

# INCISOR™

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environment

Video enabled  Issue 145

May 2010



## VOLCANO CAN'T STOP BLUETOOTH AHM

### THIS ISSUE

WE TOLD ICELAND "SEND CASH" NOT ASH  
IRIDIUM – ULTRA-WIDE NETWORKS  
ZIGBEE – A TECHNOLOGY GOING PLACES  
ANOTO: 10 YEARS OF DIGITAL PEN & PAPER

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# a picture is worth a thousand words...

So, what does that make a movie worth? A lot, obviously. Which makes this an extraordinarily valuable issue of Incisor, for we have not one, but two important new IncisorTV movie features premiering this month.

One of these is the IncisorTV movie made at the Bluetooth SIG All Hands Meeting, which took place in Seattle during April. For an awful lot of people, just getting to this event was a major challenge, as this was the time when a certain Icelandic volcano was making its presence known, and European airspace was in lock down. Prior to the AHM, we had discussed with the SIG what a good idea it was to make a movie record of the event for those people there weren't able to be there. The fact that a number of the people who were supposed to make it, then couldn't, makes this video record of the event even more useful. The SIG announced Bluetooth 4.0 at the AHM. View this announcement and much more in Incisor and the Bluetooth SIG's video of the AHM event on page 7.

Our second movie premiere this month features Anoto. This Swedish company has been promoting digital pen and paper technology since 2001. Incisor attended the original launch event, and now, ten years later, went to see Anoto again, and created a movie that documents how Anoto's technology came about, talks to three of the key people at Anoto, and sees how things have progressed in ten years. That movie is on page 10.

It has been a busy, busy month for us, with more of the same ahead. We hope that you are enjoying the same good fortunes!

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



## Funky Bluetooth

Jabra has been letting its hair down, and has created this hilarious video to promote its headset products.

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

We like it a lot, once we'd worked out what they were talking about!

If you think it's good, Tweet me - @VHolton – it's how people talk to each other these days you know!

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## Bluetooth SIG rolls out Bluetooth 4.0, includes Bluetooth LE

On April the 20th, at its annual All Hands Meeting in Seattle (see IncisorTV report on page 7), the Bluetooth Special Interest Group (SIG) unveiled more information about its forthcoming Bluetooth Core Specification Version 4.0, with the hallmark feature of low energy technology. Bluetooth v4.0 is expected to be brought to market by the end of Q2.

The AHM also saw the SIG announcing that membership in the trade organization had risen to an all-time high of 13,000 members. The SIG suggested that this recent spike in membership coincides directly with excitement over Bluetooth low energy.

"Bluetooth v4.0 throws open the doors to a host of new markets for Bluetooth manufacturers and products such as watches, remote controls, and a variety of medical and in-home sensors. Many of these products run on button-cell batteries that must last for years versus hours and will also benefit from the longer range enabled by this new version of the Bluetooth specification," said Michael Foley, executive director of the Bluetooth SIG.

"Bluetooth v4.0 is like three specifications in one – Classic Bluetooth technology, Bluetooth low energy technology, and Bluetooth high speed technology– all which can be combined or used separately in different devices according to their functionality. For example, sensors like those in pedometers and glucose monitors will run only low energy technology, thus saving power, cost and space within the device. Watches will take advantage of both low energy technology while collecting data from fitness sensors on the body as well as Classic Bluetooth

technology when sending that information to a PC, or separately displaying caller ID information when wirelessly connected to a mobile phone. Mobile phones and PCs, which support the widest range of uses, will utilize the full package with Classic, low energy and high speed technology running side by side."

At this year's AHM there was some talk of developers taking Bluetooth beyond the 10m/100m minimum ranges for Bluetooth. As part of the 4.0 announcement, and as with previous versions of the specification, the SIG suggested that the range of the Bluetooth v4.0 radio may be optimized according to application. The majority of Bluetooth devices on the market today include the basic 30 foot, or 10 meter, range of the Classic Bluetooth radio, but there is no limit imposed by the Specification. With Bluetooth v4.0, manufacturers may choose to optimize range to 200 feet and beyond, particularly for in-home sensor applications where longer range is a necessity.

The specification for Bluetooth v4.0 was first introduced in December 2009. Samples of sensors utilizing this specification are already available from some silicon manufacturers. Integration of Bluetooth low energy wireless technology within the Bluetooth specification will, says the SIG, be completed before June 30, 2010. End-user devices with Bluetooth v4.0 are expected to reach the market in late 2010 or early 2011.

## Broadcom's optimized Bluetooth hands-free car kit

Broadcom has announced a new Bluetooth reference design platform that it claims will enable improved audio quality and a better user experience in a broader range of hands-free car kit devices. This

new design platform, built upon the successful Broadcom BCM20741 family of Bluetooth system-on-a-chip (SoC) solutions for headset devices, includes an upgrade to its SmartAudio sound and voice enhancement technology that reduces background noise to deliver clear conversations in all driving conditions.

