Leading innovators from the UK and beyond have demonstrated the potential that television white spaces can have for meeting the UK's broadband needs. Developments such as this endorse the leadership position that the UK can



take in enabling more efficient use of spectrum by opening up an array of opportunities for wireless applications for consumers and businesses alike. I find the idea of using white space devices to deliver broadband to rural communities, or to expand the range and quality of urban Wi-Fi hotspots, exciting. This can form a significant contribution to our thinking as we consider how to maximise the value of the spectrum below 1 GHz. I look forward to hearing the next chapter of your progress."

Trial implementation and results

The trial analysis found Cambridge has significant television white spaces capacity — 20 white spaces channels corresponding to 160 megahertz in total, of which 13 (104 megahertz) were allowed in the test licence from Ofcom — which can be used to help augment existing broadband networks, extend broadband access to rural areas and allow for machine-to-machine communications. Geolocation databases,

provided by Microsoft and Spectrum Bridge, proved a reliable way to control frequency use by the white spaces radios and to quickly adapt to changes in spectrum usage by the licensed users.

Sample applications included:

- **City centre coverage.** The consortium set up base stations on the north side of the Cambridge city centre in four pubs and a theatre, aiming to provide widespread coverage, including "pop-up" Wi-Fi hotspots. The base stations were connected to dual omnidirectional wide-band antennas mounted on rooftops (radios and antennas provided by Neul), enabling considerably further coverage than could have been achieved with conventional Wi-Fi, in 2.4GHz, for example. The tests showed that TV white spaces can help extend broadband access and offload mobile broadband data traffic. These hotspots can enable users to enjoy data-intensive services such as online



video provided by BBC iPlayer and Sky Go during peak usage times, when additional capacity and wider reach is needed.

- **Rural connectivity.** A base station was installed at TTP's headquarters in Melbourn, a rural community south of Cambridge, and linked to a household in Orwell. The residents benefited from radical improvements in their broadband service, up to 8Mbps net speed achieved over 5.5km links, within an 8 megahertz bandwidth, using a modified, prototype version of the Neul Weightless technology. TTP anticipates it would be possible to achieve speeds greater than 20Mbps from its headquarters to Orwell using radios further optimised for rural broadband connectivity while occupying a single, dedicated TV white space channel.
- **Machine-to-machine.** Industry forecasts estimate there will be more than 50 billion connected devices by 2020, with a good proportion of these communicating and sharing information wirelessly, enabling a wide range of applications. As such, the trial explored machine-to-machine communication, often referred to as the Internet of Things. Utilising the available white spaces, an application developed by BT and Neul sent an alert message to the city council when city dustbins were full and needed emptying. The consortium

suggests that TV white spaces are uniquely placed to unlock the potential promised for the Internet of Things.

- **Location-based services.** Nokia and Spectrum Bridge developed a location-based service application that was deployed in the Imperial War Museum in Duxford, one of Europe's leading aircraft museums. As museum visitors move around the collection, they can receive prompts on their smart mobile device informing them about the items they can see and offering a rich array of related content.
- **Lab and field measurements.** In addition to the implementation of trial networks, Arqiva, BBC Research and Development, CSR and CRFS spearheaded laboratory and field measurements to better define the parameters needed to develop the regulatory framework required to enable the use of white space devices. The results of this work are being provided to the relevant UK and European regulatory bodies. In addition, the BBC developed the first version of a UK-wide database, which illustrates the typical availability that might be expected for TV white space devices following the completion of the UK digital television switchover.

See related Incisor.TV movie in '[Neul launches world's first city-wide white space network](#)' in this issue.

White space - the missing link for rural broadband?

According to TTP, which is one of the companies at the heart of the Cambridge TV White Spaces Consortium trials, white space technology could help drive the UK economy forward by providing high performance rural broadband for up to 2million 'un-served' premises across the country. Talking with Incisor at the consortium conference, Richard Walker, Head of Wireless from TTP said, "Entire rural communities could be rapidly connected using low-cost hardware operating in unlicensed TV white space. And with research suggesting that every 10 percent increase in broadband penetration could increase GDP by 1 percent, this gives the potential for well over £10billion per year for the UK economy."

"The cost of deployment is significantly lower and faster than fibre over long distances in remote areas," Walker added. "Consumers will simply have to purchase a second TV aerial along with a white space router similar in size and price to existing home routers, while we would expect service charges to be similar to current ADSL costs. The main barrier to entry today is regulation. However, with the UK Government committed to delivering broadband to all, and Ofcom driving the legislation, we may see deployment of white space systems and applications as early as 2013."

