

# INCISOR™

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environment

Video enabled  Issue 153

January 2011



## A WI-FI CHRISTMAS CAROL

### THIS ISSUE

CONSIDERING: WI-FI DIRECT VERSUS BLUETOOTH  
BLUETOOTH – THE ROAD AHEAD  
GOOGLE TV FOR THE REST OF US

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# what would nostradamus say?

The end of the year always prompts the sages to rub their beards, sip their favoured tippie, and to ruminate on what the future will bring.

The short-range wireless industry is no different. Several of the market research companies have seen fit to send us their predictions – see Juniper's 'Top ten wireless predictions for 2011' on page 12, for example, while IMS looks at Bluetooth's automotive future on page 10.

Should I enter the fray? Perhaps not. It's hard to predict, and I don't have a beard (well, just a couple of day's stubble). I couldn't, for example, have predicted that this morning a van, trying to avoid hitting me as it came down the snowy little lane that I live at the end of, would go up a bank and flip over in front of me.

Life is unpredictable.

I do think that 2011 will see a tough battle between Bluetooth and Wi-Fi Direct. Regular readers of this column, and Incisor itself, will know that I consider the Wi-Fi industry to be a) less regulated and controlled than the Bluetooth industry and b) considerably more aggressive. It (the Wi-Fi industry) is looking to challenge Bluetooth on its home turf.

In this issue, Dean Gratton looks at the Bluetooth v Wi-Fi Direct conflagration. Dean applies his usual, entertaining touch, but, be in no doubt, this is going to be a bloody war.

The question is - who can forecast which technology will end up on its roof with its wheels in the air?

Perhaps there will be clues at CES. I hope to see you there.

**Vince Holton**

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

## INCISORTV FOCUS THIS MONTH:



Sean O'Sullivan of Rococo Software tells Incisor about LocalSocial, an amazing new application using Bluetooth and proximity technology.

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"I want to catch up with the ghosts of Wi-Fi past, present and future. Not an easy task, I have to say." What is Dean on about? Well, he's going all Dickensian on us as he considers Wi-Fi's prospects in Bluetooth's back yard.

### BLUETOOTH – THE ROAD AHEAD

IMS Research considers the future for in-car Bluetooth

### GOOGLE TV FOR THE REST OF US

Say this very quietly, because they don't want you to know, but there IS somebody out there promoting Ultra Wideband!

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# news



## Motorola Mobility streams video, sells off everything...

While its handset business remains in the doldrums and is about to be spun off, Motorola has been looking at the connected home as a potential growth area.

Motorola's Mobility business has completed its acquisition of 4Home, Inc., a developer of software and services that bridge the gap between consumers and the connected home. Terms of the transaction were not disclosed.

However, the Mobility business itself, which includes its set-top box and cellphone business, is also about to be spun off by Motorola from the rest of the company on January 4.

Confused? Try to keep up at the back.

Back to the original topic, then. 4Home has been a provider of "connected home services," which include energy management, home security and monitoring, media management, and home health. 4Home's ControlPoint, Portal Server, and SDK software products allow hardware vendors and service providers to create and deploy applications and services for the connected home. Motorola's release said that a single copy of the networked ControlPoint software installed anywhere on the home network provides whole home coverage — from anywhere and at anytime. Portal Server is an application server for the NOC providing home control services for a mass-market rollout.

At the same time, Incisor learns that Motorola Mobility will sell a product in 2011 that lets consumers stream video to mobile devices such as tablet computers and cellphones in their home. The product, details of which weren't available as we went to press, will apparently be showcased at

the Consumer Electronics Show - right after Motorola has spun off Motorola Mobility!

The streaming product, says Motorola Mobility, is a first step in its efforts to combine set-top box and cellphone technology to eventually allow consumers to view any content anywhere on different devices in the next five years.

What technology is being used to stream video wirelessly in the home – Wi-Fi? Bluetooth high speed? Ultra Wideband? Solar radiation? We don't know, but IncisorTV's camera crew will do its best to unearth this mysterious product at CES, so look out for an update in one of our daily video show reports, and in the next issue of Incisor.

### ... meanwhile, Motorola also helps consumers with hands-free laws

While actively divesting itself of various divisions, Motorola's accessory business is helping consumers adapt to new laws affecting cell phone use while driving. The company has introduced three new hands-free devices: Finiti, CommandOne and Roadster.

All three have apparently been designed with integrated ability to allow users to respond to texts with their voice. The MotoSpeak feature uses text-to-speech and speech-to-text technology so you can hear your texts when they arrive and dictate a response. The timing is good - five more American states are introducing or enforcing bans on texting or handset use while driving this season, including Delaware, Massachusetts, Maryland, Oklahoma and Wisconsin.

Motorola is biting the bullet (groan ...), and taking its message out to consumers. On December 9 in Wilmington, Delaware, Motorola gave local residents the opportunity to attend an event to experience product demos and participate in a holiday multi-tasking challenge to benefit a local charity. Attendees tested their hands-free

productivity by answering holiday trivia via hands-free texting while wrapping presents for children in need this holiday season. Participants also had a chance to win one of the new devices featuring MotoSpeak, just in time for use during the hectic holiday season. Milwaukee residents also had the opportunity to test out the new hands-free devices first-hand on December 3.

It's a BIG job for a consumer electronics manufacturer to take on the challenge of promoting technologies directly to consumers. Motorola is to be applauded for this initiative.

Now, when does it come to Basingstoke?

## MindTree unveils Bluetooth low energy IP suite

MindTree has announced the launch of BlueLitE, a single mode Bluetooth low energy (Bluetooth 4.0) Intellectual Property suite.

The BlueLitE IP suite consists of Software IP – stack and profiles, and Silicon IP – baseband controller, digital Phy (Physical Layer) and RF. The pre-integrated solution IPs for complete transceiver and connectivity chip are part of the roadmap.

"MindTree has extensive experience in implementing Bluetooth connectivity in devices like headsets and optimised Application Specific Integrated Circuits (ASIC). We have developed the IP taking into account the various nuances of resource constrained, sensor based devices - the primary targets for Bluetooth low energy" said Dr. Raghunath Govindachari, CTO of MindTree R&D Services.

Several of MindTree's Bluetooth IPs have been qualified for 2.1+EDR specifications. MindTree also offers product realisation services along with its IP.



## Entertainment devices go Over-the-Top

Over-the-Top (OTT) services have grown very popular over the last year and they will only get bigger considering the connectivity of home entertainment and portable CE devices. IMS Research forecasts that over 2.1 billion connected devices will ship globally. This includes a forecast of 592 million fixed entertainment devices such as TV sets and game consoles, nearly 2 billion portable CE such as smartphones and tablets, and 268 million home network devices such as residential gateways.