Broadcom also claims that the BCM20741 SoC is the industry's most advanced low cost Bluetooth hands-free solution, providing the best power efficiency, as well as premium audio quality without the need for costly external flash memory, for the design of compelling new car kits. Typical, unqualified press release speak, that, and at one time we'd have had somebody from CSR challenging Broadcom's claims, but who knows what's going on at CSR these days?

Broadcom's list of key features of the new platform included: echo cancellation that significantly improves 'double-talk' performance, 'Near-end' speech intelligibility enhancement that automatically enhances the quality and loudness of the caller's voice so that drivers can focus their attention on the road, integrated multiple language voice prompts (in on-chip ROM) that increases ease-of-use and lowers bill-of-materials (BOM) cost, 'fast-charging' power management and tunable audio algorithms

Craig Ochikubo, Vice President & General Manager, Broadcom's Wireless Personal Area Networking line of business "We continue to grow in the Bluetooth hands-free market by delivering a superior audio experience that provides key user benefits, and is friendly to the end-user and the environment. New car kit products based on our technology also benefit from the latest version of our popular SmartAudio technology with revolutionary noise suppression technologies optimized particularly for car kits."





## connectBlue pushes Bluetooth range beyond a kilometre

At the Bluetooth SIG's All Hands meeting in Seattle (see [IncisorTV movie](#)), SIG exec director Mike Foley commented on people pushing the accepted range for Bluetooth devices. Now we learn that connectBlue's range of Bluetooth modules has been expanded with a long range Bluetooth module OEM Serial Port Adapter 433. The company told Incisor that besides the exceptional long range of 1.2km, the module also presents high throughput and the unique Extended Data Mode protocol which makes individual data channel communication possible for each unit in the 7-slave multi-point network.

The new OEM Serial Port Adapter 433 achieves its range of over 1200 meters through high receiver sensitivity and output power. In order to provide the highest throughput possible, the module supports Bluetooth Specification v2.1+EDR and is prepared for Bluetooth v3.0 via firmware upgrade.

"Our customers are found in demanding industrial applications and in these tough conditions, it is particularly important with wireless connections that are reliable," said Rolf Nilsson, President of connectBlue. "Expanding the range to 1200 meters puts extra demands on a wireless solution and we have therefore focused on expanded testing in order to deliver a robust and ready-to-use experience for the customer."

The customer can apparently be up and running in no time since the Bluetooth stack is embedded in the module and no additional driver or stack is required in the host. Further, the OEM Serial Port Adapter 433 is fully Bluetooth qualified and radio type approved for Europe, US and Canada, and has the connectBlue standard interface for compatibility over product generations and across wireless



technologies including Bluetooth, Wireless LAN and IEEE 802.15.4 / ZigBee. The Bluetooth module is also compliant with EMC, Safety and Medical standards.

## BlueAnt licenses APTX audio coding

Australian Bluetooth device and accessories company BlueAnt Wireless has become the latest licensee of apt-X audio coding technology for use in Bluetooth stereo applications. According to APTX, the technology enables the streaming of CD-quality audio for Bluetooth A2DP at extremely low latency and can be embedded in silicon and/or software.

APTX has already licensed its technology to Sennheiser, Altec Lansing, Creative Labs, Jaybird and Armour Home and the technology was awarded the 'Best of CES' by the Bluetooth SIG at CES in January – see [IncisorTV movies of the award ceremony](#) and [subsequent interview](#).

Stephen Wray, VP Licensing at APTX said, "APTX is delighted to welcome BlueAnt Wireless as our latest apt-X licensee. BlueAnt is renowned for developing innovative and cutting edge products and we are excited that apt-X technology is set to be a part of these. We look forward to building a strong technology partnership with BlueAnt and helping them deliver outstanding Bluetooth audio quality."

Executive Chairman of BlueAnt Wireless, Taisen Maddern said, "apt-X technology is proven to deliver outstanding audio quality for Bluetooth Stereo and we extremely pleased to have entered into a technology partnership with APTX. The integration of apt-X technology into BlueAnt products demonstrates our commitment to producing best in class Bluetooth products that offer the greatest user experience possible."



The current BlueAnt product range includes a voice controlled Bluetooth headset, car speakerphones with multipoint and text to speech technology, and stereo audio speakers.

## RivieraWaves to address IP and wireless market

RivieraWaves, which provides semiconductor companies with hardware, software and radio IPs for integration into their ASICs, has announced an increased focus on the IP and wireless market backed by Bluetooth and WLAN semiconductor IPs.