The potential market and economic benefits are even higher in countries that do not have an established wired infrastructure; where cable installations regularly get looted; or where it is simply not economical to install cable. While mobile cellular can serve some of these markets, TTP suggests that white space is very attractive from both a cost and bandwidth availability perspective.

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- [CES 2010 Daily Show report – Day 1](#)
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- [WiMedia special - UWB - a high performance solution / part 2](#)
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IMS positions ANT+ against Bluetooth Smart

IMS Research is predicting that ANT+ and Bluetooth Smart will become the most utilized wireless technology in sports and fitness monitoring devices. IMS projects that in the medium-term, ANT+ will have the highest adoption rate in sports and fitness monitoring devices. However, in 2016, the penetration rate of Bluetooth Smart in sports and fitness devices is forecast to overtake that of ANT+ with around 45 percent of wireless-enabled sports and fitness monitors forecast to use Bluetooth Smart.

ANT+ is already well established in the sports and fitness industry with sports manufacturers such as Adidas, Garmin and Suunto using the technology. Adidas recently released the latest addition to its miCoach range of monitoring devices, the Speedcell, which can be attached to the F50 football boot in order to collect information from the wearer such as speed, velocity and steps taken. Information can be uploaded via ANT+ to a range of ANT+ compliant devices.

IMS observes that Bluetooth Smart has only just begun to see uptake in sports and fitness devices, with Wahoo Fitness and Nike being the first to implement the technology. Other large companies such as Polar have also shown their intent to support the technology with a number of devices demonstrated at CES 2012.

Lisa Arrowsmith, senior analyst with IMS Research's Connectivity Group told Incisor, "The rapid transition from 'classic' Bluetooth to Bluetooth Smart Ready (Bluetooth 4.0) in smart phones, combined with native support in Apple's iOS and the expected inclusion in the upcoming Microsoft Windows 8 platform, is set to drive more sports and fitness monitoring device OEMs to look to Bluetooth Smart to provide connectivity with consumer devices. As a result, Bluetooth Smart is expected to be the most utilized wireless technology in sports and fitness devices shipped in 2016."



Arrowsmith continued, "ANT+ has seen some adoption in cellular handsets, from companies such as Sony Ericsson (which has 15 models supporting ANT) and HTC (which has one model supporting ANT). However, in the coming years Bluetooth Smart-Ready is set to show higher adoption in cellular handsets as a rapid transition from 'classic' Bluetooth to Bluetooth Smart Ready occurs".

Due to the move towards standardized solutions, technologies such as 5 kHz, which is currently the most adopted technology in heart rate monitors, and proprietary technologies such as Nike+, which is based on ANT, are less likely to be used. Nike has demonstrated its Nike Fuel band as well as a range of new Nike+ devices which utilize Bluetooth Smart, signaling support for the technology. In general, proprietary technology will be less utilized in the future as smartphones are

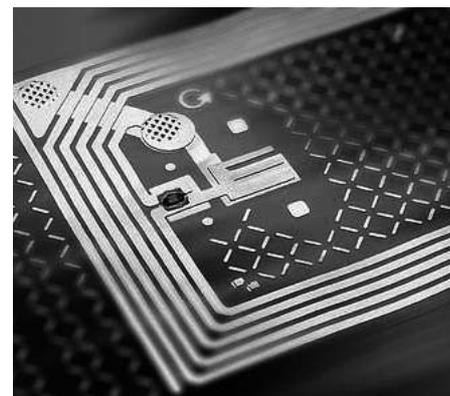
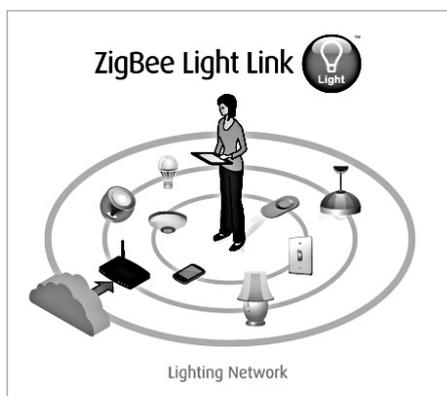
increasingly used as a "hub" for sports and fitness devices. In addition to this, standardized technology gives consumers the ability to "mix-and-match" sports and fitness devices in order to produce the monitoring system that works best for them, without being tied to a manufacturer.

Anyone needing more detail can look to IMS Research's latest report, *Wireless Opportunities in Sports and Fitness Monitoring – 2012 Edition*, which assesses the uptake of 10 wireless technologies in five sports and fitness monitoring devices (heart rate monitors, activity monitors, footpods, speed and distance sensors and cycling computers), four types of hub device (cellular handsets, portable computing devices desktop PCs and home gateways), and six types of consumer health monitoring devices (blood pressure monitors, blood glucose monitors, pulse oximeters, weight scales, implantable devices and others).