IMS expects OTT services to be integrated into many fixed entertainment devices, including TV sets, Blu-ray Disc players, set-top boxes and game consoles. Anna Hunt, principal analyst at IMS Research states, "More intelligent connected CE products that offer increased processing power present an immense opportunity for OTT service providers. Their eagerness in working with CE suppliers and a variety of platforms outside of the PC creates a challenge for specialized OTT device suppliers, such as Roku and Boxee." IMS expects the global market for OTT boxes to stagnate in 2011 and 2012 due to this competition, and then the market is forecast to slowly decrease to 5 million units shipping in 2015.

IMS Research has recently published a global study on Convergence in Home Entertainment and Portable CE, which offers forecasts for over 24 devices, projects the types of connectivity technologies being integrated into these devices, and examines strategies.

## Mecel Betula head unit concept with MAP and AVRCP1.4

Mecel is now showing a PC-version of its Betula SDK, encapsulated in an HMI. The Betula SDK is intended to allow car manufacturers to enable enhanced connectivity services and provide Bluetooth functionality in vehicles around the world.

The updated version of the Mecel Betula Head Unit Concept, which is widely used by leading phone manufacturers, OEM's, Tier1's and other stakeholders within the Bluetooth industry, contains the new MAP (Message Access Profile) and AVRCP1.4 (Audio Video Remote Control Profile 1.4) profiles.

Mecel is getting pretty excited about the applications that will be emerging, such as being able to browse your media content as if the files were physically available in your head unit or to read your incoming SMS/e-mail on the head unit display.

With these two additions to the Betula Head Unit Concept, Mecel told Incisor that a complete automotive reference design is now available for IOP testing, or just to allow the car companies to get a feeling for what sort of features they will be able to implement in automotive systems in the not too distant future.

## Antenova shows GPS RADIONOVA

Antenna and RF solutions company Antenova has launched the M10372 GPS RADIONOVA, which is a planar mount GPS Radio Antenna Module. This combines CSR's SiRFstarIV GPS chipset with Antenova's antenna technology in a low profile package. Antenova suggests that the M10372 is suited to embedded GPS, machine-to-machine (M2M) and mobile device applications such as personal navigation devices (PNDs), automatic vehicle locators (AVLs), trackers and portable media players (PMPs).

The M10372 is suitable for L1-band GPS and A-GPS systems. All front-end components are contained in a 29 x 13 x 4.7mm single package laminate base module providing a complete GPS receiver. The module apparently operates on a single 1.8V positive bias supply with ultra low power consumption and available low power modes for further power savings. It is compatible with UART, SPI and I2C host processor interfaces. Custom versions of the module can also incorporate an antenna switch for optional active antenna connection.

# new products



## Jabra Cruiser2 – still an Incisor favourite?

Remember Incisor's review of the original Jabra Cruiser speakerphone? We put it in the 'Stuff we really like' category after driving across Canada on an icy ski trip (you can see the original review in [this issue](#), and see the Cruiser featured in a number of IncisorTV movies, including [this one](#) that we made for Jabra).

Jabra has now re-launched the product as the Cruiser2. The new version has some new features, including Caller ID and Voice Guidance, and also a different look.

Caller ID announces who is calling you, exactly how you have the caller programmed into your mobile phone, for example, "'Mum at work' calling". Voice Guidance verbally guides you through the simple initial set up process, and also updates you on connectivity status and low battery levels.

Other features of the Cruiser2 include:

- Multiuse technology – allowing you to connect two Bluetooth devices to the in-car speakerphone at the same time and switch between users
- FM Transmitter – so you can transmit MP3s from your mobile device to the in-car speakerphone and play them through the car stereo system
- Noise Blackout technology – this is Jabra's system that reduces ambient sound using microphones that can distinguish between background noise and the caller's voice,
- Auto-pairing - ensuring your phone automatically pairs with the Cruiser2 whenever you are in range

Jabra told Incisor that the Cruiser2 offers up to 14 hours talk time and up to 20 days of standby time and comes with two chargers – a micro USB cable for charging via PC and a universal car charger. Other features include Bluetooth 2.1 Technology, including EDR and



eSCO, answer/end, redial and voice dialing and four pre-installed languages for Voice Guidance.

Incisor's review sample of the Cruiser2 has just arrived, and is about to fly to the USA with us for the CES trip. This involves about 1,000 miles of driving (we get around a bit!), so we'll have plenty of chance to find out whether we're just as happy as we were in Canada. Look out for the update in the next issue!

Oh, and the Jabra Cruiser2 is now available online and at retail stores, with a suggested UK retail price of £99.

### ... and re-invents its most popular headset style

Jabra has launched its next generation Jabra Wave, a Bluetooth headset using the behind-the-ear wearing style. Jabra told Incisor that the Wave offers improved comfort and new features including wind noise reduction, voice guidance, and Multiuse technology. New battery technology has allowed for a slimmer, lighter headset.

A new microphone concept combined with Digital Signal Processing (DSP) apparently ensures clear audio, even while walking or battling outdoor elements. The Wave's boom tip features a microphone that is designed for better immunity to wind noise and turbulence, while automatic volume adjustment and acoustic shock protection prevent unexpected high pitched tones and other noises that may occur in telephone networks.

Voice guidance takes the guesswork out of operating the headset by notifying users of crucial status updates, such as connectivity and low battery. StatusDisplay LED indicators also display multi-coloured lights that correspond to the headset's battery level and Bluetooth connection status so users can gauge their status with just one glance.

The Jabra Wave can be connected to up to



two devices at the same time via Multiuse technology, allowing users to transition between multiple phones, or internet calls if connected to a Bluetooth-enabled PC.

The Jabra Wave is available to buy now, and in the UK it has a suggested retail price of £59.99.

## apt-x in high-end speaker dock

Conran Audio, which describes itself as a new British "designer brand" in high-end consumer audio, has apt-X enabled its new speaker dock in order to deliver high-quality wireless audio connectivity. Created for Armour Home by design consultancy Studio Conran, the Conran Audio Dock is looking to deliver elegant design aesthetics with the acknowledged Bluetooth stereo performance of apt-X, the low-latency audio codec technology developed by Audio Processing Technology Ltd, a company recently acquired by CSR.

In addition to its ability to play wired audio from physically docked iPods and iPhones, the Conran Audio speaker dock can also play wireless audio streamed remotely from Bluetooth A2DP enabled portable media players, smartphones, laptops, and tablets, such as the iPad. The Conran dock is also compatible with apt-X for the reproduction of CD-quality full-bandwidth stereo audio over Bluetooth wireless connectivity.

The Audio Dock exhibits a frequency response of 75Hz – 20kHz, giving it the capacity to reproduce music with clarity, and has a power output of 2 x 15 Watts. The unit incorporates separate 2 x 75mm loudspeaker drivers for bass/midrange signals and 2 x 25mm dome tweeters for high frequencies.

The Conran dock has six preset audio equalisation settings to optimise its performance for different musical genres and goes on sale in January 2011.