RivieraWaves is expanding its IP offering with a brand new, stand-alone Bluetooth low energy IP portfolio including hardware baseband, software stack and profiles. A preliminary version is apparently already available and being integrated by customers. This wireless IP offering means that RivieraWaves is a "one stop shop" company providing complete solutions for WLAN+BT, Bluetooth high speed (aka Bluetooth 3.0+HS) and Bluetooth low energy (aka Bluetooth 4.0) chips. The IP offering is composed of hardware, software and analog/RF components

Wipro is granting RivieraWaves full sub-licensing and modification rights for Wipro NewLogic Bluetooth 2.1+EDR and 802.11abg Intellectual Property blocks.

"We are very satisfied with all the efforts made by Wipro, which included granting free and full access to the Wipro NewLogic Bluetooth and WLAN IPs to RivieraWaves" said Ange Aznar, President and CEO of RivieraWaves. "This is a critical ingredient that enables us to create a new structure, to effectively address IP customers, investigate new wireless markets, and also to provide a possible continuation path for Wipro-NewLogic Bluetooth and WLAN IP customers"



## 3G handset sales eclipse 2G market

ABI Research has been looking at the handset market. "Handset shipments globally for 1Q-2010 powered ahead to 303 million, up 19% Year-on-Year," says Jake Saunders, VP for Forecasting. "This bodes well for 2010 as a whole: shipments could well reach 1.3 billion. It is also notable that 3G handset shipments eclipsed 2G handset shipments."

Strongest handset shipment growth was seen in the Middle East and Africa (20% YoY) followed by the Americas, particularly the US (11%). Europe, on the other hand, is languishing with single-digit growth.

Nokia's market-share stood at 34%. New smartphones such as the N8 are helping the manufacturer to shore up its handset portfolio, as its loss of traction in the smartphone sector hit sales hard. In response, revamped efforts with Symbian ^3 and ^4, are intended to help Nokia regain momentum. Nokia is counting on smartphones expanding into the mid-tier and low tier segments where it believes it has strength.

Samsung had a strong quarter, securing 21%. Over the past year, Samsung has been cultivating deeper relationships with US and European carriers which helped the firm grow its shipments 40.2% YoY.

LG's market-share, 8.9%, has suffered from a weak smartphone portfolio in the North American market. LG has been traditionally strong in the enhanced phone sector, and has been giving a number of its older enhanced phones a smartphone twist. For example, its Chocolate phone has gone wide-screen. Shipments grew 20% YoY.

Motorola is benefiting from its initial success (2.8%) with the Droid and it keen to back it up with new products such as the Quench but the market is overtaking it. Motorola is

hoping the strong social networking theme to its smartphone line-up will help it to curry favour with the youth and prosumer market.

1Q-2010 proved to a strong quarter for Apple (8.75m, 2.9%) devices shipped, which is up 130% YoY: a remarkable feat. iPhone OS release 4, which brings multitasking and in-app advertising capabilities should help to maintain momentum, but Apple should diversify its lineup.

## Deathknell for docking speakers

Creative, the digital entertainment products company behind the Inspire S2 speaker system that Incisor featured in its 'stuff we like' section of the February issue, is entering battle against the legions of docking speakers systems on the market. Ahem, no small task, that!

Described as a breakthrough in "dock-less" speaker systems, the ZiiSound D5 has been designed to stream audio over Bluetooth wireless connectivity from portable media players, gaming PCs, multimedia laptops, and mobile smartphones.

Mike Canevaro, VP of Business Development for APTX, which provided the Bluetooth A2DP technology, said: "The new ZiiSound D5 wireless speaker system works with nearly every Stereo Bluetooth A2DP compatible device —the iPod and iPad, the iPhone and other smartphones, portable media players, e-books, and laptops. Aesthetically, the ZiiSound D5 is a true design classic —and it really sounds every bit as good as it looks thanks to apt-X audio coding and Creative electronics design."

Commenting on the global launch of the ZiiSound series, Joseph Liow, VP of Personal Digital Entertainment Products at Creative, said, "Music lovers can say bye-bye to first-generation speaker docking systems for iPod and other PMPs. ZiiSound

makes these a thing of the past. With the ZiiSound D5, there is no requirement for physical place to 'dock' an MP3 device on top of the speaker box itself to enjoy music entertainment without wires."

Incisor hasn't tried the ZiiSound D5 yet, but the Inspire S2 certainly impressed us. Being somewhat of the Bluetooth/wireless persuasion, we applaud Creative's ambitious and aggressive stance – go for it!

## IntelliNet completes femtocell interop testing

IntelliNet Technologies, which builds data offload solutions, and picoChip, a provider of silicon devices for femtocells, announced today that they have recently completed interoperability testing between IntelliNet's Femtocell Gateway and femtocell access points based on picoChip's picoXcell platform. The testing validates products against the newly adopted 3GPP standardized lu-h interface, which allows mobile operators to select customer premise and network equipment from multiple vendors for femtocell service deployments.

"IntelliNet is pleased to have had the opportunity to successfully test our Femtocell Gateway with several femtocell access points using picoChip's silicon," said Anjan Ghosal, president and CEO of IntelliNet Technologies. "Interoperability is the key to giving operators the confidence to begin large scale deployments."