"ANT+ is experiencing broad adoption among radio silicon providers in both new solutions for wireless sensors and in multi-mode connectivity parts for mobile devices such as cell phones, tablets, and sport displays. With clear advantages for flexibly connecting devices, ANT+ will continue to drive application growth and enable innovation in sports, and in personal area networks in general for the foreseeable future."

Rod Morris, Director, ANT+ Alliance

low energy wireless news



ZigBee Light Link standard completed

The ZigBee Alliance (ZBA) has apparently completed development and ratification of the ZigBee Light Link standard. The ZBA's goal was for the lighting industry to have an open, global standard, backed by a broad competitive ecosystem, offering wireless control for LED lighting solutions.

Energy efficient light bulbs, LED fixtures, sensors, timers, remotes and switches built using ZigBee Light Link will connect into a single network, without special devices to coordinate the network. It is claimed that consumers will be able to easily install products and add extra devices to their lighting network. ZigBee Light Link devices can be controlled over the Internet through computers, tablets and smart phones.

Development and validation of this standard was led by lighting companies including GE, Greenwave Reality, OSRAM Sylvania and Philips. TRaC Global (see below) provided independent testing services for the first ZigBee Certified products submitted by Atmel, Ember, OSRAM, Philips and Texas Instruments. These implementations will serve as golden units against which future ZigBee Certified products using this standard will be tested. This testing process ensures compliance with the standard so that consumers can be assured that all ZigBee Light Link products will interoperate, regardless of who builds them.

Jos Bruins, ZigBee Light Link working group chair from Philips told Incisor, "The ZigBee Alliance provided our technical working group with an excellent platform to complete ZigBee Light Link in a fast and professional manner – a standard we know that will spur the industry's new lighting propositions. ZigBee Light Link provides an easy-to-use and intuitive approach to next generation lighting that has the backing and support of top tier companies and product development is already underway."

... TRaC announced as first ZigBee Light Link test house

Global testing and compliance consultancy TRaC Global has announced that it has been appointed as the first test house validated by the ZigBee Alliance to conduct ZigBee Light Link testing for the ZigBee Certified product program.

TRaC's appointment places it as the first organisation able to carry out the testing required in order to obtain ZigBee Certified product status for products using ZigBee Light Link.

Paul Russell, director at TRaC, told Incisor, "We have played an instrumental part in bringing the ZigBee Light Link standard to market. This places TRaC in a unique position as the first ZigBee Light Link test house and is another great accolade to add to our portfolio and customer offering."

TRaC is already a ZigBee Alliance recognised test house and has a high level of protocol experience having contributed to the development of ZigBee's standards over the past five years through its involvement in the ZigBee Qualification Group and ZigBee Smart Energy Working Group.

RFID market worth \$70B+ over next 5 years?

Apparently so, according to ABI Research which predicts that the market for RFID transponders, readers, software, and services will generate \$70.5 billion from 2012 to the end of 2017. The market was boosted by a growth of \$900 million in 2011 and the market is expected to grow 20% YOY per annum. Government, retail, and transportation and logistics have been identified as the most valuable sectors, accounting for 60% of accumulated revenue over the next five years.

Group director John Devlin told Incisor, "To date, the automotive sector has been a strong proponent of RFID, largely for immobilization and keyless entry. However, penetration is already high and it will be constrained by the slower rise in automotive production volumes. As a result, it will lose status as a leading RFID market due to other established markets for RFID retaining excellent potential for further adoption. Retail in particular is set to experience very strong growth; in fact, it will become the single largest RFID sector in 2015."

Efficiency and improved operational capability are the overriding goals behind this adoption. Retail growth is driven by the proven returns that item level tagging can deliver. Stock is less likely to get lost, shop floors better stocked, and the ordering process will get smarter. RFID will cross over into customer-facing services with NFC for product information and smart marketing.

Government is a high-value sector, with strong uptake of contactless/RFID in documents and credentials. However, the drive for increased efficiency in applications such as asset tracking, fleet management, personnel location, and security are increasing the sector's acceptance and uptake of RFID solutions.

Transportation and logistics increasingly make use of the ability to accurately track and trace items and goods at item, pallet, and container level as service providers look to generate more detailed data for themselves and their customers. Also, smarter public transit systems are utilizing contactless ticketing as the basis for better managed and cost effective services.

low energy wireless news



Smart Grid demonstration project in NY

Long Island Power Authority (LIPA), which is a non-profit municipal electric provider, has selected Landis+Gyr to deploy a smart grid demonstration project in New York, USA that will test consumer response to dynamic pricing signals, as well as the scalability of smart grid technology. The trial will take place in the Route 110 corridor located in Farmingdale, Long Island, which is part of LIPA's service territory.