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# A Wi-Fi Christmas Carol

by Dean Anthony Gratton

I'm hoping most of you caught last month's column, which covered how amazing Bluetooth wireless technology really is and how, along with the recent introduction of Bluetooth low energy, it feels both invigorated and renewed as it commences a new chapter within the personal area networking domain. By the way, I'd like to thank you all for your great feedback last month – it's certainly very much appreciated and has put me in the Christmas spirit; I'm already quaffing endless amounts of mulled wine (yummy!). Having said that, although feeling festive, I'm avoiding all those annoying Christmas songs, which I have no doubt will be bellowed out by many people infused with copious amounts of eggnog and, instead I'm listening to the new album from *Orchestral Manoeuvres in the Dark, History of Modern*.

I'd like to say, before I begin, that I don't want to taint last month's feature and I don't want to unnecessarily take away the limelight from Bluetooth. However, with the Wi-Fi Alliance ([wi-fi.org](http://wi-fi.org)) now certifying Wi-Fi Direct products, Bluetooth's gloss has been dusted with a light covering of disconcertion; something which the snow that's debilitating most of the UK and Europe at the moment, can't be blamed for! Wi-Fi Direct has been touted now for a few years and it's only recently that the Wi-Fi Alliance is delivering on its promise.

## Been there, done that and have earned battle scars

Inevitably, the typical industry reaction is summed up succinctly, "It's Wi-Fi Direct versus Bluetooth" – honestly, the number of times I have read this sensational headline; well, I mean it's so predictable! It's the same monotone twaddle or, if you like, the Scrooge 'bah-humbugging' and dimming of the wireless industry's festive lights. I thought I'd drop Mike Foley, Executive Director, Bluetooth Special Interest Group an email and ask him if this



was all déjà vu? He openly stated "Yep, it's déjà vu, but it's not surprising." He continued, "Every year or so, another technology is launched that claims to be the next best thing since sliced bread – but we've been there, done that, and have earned battle scars..." What's more, I thought I'd ask Edgar Figueroa (thanks Kelly), the Wi-Fi Alliance's CEO, the same question. Taking a similar stance to Mike, Edgar added "The reported rivalry between Bluetooth and Wi-Fi Direct is greatly exaggerated." So far, so good!

Seemingly void of a Korean tinderbox, there's peace between both wireless camps (for the moment) but I still want to address that clichéd headline and really

understand the promise being made by the Wi-Fi Alliance with its Wi-Fi Direct offering as I ponder over whether Bluetooth should be overly concerned. With this in mind and, so as not to lose that Christmas spirit, I urge you to pour yourself a glass of mulled wine, take a cosy seat next to that roaring fire, and listen to my Wi-Fi Christmas Carol – beginning with my visits from the ghosts of Wi-Fi past, present and future.

## The Ghost of Wi-Fi Past

I'm here now with the ghost of Wi-Fi past. A mature and astute chap, surrounded by a faint odour of Whisky and shrouded in cigar smoke. He wistfully recalls the tale



of Wi-Fi past, reminding me that Wi-Fi first entered the market at roughly the same time as Bluetooth – give or take a few years, although I think Wi-Fi was first with its 802.11 (no letter!). Just so that I'm clear, I'm talking about the technology and not the standards' organisations. Both technologies were finding their feet at the time and, of course, both technologies faced very different teething problems (excuse the pun!). We were all very much privy to the same headlines that pitted the technologies against each other. But then, this short-range RF malarkey was relatively new and it was an exciting time. Engineers were creating first generation short-range RF products (putting aside Infra-red) and they all had jobs – ah, good times! With Bluetooth, we witnessed the emergence of the personal area network (PAN), something which we have all become familiar with over the last decade or so. Wi-Fi, on the other hand, was architected to extend the local area network, what we have come to know as Wireless Local Area Networking (WLAN). More specifically, Wi-Fi was designed to address cumbersome fixed-wire installations. In other words, if a cable was difficult to deploy in a hostile office or similar environment, Wi-Fi could be used to overcome any installation shortcomings. I should also highlight one other feature of the ghost of Wi-Fi past: admittedly his status within the PAN can at times be contentious, but Wi-Fi is an integral technology to a personal area network and, moreover, is not a personal area networking component. Wi-Fi merely extends your PAN experience to the local or wider area network. What I learned from the company of this particular ghost, and what I had perhaps forgotten as the years have passed and the technology has evolved, was the sheer ease with which Wi-Fi entered our lives and simplified connectivity. As I watch this wistful spirit depart, taking a final draw on his cigar, I feel a comforting hand rest upon my shoulder and find myself smiling at the pleasant nostalgia he has evoked.

### The Ghost of Wi-Fi Present

I'm now with the ghost of Wi-Fi present. A convivial fellow; somewhat larger than life, with a bellowing chuckle that's as large as his belly, he begins to show me a vision of Wi-Fi today. A vision that begins with an acknowledgement that both Wi-Fi and Bluetooth have very clear boundaries in terms of their topology. It's like I mentioned before, Wi-Fi is iconic insofar as it enables everyone to connect to the Internet and Bluetooth enables us to share content, listen to music through a Bluetooth-enabled headset and so on – very defining user scenarios and it seems 'never the twain shall meet'. Foley confirmed, "we use it (Wi-Fi) and we think it's great for the use-case it was intended for, connecting to the Internet."



Wi-Fi and Bluetooth have continued to evolve their technologies respectively. Bluetooth has extended its technology portfolio with the inclusion of Bluetooth low energy and Wi-Fi continues to deliver greater throughput with 802.11n. One stumbling block for Bluetooth is its high-speed offering. Ironically, despite my suggestion that never the twain shall meet, Bluetooth has opted to deliver its high-speed solution through Wi-Fi. I'm sure you all recall that the original concept was to use Ultra-wideband, as Filomena Berardi, Market Research Analyst, IMS Research explained, "Initially the technology was going to use UWB as its fast data pipe, but due to several political issues, Wi-Fi was considered a better route to go down."

As the ghost of Wi-Fi present brings his vision to an end, he reminds me that both technologies have educated everyday consumers. An arduous journey indeed, but nowadays consumers understand basic wireless capabilities and know-how. Both Bluetooth and Wi-Fi coexist in many consumer electronic products, serving their respective applications. Not only do the technologies continue to evolve in terms of features, but simpler connectivity methods

are also improved, which further enhances everyday experiences.

### The Ghost of Wi-Fi Future

I turn away for a moment to reach for my glass of mulled wine and, as I turn back, I see the larger than life fellow replaced by the ghost of Wi-Fi future – at least, I assume it's the ghost of Wi-Fi future; I can't really see him, as he's cloaked in a fog-like mist. As I squint to make him out, he gestures to the television in the corner of the room, where the TV bursts into life and begins to show me a vision of Wi-Fi future.