The IntelliNet Femtocell Gateway provides the access to macro network voice and data services and the control capabilities necessary to manage very large numbers of femtocells. It is a 3GPP Release 8 lu-h based solution towards the access with RANAP and SCTP support as well as standards based lu-PS, lu-CS and Gn network interfaces. It is built on a carrier-grade AdvancedTCA platform with an active/standby architecture.

# news



## Mobile payments market to quadruple by 2014

A new study from Juniper Research has found that the value of mobile payments for digital and physical goods, money transfers and NFC (Near Field Communications) transactions will reach almost \$630bn by 2014, up from \$170bn this year, representing the gross value of all purchases or the value of money being transferred.

The mobile payments report revealed that growth across all market segments was being driven by the wide adoption of Smartphones and the increased use of apps stores. In addition SMS ticketing schemes such as those offered by OBB Austrian Railways and Skane Traffic in Sweden were also important developments. Shopping by mobile at stores such as Amazon Mobile is also tipped for significant expansion over the next five years.

In developing markets SMS driven money transfer services are the main driver, increasing at a rate of 30% per annum.

Report author Howard Wilcox explained: "Our analysis showed that whilst the digital goods segment will account for nearly half of the market in 2010, the emerging segments such as physical goods payments, NFC and money transfers will impact the market rapidly. By 2014 for example we forecast that physical goods mobile payments market will be worth \$100bn."

The report also found that the top 3 regions for mobile payments (Far East & China, W. Europe and N. America) will represent nearly 70% of the global mobile payment gross transaction value by 2014. Vendors, retailers, merchants, content providers, mobile operators and banks are all actively establishing new services and schemes, however, in some areas such as NFC for example, greater collaboration is

required to establish a widely accepted business model that translates easily into tangible services.

## DLNA will have a breakthrough year in 2010, apparently

Who remembers DLNA? Well, to re-cap, DLNA-certified (Digital Living Network Alliance [www.DLNA.org](http://www.DLNA.org)) products set their stall out to enable an interoperable network of consumer electronics, computer and mobile devices for use in and beyond the home. Researchers at Strategy Analytics are predicting that over 2 billion DLNA-certified devices will be installed in consumers' homes or pockets by 2014. This is contained in Strategy Analytics' new service report - Connected Home Devices, "DLNA is Poised to Break Through in 2010."

"Strategy Analytics forecasts 59% growth in unit sales - to 200 million DLNA-certified devices in 2010 - rising to nearly 1 billion devices sold in 2014," said Peter King, the Connected Home Devices Service Director. "There are two key factors driving growth and global recognition at this time:

- The involvement of the Service Provider community which wants to provide whole-home services and cut support costs, and
- A software certification initiative, included as of 2010, which will enable legacy non-certified devices into the DLNA ecosystem within the home."

King added, "DLNA progress still has many challenges, but it will be a huge step closer to empowering an interoperable network of CE, PC and mobile devices for use in and beyond the home if the work-in-progress project to protect premium content as it moves into multiple devices within the home comes to a successful conclusion."

Incisor ran a major feature on DLNA about 2 years ago. At that time it was going to change the world. We haven't been overrun by DLNA-certified products as of yet. Maybe it is time that we looked at DLNA again?

## CAT-iq 2.0 embraces Broadband IP

The DECT Forum, the international association of the wireless home and enterprise communication industry, ETSI, the European Telecommunications Standards Institute, and the Home Gateway Initiative (HGI) have announced the completion and official approval of the ETSI Technical Specification TS 102 527-3, which completes the CAT-iq 2.0 related standards.

The DECT Forum told Incisor that with the standardization of CAT-iq - which, for the uninitiated, is Next Generation DECT - the integration of DECT into Broadband IP-Networks has been successfully concluded. This means that CAT-iq certified products can take advantage of IP connectivity to enable wideband telephony and data driven applications in the digital cordless phone market. The availability of this ETSI Specification is intended to allow vendors and system integrators to develop CAT-iq 2.0 certified products, based on the ETSI standards. The DECT Forum has set up a Certification Program for CAT-iq 2.0 end products (fixed part and/or portable part) to ensure a mandatory quality level and interoperability to specific product parameters, which will provide a consistent end-user experience.

"The availability of this specification is a major milestone for the wired and wireless communication industry. I am expecting first innovative products, based on the new standard for telephony and data communication, in the second half of 2010", says Erich Kamperschroer, Chairman DECT Forum.



INCISOR EVENT REPORT

# Bluetooth Special Interest Group 2010 All Hands Meeting

Seattle, USA, 19th – 23rd May 2010  
 Attending for Incisor: Vince Holton

**Tokyo, Vienna, Phoenix..... Just some of the towns that have hosted the Bluetooth SIG's annual All Hands Meeting, the occasion when the great and good of the Bluetooth industry gets together to find out what the SIG is doing, what their buddies at other companies are doing, what is happening to the specification, and what trends they need to be aware of.**

You may have noticed that the event moves around a bit - different continents, time zones etc. Well, this year the SIG decided to hold the AHM in its home town of Seattle, Washington, USA, which must have seemed like a good idea at the time. Doubtless in terms of staging a major event during tough economic times, it made sense for the SIG to keep its costs down.