The project includes deployment of Landis+Gyr's Gridstream RF smart grid network, along with smart meters and in-home energy displays to consumers in Farmingdale. The project area, which includes the Farmingdale State College campus, was chosen because it is representative of LIPA's customer base in terms of demand levels and percentage of residential versus commercial customers.

Gary High, Vice President of Sales at Landis+Gyr told Incisor, "We are working with LIPA to demonstrate how advanced metering improves reliability, power quality and energy efficiency. This involves demonstrating all of the advanced metering functions for monitoring and managing power delivery, as well as effective ways to engage consumers by providing more information about energy use and tools to improve efficiency."

LIPA and its partners, Stony Brook University and Farmingdale State College, received a Smart Grid Investment Grant from the Department of Energy to fund the project. They are using this demonstration project to provide an assessment of the benefits of smart grid technology. In addition to advanced metering, the utility is interested in solutions to automate and control distribution devices. Deployment of the Gridstream network and advanced



meters is scheduled to be completed by June of 2012.

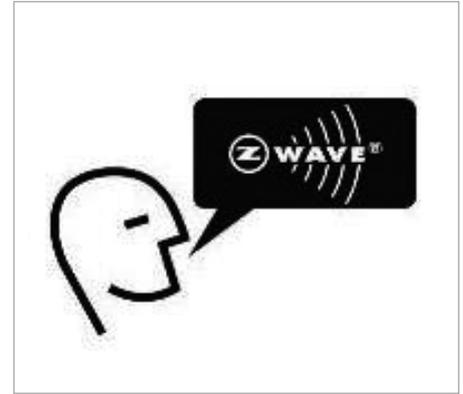
Gridstream RF technology uses a radio mesh network to communicate with meters, in-premise devices and distribution automation equipment. Gridstream devices use the Smart Energy Profile standard to enable communication with smart appliances and in-home units.

Rooms with a view

A new facility at the Building + Innovation Center in Kaiserslautern, Germany provides more than 4000m² of floor space on four levels. When the building was at the design stage, flexibility in use was a central factor in planning the building. Contrary to the original plan, which included the use of a number of parallel communication protocols for different functions, the solution implemented uses an open BACnet/IP network throughout.

The Sauter ecos502 room controllers that were selected control heating, ventilation, sunscreening and lighting on a user programmable automation hardware platform. The necessary infrastructure is provided in the dropped ceilings and in raised floors so that partitioning walls needn't incorporate building automation functionality and can be reconfigured to match the needs of a growing enterprise. Because of the likelihood of frequent changes in room configuration, controls in a room need to be repositioned and reassigned. Sauter's EnOcean room control panels were selected for this reason, and can be positioned anywhere in a room.

The EnOcean room control panels have an integrated solar cell and require no extra power supply. The bidirectional wireless technology not only enables switching commands to be sent to the room controller, information from building automation such as actual readings, setpoints, time and date



can be transmitted to an EnOcean room control panel. The easy to use symbol system makes it simple for the user to control as many as twelve functions.

The operators of the Building + Innovation Center in Kaiserslautern have stated that they have benefited not only from flexibility in the use of the building, but also from the positive impact on costs.

Z-Wave announces 600th certified product

The Z-Wave Alliance has certified its 600th product. This is a Whole House Energy Meter from RCS Technology that is designed to provide accurate consumption data.

When installed, this meter can monitor accumulated energy usage and instantaneous demand data kWh/kW for single-phase and two phase circuit installations. This information is reported to the Z-Wave network using Z-Wave's Advanced Energy Control (AEC) standard. Because Z-Wave products are interoperable, the RCS Home Energy Monitor's data can be used by any number of Z-Wave devices from multiple manufacturers including; in-home energy displays, energy management controllers, gateways, thermostats and other devices. The Whole Home Energy Monitor is a key element in Home Energy Management systems (HEMs).