The delimitation between applications and use cases has been crystal clear over the last decade or so. Wi-Fi has never been classified as a personal area networking technology, but the vision I'm shown seems to suggest that the Wi-Fi Alliance wishes to embark upon a journey where Wi-Fi technology will undoubtedly become an intrinsic member of the PAN family due to its new Wi-Fi Direct standard. I sip some more mulled wine and become engrossed in what can be only described as a host of new user scenarios that



overlap with Bluetooth. Edgar confirms, "Wi-Fi Direct enables a wide range of possible use cases, and we're excited to see what kinds of neat things emerge from the application development ecosystem." He continues to elaborate, "Some of the initial uses we'll see are printing apps (e.g., direct from camera or phone), share or transfer content (synch a music library, transfer a picture or file), and display (show photos on a TV screen). When two or more devices can quickly make a direct Wi-Fi connection at Wi-Fi rates and range, the sky really is the limit on what can be invented to make use of that connection." In terms of the inevitable application overlap with Bluetooth, Edgar finally concludes, "In the instances where there is overlap, vendors will make their own decisions about which technology to use for what applications."

### Expressing concerns

I dare say, the future for 2011 seems to have Wi-Fi Direct and Bluetooth pitted against each other leaving many manufacturers doubting whether or not the two technologies will be integrated into their consumer electronic products. Filomena (IMS Research) highlighted, "I feel that there are more opportunities for Wi-Fi Direct and question whether there is a need for both technologies in certain devices. Based on conversations I've had with set-top makers, handsets makers and other OEMs, I do believe there will be significant uptake of the technology."

Wi-Fi Direct clearly places Wi-Fi into a territory that it's unfamiliar with – it now has to mandate interoperability scenarios across multiple products, which have to support multiple manufacturers. Mike Foley expressed his concerns with the Wi-Fi Alliance extending beyond what is already understood - he said, "We know Wi-Fi – we use it and we think it's great for the use case it was intended for, connecting to the Internet." Mike continues, "But extending beyond that is unproven and much more difficult than the Wi-Fi Alliance may be purporting. As companies develop diverse, leading-edge connected CE products, counting on unproven ideas like Wi-Fi Direct for

connectivity is an unnecessary, risky, and likely a costly (time and money) proposition."

### Do I hear cries of Bluetooth is dead (again)?

Clearly, the Bluetooth SIG has a decade's experience in supporting multiple manufacturers who provide many of the applications supported by Bluetooth wireless technology. Bluetooth has come a long way, has battled its way through and has succeeded where others have failed. In fact, Filomena confirms that Bluetooth won't meet a sorrowful demise; on the contrary, "I don't however believe BT will disappear, as its presence in handsets cannot be ignored. The development of Bluetooth low energy will mean the technology is still important in handsets. This technology will be able to address markets such as fitness, medical and many other low power applications." But I know Bluetooth can't rely solely on its BLE offering; it has the classic and high-speed variants to attend to and the SIG mustn't ignore the market potential, as Mike confirms, "Our market-proven strategy is simple – stay focused, stay innovative, stay on top."

The mist is fading and it's become a lot clearer for me. In that moment of realisation, the television abruptly stops and the ghost of Wi-Fi future bids farewell (at least I think that's what he's doing!). So, despite the concerns raised earlier in the vision, it seems the Wi-Fi Alliance has the unfortunate task of re-educating its consumers. As Mike suggests, many consumers associate Wi-Fi with an ability to connect to the Internet, so the Alliance will need to undertake a programme where consumers can gain a better understanding of what other scenarios are possible. I know, for instance, that if a printer is connected to an access point, then PCs connected to the same access point can share the services of that printer. But now the Wi-Fi Alliance has provided scenarios where you can print directly from a mobile phone or from a camera, something you'd ordinarily associate with Bluetooth. With or without the mulled wine, it's all becoming very confusing!

### No-one's certain of the future

My Wi-Fi Christmas Carol has been told and the challenge has been set. Wi-Fi has spent the last decade convincing individuals and businesses alike of its greatness and now wishes to extend the technology into an unproven domain. 2011 will be a year to watch, as I'm guessing the future will be a little turbulent for Wi-Fi Direct until it finds its feet, and, more importantly, what will Bluetooth do? As memories of my festive tale dance in my head, a single phrase leaps to mind that best summarizes my thoughts towards the two technologies this Christmas and the duelling that awaits them: "And I heard them exclaim as they vanished from sight, Merry Christmas to all and to all a good fight."

### Until next month ...

I notice already there's some CES hype being touted. I can't wait! So, this is where Dr G signs off this year (again) and I wish you all a great Christmas and a spectacular New Year. Take care.

### About the Author

Dr Dean Anthony Gratton is a bestselling author and columnist. He has authored several patents, contentious articles and a number of bestselling books on wireless technology. He has worked within the telecommunications industry for over sixteen years and provides consultancy to a number of high profile companies.

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## Snippets

### Nokia files more patent infringement complaints against Apple

Nokia has filed claims in the UK, Germany and the Netherlands, alleging that Apple infringes Nokia patents in many of its products sold in these countries, including iPhone, iPad and iPod Touch.

Nokia's filings include: UK - 4 Nokia patents related to touch user interface, on-device app stores, signal noise suppression and modulator structures, Germany - 7 Nokia patents related to touch user interface, antenna structures, messaging functionality and chipsets, and 5 Nokia patents related to on-device app

stores, caller ID, display illumination and the integration of multiple radios and Holland - 2 Nokia patents related to signal noise suppression and data card functionality.

# Bluetooth – the road ahead

## IMS Research considers the future for in-car Bluetooth

The use of Bluetooth in handsfree devices soared as a result of a number of countries and states banning the use of hand-held cell phones while driving. Bluetooth and handsfree calling go hand in hand; IMS Research estimated that over 7 million cars were Bluetooth-enabled in 2009. Furthermore, forecasts are positive. IMS Research believes that over 25 million cars will be Bluetooth-enabled in 2017. Consumers, pushed by legislation, cell-phone makers and network carriers, are well aware of the handsfree use-case. They have adopted it, and like it.

Audio streaming is the second use-case for Bluetooth in vehicles. The Advanced Audio Distribution Profile (A2DP) is already incorporated in a number of products in the aftermarket and OEM market. The market for A2DP-enabled Bluetooth in cars is still relatively small compared with that for handsfree calling. One reason is that most consumers are still fairly unfamiliar with the concept of wirelessly streaming music via Bluetooth. Furthermore, the A2DP profile was initially criticised for not delivering good enough audio quality and was thus not pushed by certain high-profile device makers. However the Bluetooth SIG community has made a determined effort to improve audio quality and meet consumer expectations\*. According to IMS Research's latest forecasts from its annual Bluetooth report, the number of A2DP-enabled devices, such as PMPs, will increase as a result of this improved audio quality. This, coupled with the fact that car manufacturers are phasing out CD players, will inevitably improve the prospects for A2DP-enabled automotive devices. With more A2DP-enabled devices around, consumers will see the value of streaming with Bluetooth, making its use more commonplace. IMS Research therefore predicts that the situation will change and in 2017 most cars with Bluetooth handsfree will also be A2DP-enabled.