What nobody anticipated was that an external event would have a major impact on this year's AHM, and the effect would have been the case wherever it had been held. The event was of course the eruption of the Eyjafjallajökull (no, we've no idea how to pronounce it either) volcano in Iceland. With a virtually complete shutdown of European airspace for six days in the immediate run-up to the AHM, not only were plenty of Europeans unable to make it to Seattle, but neither were a number of US execs who had been travelling prior to the event. Only by hovering over a 'book' button on British Airways' online booking site from the moment the ban was lifted was I able to get to Seattle, and even then I missed the first day. Although you wouldn't know it from our movie - the miracles of TV production!

So, what happened at the AHM for those people that didn't get there? Well, plenty. Perhaps the biggest news item was the formal announcement of Bluetooth 4.0, which brings mandatory support for Bluetooth low energy. More about the 4.0 announcement in our news section.

But for those of you who were never going to be able to make it to the AHM, and those that were meant to be there but were thwarted by the volcano, IncisorTV combined forces with the Bluetooth Special Interest Group to create a permanent video record of the event, including coverage of Mike Foley's keynote speech, the Bluetooth Talk Show, the 2010 roadmap, the Board of Directors panel session and the announcement of the latest additions to the Bluetooth SIG Hall of Fame. This elite group of people, each of whom has been judged to have gone well beyond the call of duty in their roles within the SIG and in support of Bluetooth over many years, now has two new members. Who were they? Well, you will have to watch the movie to find out!

You will find that this movie is an overview presentation. Over the coming week or so, IncisorTV will work again with the Bluetooth SIG to create focused movies that provide more detail on the key sessions from the AHM that are mentioned above. To re-cap, these are: Mike Foley's keynote, the

Bluetooth Talk Show, the 2010 road map, the Board of Directors panel, the presentation by the AHM's guest speaker Scott Bedbury, CEO of brand development consultancy Brandstream and the guy who created Nike's 'Just do it' campaign and much of Starbucks' marketing, plus an expanded look at the product demo session. Once these short movies are available, IncisorTV and the SIG will send out notifications.

So, if you have always wondered what SIG people like Mike Foley, Diana Hoffman, Ulrika Linnér, Lindsay Peattie and Heidi Chow look like, plus board members including Chris Hansen, John Barr James Rutledge, or if you've never been to an AHM and would like to know what you have been missing, this movie is your opportunity. Just click on the movie screen below.

I hope you enjoy it, and once you've sampled the experience I expect that you'll be planning to be at next year's All Hands Meeting - book your ticket for Budapest now, and keep your fingers crossed that the volcanoes stay quiet!





Richard Traherne,  
Cambridge  
Consultants

# Iridium Communications – Ultra-Wide Area Networks!

Richard Traherne  
Head of Wireless at Cambridge Consultants

**Iridium Communications** is unique. It's the only communication provider with full coverage of the globe - allowing people to communicate wherever they are, as long as they have a clear view to the sky. With terrestrial cellular networks serving less than a percent of the globe, Iridium is a valuable lifeline for many. The Iridium system serves a wide range of markets, from marine and aviation through to military and emergency services, in even the remotest areas of the world. With its satellites being virtually impervious to natural disasters, such as hurricanes, tsunamis and earthquakes, the Iridium service has also played a vital role in helping those people unfortunate to suffer in places such as New Orleans and Haiti to re-build their lives.

With one of the largest independent wireless development teams in the world, Cambridge Consultants was selected by Iridium in 2003 to develop its ground-based handset and terminal equipment. Acting as Iridium's 'virtual design team', Cambridge Consultants enables Iridium to focus on its core business – network operation and overall service strategy.

The Iridium story is a fascinating one. Most people have at some time considered what 'can't-live-without item' they would choose to take to a desert island. Folklore would have it that such a thought was the catalyst for what we know today as the Iridium system. Sat on an island in 1985 in the middle of the Atlantic, the wife of a Motorola executive bemoaned the fact that she couldn't make an urgent call home. After taking the idea back to base, and following some major R&D, the result was a network of 66 Low Earth Orbit (LEO) satellites that circle the earth at an altitude of 500 miles, forming the largest commercial satellite constellation in the world. The 'birds', as the satellites are affectionately termed, travel overhead at an



impressive 5 miles per second, each with a footprint around the size of the USA. Travelling at this speed, each bird provides around 5 minutes coverage to a user on the ground, before the next one rises over the horizon to take over.