Gene Goodell, VP of Business Development at RCS Technology told Incisor, "RCS has been a long standing member of the Z-Wave family, we even have Z-Wave Development Kit #002. We continue to utilize Z-Wave because we believe that, for years to come, Z-Wave will be a complete end-to-end solution that will solve the needs of end users when it comes to energy management and home control products for the residential, commercial and hospitality markets."

low energy wireless news



EnOcean wireless now an international standard

The International Electrotechnical Commission (IEC) has ratified a new standard – ISO/IEC 14543-3-10 – for wireless applications with ultra-low power consumption. It is the first and only wireless standard that is also optimised for energy harvesting solutions and, therefore, for EnOcean's self-powered wireless technology. The EnOcean community is predictably delighted, saying that together with the EnOcean Equipment Profiles (EEPs) drawn up by the EnOcean Alliance, this international standard lays the foundation for fully interoperable, open wireless technology comparable to standards such as Bluetooth and Wi-Fi.

The new standard is geared to wireless sensors and wireless sensor networks with ultra-low power consumption. It also includes sensor networks that utilise energy harvesting technology to draw energy from their surroundings – for example from motion, light or temperature differences. This principle enables electronic control systems to be used that work independently of an external power supply. EnOcean GmbH, which develops energy harvesting wireless technology, is a pioneer in this field. The company has been producing and marketing maintenance-free wireless sensor solutions for use in building and industrial automation for more than ten years. EnOcean-based products are currently installed in over 250,000 buildings around the world.

Laurent Gai-Miniet, CEO of EnOcean GmbH told Incisor, "EnOcean supported the development of the new standard from day one. The ratification is a milestone in our company history and validates the success and the potential of energy harvesting technology. Standardisation will boost the demand for energy harvesting sensors and wireless modules and step up their implementation. At the same time, we anticipate the development of even more efficient energy harvesting solutions that use a wide range of energy sources."

Members of the EnOcean Alliance have already introduced more than 850 EnOcean-based, interoperable products, all of which comply with the new standard. The EnOcean Alliance draws up the specifications for the applications based on the standard. These EEPs (EnOcean Equipment Profiles) ensure the interoperability of products from different vendors. Graham Martin, Chairman of the EnOcean Alliance added, "EnOcean wireless technology is already a firmly established technology for green, smart buildings and applications. The EnOcean Alliance sees the ratification of the international ISO/IEC 14543-3-10 standard as one of the key prerequisites for expanding the already highly successful, fast-growing EnOcean ecosystem. As an independent, open organisation, the Alliance is keen to inform potential product manufacturers and users about the benefits of the standard and to ensure the interoperability of EnOcean-based products."

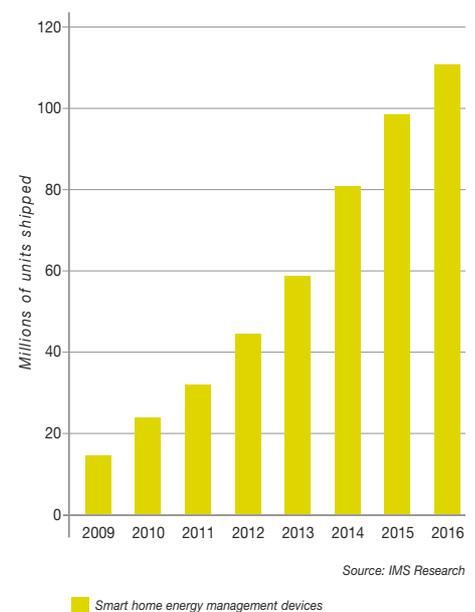
The standard can be downloaded from www.iso.org.

400 Million 'smart home energy management' devices boost connectivity semiconductor suppliers

In the next five years, around 400 million 'smart home energy management' devices will be shipped globally, according to a recent study from IMS Research. This includes devices such as smart meters, smart thermostats, in-home displays, 'smart appliances', and load control switches [see figure below]. This represents a major opportunity for IC suppliers, driving connectivity technologies into a wide range of typically 'un-connected' devices. Yet the type of connectivity technologies selected varies by both country and the type of company deploying the energy management solution.

IMS Research's report, The World Market for Smart Home Energy Management Systems – 2012 Edition, forecasts that 70% of these 'smart' devices shipped in the next five years will be smart meters themselves. However, the market for peripheral devices, such as smart thermostats, in-home displays, and load control switches, is also set to grow significantly. For example, in the US, annual shipments of smart home energy management devices, such as smart thermostats, smart plugs, in-home displays, and smart load control switches, are expected to exceed annual smart meter shipments (in unit terms) from 2015.

World -shipments of energy management devices



This includes:

Smart meters, Smart thermostats, In-home displays, Smart plugs, Load control switches, Smart appliances, Smart electric storage water heaters, Other residential 'Smart' HVAC controls, Smart EV chargers, Smart PV systems, Smart gateways

low energy wireless news



Europe's smart grid research agenda updated to 2035

A new strategic research agenda for smart grids setting out the longer term research and innovation activities necessary by 2035 has been released by the European Technology Platform SmartGrids. The document updates and extends the first strategic research agenda, which was published in 2007 covering the period up to 2020.