However, developing a market for automotive devices that use Bluetooth low energy may prove a harder task. In principle Bluetooth low energy could be used for a number of in-car applications, such as remote keyless entry, remote



control of infotainment devices, tire pressure monitor communication and possibly as the communication platform for some non-safety critical sensors. It is unreasonable to hail the technology as the answer to every automotive prayer; however there is interest from the industry. Unlike the consumer electronic industry the automotive industry is notoriously cautious and no new technology will enter the market until it has been rigorously tested. In the case of wireless sensors there are two main issues. Firstly the reliability requirements are extremely high in the vehicle, there is no room for error and the expectations of the industry are high. Fundamentally, thus far wires have been doing a good job so unless the technology can prove its robustness, wires will continue to reign. More seriously, the environment of the vehicle is often unsuitable for wireless communication, due to the increasing use of electromagnetic shielding in vehicles. With the technology in its infancy phase, we may have to wait a while until we see the technology in automotive applications. That said, its presence is being felt in the industry.

To conclude, it's very much a time for design innovation using Bluetooth, with many prospective use-cases being discussed and even developed by the automotive industry. However, it is worth remembering that this sector is slow to make decisions; so be prepared for a wait before we see widespread use of Bluetooth low energy in cars. The underlining message to the Bluetooth industry is, "don't hide your light under a bushel". By this we mean continue to innovate and think up new applications in the car, and shout about them! Only then will we see Bluetooth branch out into new and exciting applications in the vehicle.

*\*With respect to IMS' observation, Incisor believes it was the case that the audio quality available with the A2DP profile was always very good. However, it was not necessarily implemented well in early products that supported the stereo music streaming function. This was what generated early negative comments.*

# NEW MOVIES SHOWING AT INCISOR.TV!

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Here are some of the latest movies:



Bluetooth SIG re-structures as part of push to 15 billion device shipments.



Here comes Bluetooth high speed wireless technology!



Frontline Test Equipment – the importance of interoperability testing.



Rococo talks Bluetooth LocalSocial – combining proximity with location.

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# high speed wireless news




## New Wireless HDMI video from Alereon

Ultra Wideband ain't dead yet, you know, and despite the fact that the surviving UWB companies have chosen (for some reason we don't pretend to understand) to operate in stealth mode, there is activity out there.

Alereon, which is one of the survivors, has announced the addition of several new wireless HDMI reference designs to its UWB wireless portfolio: All are powered by Alereon's ECMA and ISO standard AL5000 UWB chipset.

The AL5750 1080p reference design supports high screen resolutions, long range and improved text and video performance with lower CPU utilization for laptop to HDTV applications. Based on the SMSC UFX6000 USB Graphics Adapter, the AL5750 adapter wirelessly supports up to 1080p in both standard and wide screen aspect ratios.

The AL5810/11 provides wireless support for HDMI to HDMI cable replacement application, including High-bandwidth Digital Copy Protection [HDCP] support. The AL5810/11 Wireless Encoder/Decoder, based on the Taifatech Encoder/Decoder supports 1080p with HDCP and is designed for low-cost applications.

The AL5820/21 Wireless Encoder/Decoder with 3D support is based on the Cavium PureVu-3D CNW5302 Full-HD Video Co-Processor. This solution supports 1080p-60 with HDCP utilizing Cavium's SLL Technology for achieving low latency. The AL5820/21 is targeted at high performance designs that support 3D applications.

"Streaming video designs require high quality wireless links that are not susceptible to shaky video artifacts resulting from Wi-Fi interference," Eric Broockman, Alereon's CEO told Incisor. "Alereon's reference designs utilize our worldwide UWB technology that is capable of delivering 240Mbps of throughput and is devoid of the performance and interference issues that are usually associated with other wireless solutions."

Incisor.TV is normally invited to the Alereon booth at CES to view the latest UWB video-streaming demo, so we should be able to preview these products in one of the daily show reports that will be broadcast at [www.incisor.tv](http://www.incisor.tv) during CES.

## Top ten wireless predictions for 2011

As 2010 draws to a close, it's list time again, and Juniper Research has drawn up a list of predictions for the coming year, wrapped up as the top trends for the mobile and wireless industry for 2011.

Citing one of last year's list predictions, Juniper says that 2010 was the year in which the surge in mobile data traffic, driven by the consumer smartphone boom, began to place the 3G networks under severe strain. A number of network operators have responded by introducing tiered data pricing – a trend which will undoubtedly increase – but as smartphone adoption continues apace, network capacity will be sorely tested in 2011.

Tiered pricing (and the use of Wi-Fi as capacity relief) may serve to alleviate the problem to a certain extent, but until we see mass deployments of LTE networks (and, equally important, devices that are LTE-capable), then operators face a nervous period of attempting to manage the transition.

Juniper's Top Ten wireless predictions for 2011 are, then:

1. Surging mobile data traffic
2. Augmented reality to enhance mobile games and retail
3. Cloud-based operating systems are launched
4. Mobile banking will become a "must-have" when opening a new account
5. Mobile devices begin to replace credit cards
6. Mobile handsets become even more sensitive
7. Mobile lottery tickets sales to soar fuelled by deployments in US, Europe, and China
8. Mobile-specific threats lead to demand for mobile-specific security

9. Buyouts take social purchasing to a new level
10. More vendors develop a "greenheart"

A free report detailing the findings is available to download from the Juniper website.

## Cisco threatened as US businesses expand Wi-Fi coverage

In a new report from ABI Research, Wi-Fi penetration in US commercial establishments employing more than five people is forecast to grow to 45% by the end of 2010. Establishment penetration is greatest among large businesses; but over the last two years, penetration growth has been highest in the small business segment.

Enterprise practice director Dan Shey comments, "Education and healthcare continue to be the anchor tenants for Wi-Fi equipment vendors. But now nearly every vertical is expanding use of Wi-Fi, either for employee use or for customers. Adoption of Wi-Fi enabled laptops, smartphones, netbooks and media tablets among the US population has driven this trend and will continue to do so."

Cisco-branded Wi-Fi equipment is in more US commercial establishments than that of any other Wi-Fi supplier. However, Cisco's market share varies widely by size of business. Over time, says ABI, the competitive threats for Cisco will increase on two fronts.

First, smaller Wi-Fi suppliers are targeting the underpenetrated SMB segment with price-competitive, quality products having adequate feature sets. As these smaller vendors establish a presence in the mid-tier market they can take their brand recognition to the larger market segments.

Second, technology evolution and constrained capital conditions are driving companies to consider all their options for choice of Wi-Fi equipment. In the longer term, 4G cellular technologies offer an alternative to Wi-Fi for both on-campus and off-campus connectivity.

# Google TV for the rest of us

by Eric Brockman, Alereon



**Google TV has just launched in the form of new HDTVs from Sony as well as the Revue from Logitech. The Revue is \$299 and a 40 Sony Google TV is \$799 at Best Buy – about \$200 more than an equivalent 40 LED HDTV. Both products require yet another thing to put on your couch or coffee table – a keyboard.**

Google TV may say more about the power of search and Android than it does about a new paradigm for using your HDTV. (It may also be a testament to Microsoft's inability to make Media Center attractive to CE companies.) The issue I have with Google TV is not the nice media search interface. My issue is really simple – it requires me to spend \$300 to \$800 for a new gizmo that is basically comprised of a nice large font media search interface, nice entertainment GUI and a new remote

control/keyboard. That just seems like a lot of money for a GUI + keyboard + search engine.