An incredible demonstration of the capabilities of the system occurred last year when an off-duty astronaut who was climbing Everest made a birthday call to his colleague in the International Space Station. The call was placed on his satellite phone as he clung to the side of Everest, connected with the satellite passing overhead, travelled across Iridium's mesh of satellites until over its Arizona operations centre, where it returned to Earth. From there it entered the terrestrial network to be routed to NASA's repeater station, from where it was transmitted up to the space station. If spending your Birthday in space wasn't incredible enough, hearing Happy Birthday sung with a background chorus of Sherpas must have made for a

memorable day! Certainly, an engineering marvel in my book.

Since its early days, Iridium has evolved considerably to become a spectacular success story today in the mobile satellite services market. It has achieved this through continuous innovation of its handset and modem products. Iridium has used Cambridge Consultants for its product development to ensure that it remains at the forefront of technology. All of Iridium's product platforms are developed with future applications in mind, to build in as much future-proofing as possible to maximise Iridium's ability to quickly satisfy new markets as they emerge.

One of Iridium's original product concepts was its handset, which remains an essential piece of equipment for a wide range of users including the US Department of Defense. However, Iridium was quick to recognise the value of extending its network for use by





other product manufacturers. To achieve this, Cambridge Consultants developed a range of voice and data modems for Iridium that were 'embedded products', allowing Iridium's ecosystem of 'Value-Added-Manufacturing' (VAM) partners to integrate Iridium modem functionality into their products. Typically, the VAMs have specialist expertise, such as aeronautical product design and so can extend Iridium's technology into markets that would require high investment from Iridium to penetrate themselves. A smart move by Iridium that's valued by its VAMs and which enhances Iridium's airtime revenue stream substantially.



This year, Cambridge Consultants has developed a further extension to this embedded product line; the recently announced Iridium 9602 – the world's smallest satellite data modem, that fits in the palm of the hand. With its tiny size and low power consumption the 9602 opens up a whole range of new applications for satellite communication. Topical examples include Machine-to-Machine (M2M) and asset tracking. The 9602 enables companies to monitor assets wherever they are in the world, in applications such as fleet management, personnel tracking, remote sensor telemetry and enterprise logistics. Despite its volume launch not being until June, over 90 companies are already working on plans to embed the 9602 into their products.

In terms of data rate, the initial Iridium concept was a 'single bearer' system, capable of supporting just one voice channel or 2.4 Kbit/s data communication. In a further extension of the product range, Iridium engaged Cambridge Consultants to devise a way of using multiple bearers to increase data rate, reflecting the hunger for higher data rates that we currently see with our ground-based telecommunication networks. The key challenge was to achieve this within the constraints of the existing system and particularly without increasing the load on the space vehicles, with their limited resources. The first product to

emerge from this new technology platform has been the [award winning](#) Iridium [OpenPort®](#) – a maritime product that provides vessels with 3 separate phone lines and high speed data. This has provided crews with a taste of the 'broadband' connectivity that they enjoy at home, in the middle of the ocean.

So, what is on the future horizon for Iridium? As the range of applications for Iridium explodes it has embarked on plans for a second generation satellite network. Called Iridium [NEXT](#), the new constellation is being designed to provide significantly enhanced features and performance, as well as further functionality through hosted secondary payloads on its new satellites. Overall, this is a tremendously exciting prospect as Iridium may be adding significant new capabilities to its constellation, such as earth observation and location based services. Targeted to launch in 2014, this will indeed be another new chapter in the life of Iridium.

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

## 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**

- [Bluetooth 2010 All Hands Meeting](#)
- [Anoto - 10 years of digital pen and paper](#)
- [BiteBack Sweden](#)
- [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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- [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](#)
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- [2007 Wireless Symposium](#)
- [Bluetooth / Wibree launch event \(full version\)](#)
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- [Best Bluetooth of CES 2007](#)
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- [Wireless USB special - Introducing Wireless USB](#)
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INCISOR.TV FOCUS

# Anoto – ten years on

**A pen that can input the things you are writing directly into your own PC, or fire your words across the air to a server and a corporate computing system. A neat idea, eh? Here at Incisor, we thought so, and wrote as much after attending the press event in London. Our interest had originally been sparked by the fact that the pen used Bluetooth, but the story was much bigger than that.**

Would you like to read the story? You can do so [here](#) – see page 3 of this issue of Incisor.

In fact, we liked the product so much that we got together with Anoto and created an Incisor-style e-magazine that was dedicated to Anoto's digital pen and paper technology. We called it by the (shamelessly pun-based) name, Apendig. You can see issue 1 of that magazine [here](#).

Now, the observant amongst you will have picked up on the fact that that issue of Apendig, and especially the 'stone-age look' issue of Incisor – were published some time ago. And they were. They were published in 2001, following the dawn of the new millennium.