Since the initiation of the smart grids revolution, the world has changed, states the document. The large majority of stakeholders in Europe, including governments, are now fully aware that their overall target of 34 percent renewable energy supply by 2020 means the grid must be re-engineered and that this may be done cost optimally with intelligent grid based systems.

The SRA 2035 focuses on the research necessary for the further development of the electricity system for the years 2020 to 2035 and beyond. Issues include going well beyond the 2020 targets of a 20 percent reduction of EU greenhouse gases – a factor of 4 is envisioned by 2050 – and 34 percent renewable generation contribution to final consumption.

The research also must consider the increased stress on maintaining the high level of the quality of electricity supply and of the security of the system, and exploiting it together with a much more controllable and intelligent, efficient electricity consumption, and by more energy storage available near the consumption.

Commenting for Incisor, European SmartGrids Platform chairman Ronnie Belmans said, "These activities should start NOW to enable a smooth transition from today ... towards an optimal smart energy system with flexibility in demand and generation by 2035."

Dual RFID-ZigBee sensors to enable NFC apps for the Internet of Things

Libelium has announced a new RFID/NFC module for the Wasp mote sensor platform. The radio module allows sensor data to be used in Location Based Services (LBS) such as asset tracking, supply chain monitoring, intelligent shopping or access management.

By using RFID/NFC passive sensors, along with ZigBee active sensors, Libelium suggests that asset tracking can be more accurate than ever along the whole supply chain process. Product management software, like ERPs, will gain access to real time information related to remaining stock, storage and transportation conditions (temperature and humidity levels, vibrations, light exposure, etc.), expiry dates and even consumer profiles, plus time spent in front of a shelf or products picked up and not bought.

Security applications, including access control, can also be covered with this technology as the Mifare RFID standard uses a 6 bytes key.

The information given by the passive tags (cards, key rings, stickers, etc) is read by the RFID/NFC interface and then transmitted using the ZigBee radio to an Internet gateway which will finally upload it to a Cloud server - making it accessible everywhere. The identification data can also be sent to the Cloud directly using a Wi-Fi radio.

Libelium's CTO David Gascón told Incisor, "Soon, we will scan products in the supermarket with our smartphones to check if they contain anything our family is allergic to, and we'll also see nutritional information, while our fridge will warn us about expiry dates and suggest shopping lists according to our preferences."

EnOcean initiates university programme

The burghers of batteryless wireless systems at EnOcean have launched a new university programme. This is intended to educate the university community about energy harvesting wireless technology and open up students' career opportunities at EnOcean. The programme addresses Electronics, Software or Computer Engineering, Mechanical Engineering, and other related courses. A key element of the programme is 13 month placements (internships) for students.

EnOcean manufactures and markets maintenance-free wireless sensor solutions for use in buildings and industrial installations as well as in further application fields such as smart home, smart metering, logistics or transport. Its solutions are based on miniaturised energy converters, ultra-low-power electronic circuitry and reliable wireless. The technology works entirely maintenance-free without batteries. Its wireless modules harvest the energy they need to power radio communications by collecting energy from ambient sources – such as motion, light and temperature differentials. The International Electrotechnical Commission (IEC) has recently ratified EnOcean's wireless technology as the international standard ISO/IEC 14543-3-10, which is optimised for wireless solutions with ultra-low power consumption and energy harvesting.

The interns selected for the 13 month placements will start working in the development labs of EnOcean this July. Although primarily focused on design and development, there will also be regular involvement with marketing, sales, manufacturing and the recruitment of their successors – a chance for the students to experience the "full picture" of industrial activity.

To guide this new programme, EnOcean has engaged university-expert Robert Owen. From 1994 to 2011 Robert built and ran The European University Programme of Texas Instruments (TI).

low energy wireless news



NXP enables mobile ticketing for smart mobile devices

NXP Semiconductors is enabling MIFARE4Mobile as an embedded applet on upcoming NXP embedded secure elements to support mobile ticketing for the MIFARE Classic system installed base worldwide. The solution is available now in NXP's PN650 stacked solution, incorporating the PN544 NFC controller and SmartMX based P5 secure application platform (embedded secure element).

According to NXP, the MIFARE technology platform has become the most widely adopted contactless technology on the market today and is an essential element in public transportation schemes, ticketing systems, loyalty programs, and access management as well as more than 40 other applications around the world. Through a licensing program the MIFARE technology platform is available on several form factors, including embedded secure element, UICC SIM and micro SD, from different vendors.