I do like and want the functionality of Google TV; I like the ability to play and search both my personal content as well as content that "lives" on the web (like Youtube and Netflix). So for this holiday season perhaps the real question then is "What about Google TV for the rest of us?"

Here's what I suggest. Buy yourself an [Imation Link](#) (*Ed.: for those that don't know, the Link uses Wireless USB to stream video, behind Wireless USB is Ultra Wideband, and Alereon is an UWB developer*) and download your choice of free media interface – I suggest Boxee for a simple clean GUI, but also either XMBC if you are a techie, or Plex for MAC users work as alternative choices.

The Imation link doesn't require you to buy a new HDTV so save the \$800+. It costs less than half of the Revue – just \$140 or less. The Imation Link transforms your HDTV into a big LCD screen for your current PC Laptop; it brings the power of your Laptop and of the Internet and all of the content of both to your HDTV. Used to using IE, Chrome or Firefox to search and play on the web, feel free. Surf and use Netflix, Hulu, Youtube, ESPN, Google search and any of your favourite online web sites. All that web content that is now blocked on Google [like all the major networks] you can watch on your big screen from the comfort of your couch. Like using Skype to talk to friends and family? No problem. How 'bout PC gaming on the big screen. Love it. Whatever you like to do on your PC, go ahead. Wow.

What is missing? Most of us don't have a general purpose media interface like Google TV running on their laptop. I suspect Google will eventually update Chrome, Google's browser OS, to be Google TV capable. Windows Media Center works fine, but it doesn't aggregate Youtube, Netflix and other web media content. There are however, some nice choices that work very well as an interface to your media, allow you to access web media and look great up on your HDTV. Boxee is my favorite. It is a free download, is platform independent, has a large apps selection and has a clean media interface for music, movies, photos, etc. You can look at media on the web as well as whatever is stored in your own media library. The next choice is XMBC. It is a freeware project that has multiple interfaces. Boxee was built and extended from the original XMBC source. XMBC is more interesting to techie types, or those people who enjoy full customization of their experience.

Aside from cost and avoiding a high dollar purchase, there are other reasons to purchase the Imation Link and optionally to also download Boxee's media interface software. To me, the most problematic issue with Google TV is that Google TV requires you to learn a new graphical interface, requires you to use Google Chrome as your browser





Buy an Imaton Link and save \$800!

and requires you to add a keyboard. By contrast, using a product like the Imaton Link – which throws your laptop screen up on your HDTV, you may use whatever browser or browsers you already know, use the keyboard on your laptop that you already like, use Google search, which you already know, and use whatever media GUI you wish to use – if any. Perhaps you like iTunes. Maybe you like Microsoft Media Center. Perhaps you'll like Boxee or XMBC. And who knows, Google TV search may get ported

from Android to Windows-7 before long. In short, you get to have your Internet TV experience your way, without having to learn something new, and it costs you way less money. The alternative is to have it Google's way, and having to learn a whole new set of Google software while having to leave yet another remote control or keyboard on your couch and avoid having to buy a new HDTV. I vote for the Imaton Link. And for full disclosure, I already own an Imaton Link and happen to like it a lot.

## Snippets

### 4G/LTE/WiMAX news

#### **Picochip and Wavesat achieve LTE interoperability**

Picochip and Wavesat have announced that they have successfully completed interoperability testing (IOT) between Picochip's PC960x LTE small cell

basestation solution and Wavesat's Odyssey 9000 family of UE chipsets. The two companies say that completing this series of LTE service and IOT milestones represents success in their jointly stated aim of delivering full performance with end-to-end interoperability.

#### **LTE Services in the US Will Generate More than \$940 Million in 2015**

When it comes to mobile network infrastructure discussions, LTE is the name on everyone's lips. Yet the very meaning of the acronym – "Long-Term Evolution" – is a hint that it isn't going to happen

overnight. LTE's deployment as the mainstay 4G technology will take place gradually, and won't even begin to gather real steam until 2013. Nonetheless, LTE is forecast by ABI Research to generate \$942 million in service revenue in the United States in 2015, with nearly a further \$650 million to come from Western Europe.

## 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.

**Click on the links below to watch recent Incisor TV presentations**

**Who needs stress? Says Jabra**

**EnOcean Alliance – energy harvesting technology**

**Aftermarket Bluetooth versus factory fit**

**Bluetooth 2010 All Hands Meeting**

**Anoto - 10 years of digital pen and paper**

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**CES 2010 Daily Show report – Day 1**

**CES 2010 Daily Show report – Day 1**

**CES 2010 Daily Show report – Day 1**

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**BiteBack USA**

**BitBack UK**

**IncisorTV commercial for CSR/SiRF merger**

**DECT Forum and CAT-iq in 2009**

**Bluetooth SIG – Best of CES 2009**

**WiMedia Alliance – UWB in 2009**

**Incisor showreel**

**WiMedia special - UWB - a high performance solution / part 1**

**WiMedia special - UWB - a high performance solution / part 2**

**WiMedia special - WiMedia and Bluetooth**

**WiMedia special - Updating the WiMedia roadmap**

**WiMedia - The future for UWB**

**Bluetooth low energy wireless technology**

**IncisorTV commercial for CSR – BlueCore7**

**IncisorTV commercial for CSR RoadTunes**

**IncisorTV commercial for CSR BlueCore Player**

**A guide to Bluetooth Version 2.1 + EDR**

**10 years of Bluetooth / Best Bluetooth of CES 2008**

**CES 2008 – Profile of Parrot**

**Introducing Incisor**

**2007 Wireless Symposium**

**Bluetooth / Wibree launch event (full version)**

**Incisor TV overview: the Bluetooth SIG / Wibree Forum merge**

**Best Bluetooth of CES 2007**

**Incisor profile: Icron Technologies and Extreme USB**

**Wireless USB special - Introducing Wireless USB**

**Wireless USB special - Wireless USB in use**

# low energy wireless news



## Nordic Semi expands 2.4GHz RF and ANT range

Ultra low power (ULP) RF specialist Nordic Semiconductor is to expand its existing 2.4GHz RF and ANT product line-ups in Q1 2011 with a new set of ultra miniaturized, wafer-level chip scale package (WLCSP) options. These, says Nordic, are designed to meet the highly space-constrained needs of both existing and emerging sports, fitness and health applications such as wireless watches, bike computers, sensors, hearing aids and other devices designed to be worn on or near the body.

Sampling in Q1 2011 and available for volume orders in Q2 2011 will be the nRF24AP2 WLCSP (1- and 8-channel) and nRF24LE1 WLCSP (Flash or OTP) options.