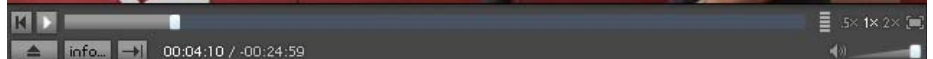
It's true, Anoto has been promoting digital pen and paper solutions for ten years, or even a little bit more. There have been a few changes along the way, but the company has enjoyed consistent funding and several of the solutions in its portfolio are now approaching widespread adoption and a reassuring level of maturity.

Incisor has stayed in touch with Anoto, and this month we agreed that it was time that we got together again to review the last ten years and to bring Incisor's readers up to speed with the latest status of Anoto's technology and its solutions.

The process of delivering the story has come up to date, too. We took the IncisorTV cameras over to Anoto's head office in Lund, Sweden, and spoke to three of Anoto's key people, all of whom have been there from the beginning: Christer Fåhraeus, who came up with the original concept and founded Anoto, Petter Ericson, who took Christer's idea and made it happen, and Ebba Åsly Fåhraeus, who has overseen the commercial roll-out of Anoto's solutions.

Anoto's technology is still compelling. Watch the movie and see if you don't agree.

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





Jon Harros,  
TRaC

# ZigBee – A technology that’s going places

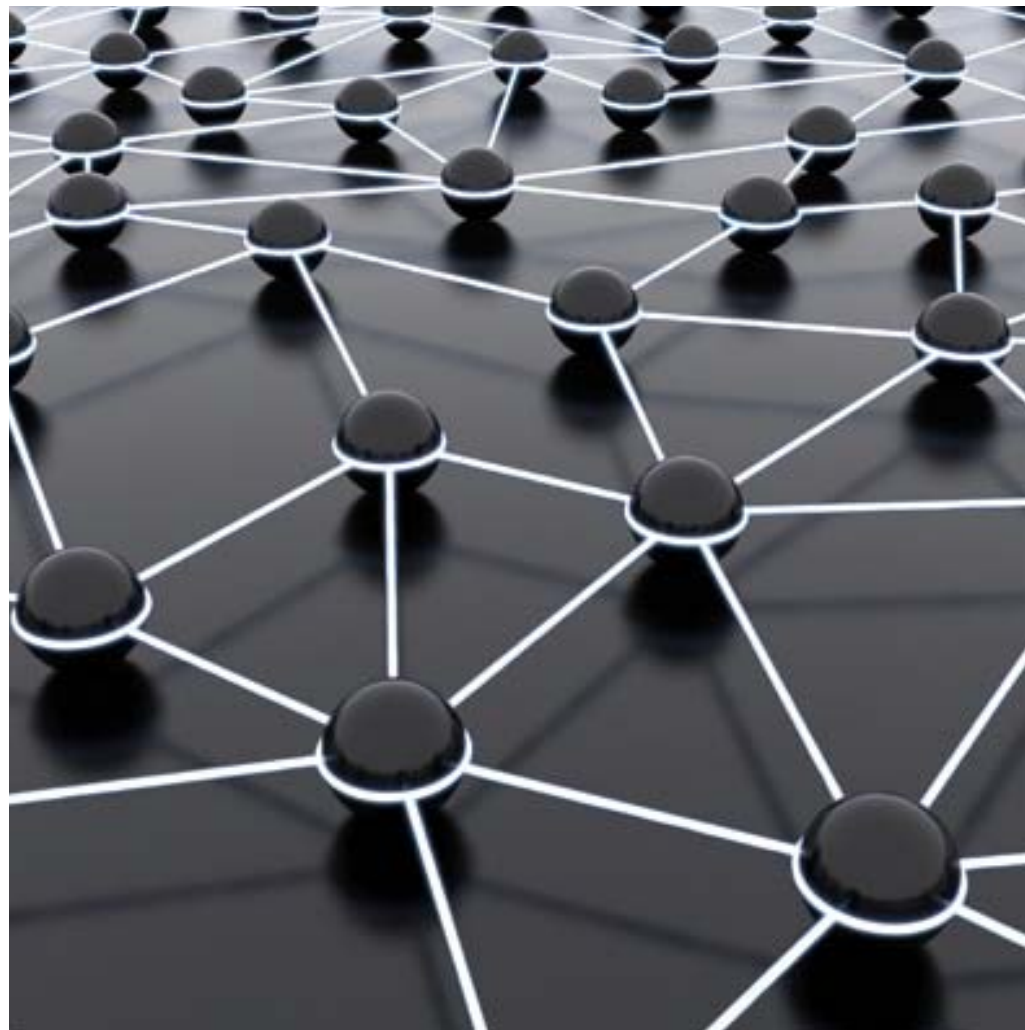
By Jon Harros, TRaC

**Today, I attended the fourth European Developers Conference, I was amazed by the diversity of companies that attended and exhibited at the event. Despite the global economic downturn, ZigBee is a technology that is still seeing real growth and interest in the “real world” of products.**

In fact ZigBee has accelerated within the past twelve months. There has been a significant rise in the number of ZigBee certified products; the membership has risen to just under 360 and includes some of the biggest names in their respective fields. ZigBee has demonstrated its “real world” credentials with 85,000 (yes, you read that correctly) ZigBee radios working within close proximity within one of the major Casinos in Las Vegas as an example (continually reported by the ZigBee Alliance).