MIFARE4Mobile is a technology which is used to manage MIFARE-based services such as transit ticketing, access management and loyalty, in NFC enabled mobile devices, from over-the-air installation to end-user interaction via the user interface of the mobile phone. MIFARE4Mobile is guided by the MIFARE4Mobile Industry Group, which was formed by leading players in the NFC ecosystem in 2010, and is currently defining the next evolution of MIFARE4Mobile specifications. The upcoming specifications aim to support additional MIFARE technology platform products and compliance to global standards such as Global Platform.

The currently published MIFARE4Mobile specification is V1.01 and has the capability to serve MIFARE Classic based infrastructures. In its first MIFARE4Mobile applet implementation, NXP Semiconductors extended V1.01 features to allow for multiple service providers within one secure element.



NXP's spokesperson told Incisor that over 650 cities and more than 50 countries are using the MIFARE technology platform, mobile applications and, specifically, ticketing for public transit.

Turkcell and Akbank move NFC Payment forward

Communications and technology company Turkcell has announced its collaboration with Akbank to introduce the merging of its NFC-based Mobile Wallet Service, Turkcell Cep-T Cüzdan, with its Location Based Services ("LBS").

Now, Turkcell subscribers holding Axess cards can shop with their mobile phones through Turkcell Cep-T Cüzdan and benefit from the special promotions offered by Akbank. The two companies are also providing customers with 'surprises' through location-based services.

This location based system enables credit card users who add their Axess cards to Turkcell Cep-T Cüzdan to be informed about spontaneous promotions tailored to the specific user, and surprise campaigns around their current location. Turkcell Cep-T Cüzdan users who wish to utilize these campaigns can go to the related sales points and enjoy the benefits of paying through their Axess cards, as defined on Cep-T Cüzdan.

Chief New Technology Business Officer Cenk Bayraktar commented that "We are proud to have realized many firsts in the area of NFC technology that we have implemented both globally and in Turkey."

Akbank Executive Vice President in charge of Payment Systems, Mehmet Sindel underlined that the aim is to integrate mobile phones - an indispensable part of the daily life - with payment systems and commented, "We closely monitor and adopt technological changes that facilitate our customers' lives. We completed



the first stage of our project that is enabling shopping with Axess cards by registering them with users' mobile phones in previous months through our collaboration with Turkcell. Now we are launching this new application to make it more attractive for our customers."

Nokia brings NFC to Nokia Lumia 610 smartphone

Nokia has announced an NFC version of the recently-launched Nokia Lumia 610 Windows Phone, the cheapest smartphone in the Lumia range. Orange will be the first operator with the Lumia 610 NFC, which can pair with NFC accessories and read NFC tags. The Lumia 610 NFC also has the hardware and software enablers for the implementation of NFC payment and ticketing solutions, and has been certified for contactless payments both with MasterCard PayPass technology, and with Visa's mobile application for payments at the point of sale, Visa payWave.

MasterCard PayPass technology provides consumers with an alternative to cash at the point of sale for their everyday purchases. Devices certified by MasterCard, such as the Lumia 610 NFC, go through a rigorous testing process by a MasterCard accredited laboratory to ensure they will work seamlessly with the PayPass network.

Ilari Nurmi, head of product marketing for Nokia's Smart Devices business unit told Incisor, "Nokia continues to lead the field in NFC with this latest implementation on the Windows Phone platform. We're bringing NFC right across our portfolio, and together with our ever-growing range of NFC accessories we're making it easy for people to connect via a single tap. We're also enabling operators and other service providers to build NFC payment and ticketing solutions on top of our smartphones."

The Lumia 610 NFC is expected to be available early in the third quarter of 2012.

white space/4G/m2m news



Pan-European M2M service to be delivered by MNO and partner

Mobile network operator JT and M2M market specialist Stream Communication have issued a statement saying that they will roll out a pan-European machine to machine (M2M) mobile network service.

The two companies tell Incisor that they have entered into a joint partnership and strategic agreement to provide what they say is the first service offering a true pan-European reach at an effective price point. M2M is expected to be one of the most dynamic growth areas for mobile communications, with 27% compound growth per annum predicted to 2016. One of the contributors to this growth is expected to be smart metering.

JT claims to have a wide range of roaming agreements across the UK and Europe, delivering access to multiple networks in most European countries, and suggests that organizations looking to rollout complex M2M projects through the partnership would only have to deal with one operator to access multiple European networks.

Stream Communications has built and implemented a private network backbone. The company's proprietary online M2M platform, OaSys, provides customers with access to, and management of, SIM cards and multiple network services, as well as real time billing, analytics and tariff information.