The 1- and 8-channel nRF24AP2 WLCSP package options are, according to Nordic, the world's smallest single chip ANT solutions, featuring 400µm pitch (regular array) 32-ball BGAs with a thickness of 0.5mm and a flat footprint area of just 2.6 x 2.7mm (7mm<sup>2</sup>). If anybody out there knows of anything smaller, then let us know!

The RF24LE1 WLCSP option (Flash or OTP) will again be a 400µm (regular array) 32-ball pitch BGA measuring 2.7 x 2.7 (7.3mm<sup>2</sup>) in footprint area for the Flash version and 2.6 x 2.7 (7mm<sup>2</sup>) for the OTP version. Both devices are 0.5mm in thickness.

"In a lot of existing and emerging health, fitness and medical applications size is quickly becoming a key differentiating factor because the products involved are often carried on or near the body and so need to be as light and small – i.e. discrete – as possible," commented Thomas Embla Bonnerud, Product Manager for Ultra Low Power Wireless at Nordic Semiconductor. "By expanding our 2.4GHz RF and ANT product lines with these brand new WLCSP options



that will provide chip footprint savings of up to 5x compared to competing products – we are enabling our customers to take their end product designs to the next level in terms of size, weight and ultimately end user comfort and convenience that consumers will reward in their purchasing decisions."

## Over 20 million 802.15.4 chips sold in 2009... but fewer than half were ZigBee-certified

An upcoming study by IMS Research, "The World Market for Low-power Wireless – 2011 Edition" reveals that, in 2009, of the 20 million IEEE 802.15.4 ICs shipped, fewer than half were ZigBee certified! The market for 802.15.4 ICs using proprietary networking software is often underestimated, partly because the market is fragmented with a large number of small deals accounting for much of the volume.

Yet there is clear evidence of some application areas moving to standardized solutions. Lisa Arrowsmith, Senior Market Analyst at IMS Research, comments, "In 2010, the product mix of ZigBee, RF4CE, WirelessHART, ISA100, and proprietary solutions using the IEEE 802.15.4 physical layer looks very different to that in 2009. On aggregate, 802.15.4 ICs using proprietary software appear set to lose 20% of their market to ZigBee and RF4CE. Even so, their shipments will triple from 2009 to 2015".

Some application areas are moving rapidly to standardized solutions. They include both existing application areas, and emerging ones such as consumer health monitoring devices and home area networking (HAN) devices that can communicate with smart metering gateways. Demand for standardized solutions is forecast to continue to grow, particularly where consumer markets are expected to



develop, as they require interoperability between manufacturers.

Yet demand for 802.15.4 solutions using proprietary software will also grow. Proprietary software can offer simple network stacks, with relatively low memory overheads; and avoid the certification costs of ZigBee networks. Proprietary-based solutions will remain appropriate in cases where 'open' networks are not required or desired.

## Google and NXP integrate NFC in Android 2.3

NXP has formed a strategic collaboration with Google to provide a complete open source software stack for Near Field Communication (NFC). The NFC stack will be fully integrated and validated on Gingerbread, the latest version of the Android platform. Google also integrated NXP's NFC controller (PN544) into its newly launched Nexus S phone, co-developed by Google and Samsung, offering users access to NFC based services and applications.

With developers now able to access an open source NFC implementation, NXP told Incisor it will help drive the development of new applications that extend the touch interface of mobile applications beyond the devices screen. It also enables manufacturers to develop NFC enabled mobile devices more quickly. Using natural touch gestures, NFC devices can pair easily with accessories, interact on a peer-to-peer level to exchange data, and connect to reader and tag infrastructures. Nexus S will offer consumers access to read NFC tags.

The NXP PN544 chip is compliant with all released NFC specifications on the Single Wire Protocol (SWP) connection with the SIM and the Host Controller Interface (HCI).

# low energy wireless news



## NFC Forum launches certification program, publishes tech specs

The NFC Forum has unveiled the NFC Forum Certification Program, which is intended to offer increased assurance that NFC Forum-certified products are interoperable with other NFC Forum-certified products.

The Certification Program is being launched in waves, as NFC Forum specs evolve. The first Certification Wave includes testing for the lower-level digital protocols, specifically the Tag Operation specifications for the different tag types, the NFC Digital Protocol Specification, and the NFC Activity Specification. The second Certification Wave, scheduled to launch in 2012, adds testing for the physical layer and selected upper-level digital protocols, including RF analog and peer-to-peer.

### New technical specifications

The NFC Forum has also announced the publication of four technical specifications that further define the modular architecture and interoperability parameters for NFC devices and protocols. The specifications are as follows:

The **NFC Digital Protocol Technical Specification** addresses the digital protocol for NFC-enabled device communication, providing an implementation specification on top of the ISO/IEC 18092, ISO/IEC 14443 and JIS X 6319-4 standards. It harmonizes the integrated technologies, specifies implementation options and limits the interpretation of the standards; in essence, showing developers how to use ISO/IEC 18092, ISO/IEC 14443 and JIS X6319-4 standards together to ensure global interoperability between different NFC devices, and between NFC devices and existing contactless infrastructure.

The **NFC Activity Technical Specification** describes the building blocks, called Activities, for setting up the communication protocol between NFC devices or an NFC device and an NFC tag. These Activities can be used as defined in this

specification and can be modified to define other ways of setting up the communication protocol for different use cases. Activities are combined in Profiles. Each Profile has specific Configuration Parameters and covers a particular use case.

The NFC Forum has mandated four tag types to be operable with NFC devices, forming the backbone of interoperability between different NFC tags and devices to ensure a consistent user experience. The **NFC Forum Type 4 Tag Operation Specification, Version 2.0**, which is an update from Version 1.0, provides the technical information needed to implement the reader/writer and associated control functionality of an NFC device to interact with the Type 4 Tag, which is fully compatible with the ISO/IEC 14443 standard. Version 2.0 of the specification updates the parameter values and usage of Select Commands. It also adds coexistence of Type 4 Tag Version 1.0 and Version 2.0, consistently aligning defined terms.

Finally, the **Signature RTD Technical Specification** defines the format used when signing single or multiple NFC Data Exchange Format (NDEF) records. It provides a list of suitable signature algorithms and certificate types that can be used to create the signature. Signature RTD can be used to protect the integrity of NDEF messages (e.g., as stored in tags) by signing it with cryptographic keys.

Specifications still under development include the RF analog specification and also higher-level protocols and applications such as the Simple NDEF Exchange Protocol (SNEP) specification and the NFC Controller Interface (NCI) specification.

## EnOcean-enabled bidirectional VAV controller with BACnet gateway

CAN2GO recently launched a new Variable Air Volume (VAV) building automation controller

capable of bidirectional communication with EnOcean and wired end-devices. The controller features an embedded EnOcean transceiver and an EnOcean-to-BACnet gateway, allowing wireless control of energy-harvesting end-devices within an end-to-end BACnet system.