The partnership says that it will deliver one central point to plan, execute, track and report on M2M projects, and claims to be able to rollout M2M systems with minimal time delay and technical development client side, even for projects based across multiple countries. Furthermore, network services and tariffs can be tailored according to specific customer requirements.

Sounds a bit ambitious, if you ask us. Comment has been sought from other players in this industry.

Asia's carriers roll out LTE

In 2002, Asia-Pacific mobile operators lagged behind their North American and European counterparts in terms of service development. Fast forward to the present day and, according to ABI Research, the situation is very different. Out of 110 networks, 10 operators (9%) have commercial 4G LTE networks up and running. Another 58 (53%) either have specific plans to roll out LTE or are conducting trials.

"We estimate total Asia-Pacific mobile capital expenditure to reach US\$53.3 billion by the end of 2012," commented Jake Saunders, vice president of forecasting. "62% is still very much earmarked for radio access network deployment. Other key investment areas include EPC and gateway upgrades to the core network at 9%, as well as improving in-building wireless coverage into dense urban centers at 5.7%."

Evidence for this equipment spend can be seen in a number of markets. In China, 4G licenses have yet to be issued, but that has not stopped China Mobile from making plans. In 2Q-2012, China Mobile announced that it had completed a six city TD-LTE trial. The 655 million subscriber operator plans to ramp up its TD-LTE base station count to over 20,000 TD-LTE base stations by December and 200,000 by 2013. China Unicom is focusing on accelerating its 3G network build-out, optimizing 2G network coverage, and expediting indoor coverage. China Telecom is focused on implementing telecom cloud and value-added services projects.

Heavy RAN investment has been taking place in India. A number of operators are jockeying for position in a very competitive marketplace. On April 10, Bharti Airtel became the first operator to launch 4G LTE services in India, in Kolkata. Bharti Airtel hopes to launch 4G services in Bangalore before June 2012. Equipment spend is not just occurring in 4G. The Indian operator, Idea, has continued to roll out 2,270 2G cell sites and 1,176 3G cell sites in the past year.

Southeast Asia has seen a strong commitment to 4G, with commercial networks up and

running in Malaysia (likely WIMAX over LTE), Singapore, and the Philippines.

Global M2M subscriber base now exceeds 100 million

According to new a research report from the analyst firm Berg Insight, the global number of mobile network connections used for wireless machine-to-machine (M2M) communication increased by 37 percent in 2011 to reach 108.0 million. Asia-Pacific was the strongest regional market, recording a year-on-year growth rate of 64 percent and reached 34.5 million connections at the year-end. Europe and North America grew by around 27 percent each to 32.3 million and 29.3 million connections respectively.

In the next five years, the global number of wireless M2M connections is forecasted to grow at a compound annual growth rate (CAGR) of 27.2 percent to reach 359.3 million in 2016. "2011 was the year when M2M communication really took off in China. The number of wireless M2M subscribers in the country nearly doubled and is now estimated to exceed 20 million", Tobias Ryberg, Senior Analyst, Berg Insight told Incisor. "We believe that China Mobile became the world's largest M2M connectivity provider at the end of 2011 with around 14 million subscribers. If the trend continues, the Chinese market will surpass the US in absolute terms within two to three years".

Berg Insight expects that 2012 will be another positive year for the wireless M2M industry. A renewed interest in telematics technology from the global automotive industry has already had a positive effect on demand and promises to generate very significant additional volumes over the next years. Overall, the enterprise M2M market will benefit from increasingly advanced service enablement platforms that facilitate the integration of enterprise applications and networked remote devices.

events



DATE	EVENT	LOCATION	NOTES	LINK
June 3 - 9 2012	Bluetooth SIG UnPlugFest 42	Shanghai Marriott Hotel City Centre, Shanghai, China	-	www.bluetooth.org
June 12 - 14 2012	Wi-Fi Alliance member meeting	Toronto, Ontario, Canada	-	http://www.wi-fi.org/events_overview.php?id=351
June 27 - 28 2012	European ZigBee Developers Conference	Munich, Germany	-	http://www.zigbee-devcon-europe.de/
October 9 - 11 2012	Smart Homes 2012	Rai Convention Centre, Amsterdam, The Netherlands	-	http://www.smarthomes-europe.com/
Nov 13 - 16 2012	electronica	Messe Munchen, Munich, Germany	-	http://www.electronica.de/
Jan 8 - 11 2013	2013 International CES	Las Vegas, Nevada, USA	-	www.cesweb.org
March 5 - 9 2013	CeBIT	MesseGelande, Hanover, Germany	-	http://www.tradefairs.com

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