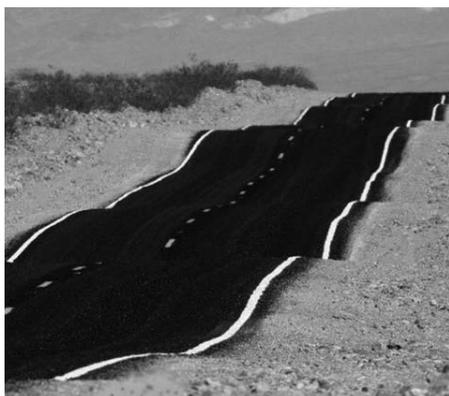
The VAV controller is a fully-programmable device with an on-board pressure sensor capable of meeting VAV application requirements. The CAN2GO controller can act either as a stand-alone product or be integrated into a larger BACnet system, and is predicted to extend the reach of centralized building automation systems

"The use of wireless technology within a building management system reduces the amount of wiring required, effectively enabling fast and cost efficient solutions. By supporting both wired and wireless connectivity, an integrator can take advantage of the cost and deployment advantages of wireless where needed, and still rely on wired connectivity where appropriate" said Louis-Nicolas Hamer, VP Product Strategy for the CAN2GO product line.

"The development of BAS gateways is an important milestone for the EnOcean community as well as for the building automation industry. Gateway controllers provide the missing link between wireless EnOcean devices and traditional building automation systems. Integrators everywhere can now manage EnOcean end-devices exactly as they do wired end-devices." said Jim O'Callaghan, President of EnOcean, Inc..

CAN2GO controllers are the first capable of two-way communication and control with wired and wireless end-devices. Employed as gateways, CAN2GO controllers convert EnOcean and wired end-devices to BACnet objects, enabling integration into BACnet systems. They can also act as servers, hosting a complete IP web-interface capable of managing all controllers and their end devices. In addition, CAN2GO controllers can communicate with each other wirelessly, or through a wired Ethernet/IP network, or via chain-linked CANbus serial bus.

# 4G/LTE/WiMAX news



## A bumpy road for LTE subscriber growth

While LTE is destined to become the dominant wireless airlink, say researchers at In-Stat, several formidable challenges will make its widespread adoption slower than many expect. For starters, spectrum has to be cleared, licensed, and either allocated or sold off before LTE takes hold. As every country has its own telecommunications regulations, these factors will take varying periods of time to be resolved. However, despite this difficult path, In-Stat forecasts that the number of LTE subscribers will approach 115 million by 2014.

"US operator LTE CAPEX spending will drive wireless leadership from Asia and Europe to North America," says Chris Kissel, an analyst for In-Stat. "From 2009 to 2014, more than one quarter of global LTE CAPEX spending will occur in the US. As a result, the US will have more LTE subscribers than the entire Asia/Pacific region by the end of 2014, even though it will have less than half the POPs."

Recent In-Stat research found that: although the vast majority of LTE subscribers will be FDD-LTE, TD-LTE will have a CAGR through 2014 of almost twice that of FDD-LTE; working through technology partners, Huawei and Ericsson, Vodafone purchased 1,500 LTE base stations in Germany in 2010; LTE networks will have better than half of all last mile backhaul capacity in North America by 2014.

Despite the potential for LTE services in China and India, Japan is very likely to have the most LTE subscribers in Asia/Pacific by the end of 2014.

## Rohde & Schwarz releases an LTE Test Case Wizard

Rohde & Schwarz is claiming that its LTE test case wizard dramatically eases the task of generating the correct signals for specific LTE base station test scenarios. An operator of a signal generator only has to select the appropriate test case and the wizard will configure the desired LTE signal, interferers, AWGN and fading. Wizard functionality includes automatic selection of the correct LTE reference measurement channel, setting of the required LTE resource block allocations and configuration of the interfering signals. All power levels of the different signal components automatically conform to the test specification.

A new feature for any of three Rohde & Schwarz vector signal generators, the LTE Test Case Wizard was created to implement easy signal generation for conformance testing of LTE base stations. The test cases are in line with the 3GPP technical specification (TS) 36.141 and comprise test signals for transmitter, receiver and performance tests. A graphical display of the test signal scenario helps the user to keep track of the signal generation at all times.

LTE test cases that require four antenna signals can also be handled by the test case wizard, typically by using two dual-path R&S SMU200A vector signal generators. In these dual instrument setups, the test case wizard can then be parameterized to set up each individual R&S SMU200A vector signal generator to cover either the first half or the second half of the needed test signals.

## UK lags behind after new LTE spectrum auction timetable announced

According to a new Juniper Research report, the first beneficiaries of LTE mobile broadband networks will be business users based in developed countries, led by the US and Japan amongst other countries. Juniper forecasts that global service revenues will exceed \$200bn by 2015, from a standing start in 2011.

LTE business users will benefit from speed or quality of service guarantees thereby alleviating service dropouts. However, spectrum auction timetables in some European countries such as the UK where bidding does not start until 2012, will delay users experiencing these benefits.

Juniper's report found that LTE premium services for high-end business users will be critical revenue drivers for mobile operators. Howard Wilcox, author of the new 4G LTE Revenue Opportunities report noted: "Our business modelling demonstrated that high traffic enterprise subscribers using web, email and video services will be the critical early adopter segment to benefit from LTE. There is an opportunity for premium pricing plans that will drive service revenues and the report shows this."

The report however also forecasts that consumer users will typically spend at only about half the monthly rate of enterprise users.

# events



DATE	EVENT	LOCATION	NOTES	LINK
Jan 6 - 9 2011	International Consumer Electronics Show (CES)	Las Vegas, Nevada, USA	-	<a href="http://www.cesweb.org/">www.cesweb.org/</a>
Jan 26 - 27 2011	DECT World & CAT-iq 2011	NH Barbizon Palace, Amsterdam, The Netherlands	-	<a href="http://www.dectconference.com/">http://www.dectconference.com/</a>
Feb 6 - 9 2011	ISPO – the International Sports Business Network	New Munich Trade Fair Centre, Munich, Germany	Bluetooth SIG participating at Wearable Technologies Pavilion	<a href="http://www.ispo.com/en/Home/cn/vi/vicn/dates_facts">http://www.ispo.com/en/Home/cn/vi/vicn/dates_facts</a>
Feb 7 - 11 2011	Bluetooth SIG UnPlugFest (UPF) 38	Renaissance Hotel, Las Vegas, Nevada, USA	-	<a href="http://www.bluetooth.org">www.bluetooth.org</a> (member log-in required)
March 15 - 19 2011	ISH 2011	Messefrankfurt, Frankfurt, Germany	Trade fair: Building, Energy, Air-conditioning Technology, Renewable Energies	<a href="http://www.ish.messefrankfurt.com/">http://www.ish.messefrankfurt.com/</a>
April 11 - 14 2011	Bluetooth SIG All Hands Meeting	Intercontinental Hotel, Budapest, Hungary	Annual meeting for all Bluetooth SIG members	<a href="http://www.bluetooth.org">http://www.bluetooth.org</a> (requires member logi-in)

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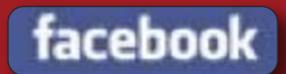
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