Over the years, working for a test house (TRaC) has allowed me to be involved in a wide range of technologies, I have seen technology fads come and go. However, to me there are two aspects about ZigBee that are particularly striking and lead me to believe that it is now maturing from a technology in its infancy, having to justify its theoretical advantages, to a relevant and major technology that is rapidly expanding and building its own momentum.

Firstly, there is the fact that ZigBee is finally removing its geographical shackles to its US origin. In the early days, ZigBee was very much driven by a group of US companies. In fact it used to bring a smile to my face (honest) when I found that not only did I have to attend conference calls which were mainly scheduled in the evenings (European time), but that these calls were always cancelled whenever there was a national holiday in North America but still ran when holidays occurred in Europe or the UK (but being British I didn’t complain!)



Now-a-days, the ZigBee membership is pretty well split with 40% from North America, 30% from Europe and 30% from Asia/MEA. The conference calls take place at all manner of times to suit the differing worldwide time zones (so everyone shares the pain of calls in the evening once in a while). And the ZigBee Alliance is talking about setting up a fixed European office to service the rapidly growing number of European members. This is a significant step to take and speaks of a technology that

now has the confidence and appeal to take such a step.

This is good news for everyone. Companies from outside North America are feeling that the technology is becoming more accessible and the North American companies are seeing an opportunity for new market growth.

Secondly, ZigBee has recently introduced certification routes for another three groups of products. As such ZigBee now





covers Smart Energy products (ZSE), Home Automation products (ZHA), Telecoms products (ZTS) and Healthcare products (ZHC). Each of these product groups now has its own list of certified devices from completely separate manufacturers. There is now a real feeling of a critical mass of products having been reached. This is a key milestone for any technology wanting to establish itself as a long term solution.

Once a critical mass is reached there is a real incentive for manufacturers to design products that can interoperate with the current certified ones. For some manufacturers, this even becomes more of an imperative, rather than an incentive, as they don't want to be left behind when their competitors launch products that are ZigBee certified. (As is often demonstrated by modern successful products, marketing is key and having the right logos is just as important as having that new innovation). Another aspect of the new certification routes is that ZigBee appears to have succeeded in drawing some of the biggest names in completely differing fields.

Initially the fact that ZigBee was being talked about as a possible technology for

lots of different applications (Smart Energy, Home Automation, Telecoms Services, etc) presented a serious risk that it would become a "jack of all trades and master of none". However ZigBee Smart Energy (ZSE) is rapidly becoming one of the dominant technologies within this field, ZigBee Home Automation (ZHA), ZigBee Telecoms Services (ZTS) and ZigBee Healthcare (ZHC) have been used for certification by some of the biggest manufacturers within these respective fields.

There is a great deal more on the way. With the ZigBee Alliance regularly making announcements about the new ZigBee Retail Profile, ZigBee Remote Control Profiles (again supported by major manufacturers in these fields) as well as advancements in different energy harvesting/Green Power features, it is clear that more and more manufacturers are coming up with ways of using ZigBee that provide them with paths to new undiscovered markets.

So it's an exciting time for those involved in ZigBee and it will be interesting to see how the landscape will have changed in another twelve months, as I'm sure that

by the time of next year's European ZigBee Developers Conference there will be more certification routes as new profiles are finalised and perhaps a new use case being considered.

### About TRaC

TRaC is a leading test group with accreditations for all major markets worldwide. It has established itself with a reputation for unrivalled excellence in global approvals, testing and certification.

TRaC provides the assessment route to product manufacturers and designers to ensure they fulfil their legal obligations and demonstrate full compliance with the requirements of countries around the world. For more information, visit [www.tracglobal.com](http://www.tracglobal.com)

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# low energy wireless news

## ZigBee smart energy v2.0 tech requirements available for public comment

The ZigBee Alliance has announced that the ZigBee Smart Energy version 2.0 Technical Requirements Document (TRD) was made available for public comment by the Smart Grid community at large, opening it beyond those who have been active in its creation. The Alliance told Incisor it made what it describes as an 'unprecedented move for an organization engaged in standards development' because it recognizes the important role ZigBee Smart Energy plays in the Smart Grid and the need to expedite the broadest consensus possible on its capabilities.

The Alliance has entered into liaison relationships with key stakeholder groups to engage directly in the collaborative development process for the HAN and the Smart Grid. The TRD represents input from a broad set of players into the development of the IP-based version of ZigBee Smart Energy. The TRD is driven by the Market Requirements Document that was made publicly available in June 2009.

"ZigBee Smart Energy 2.0 will provide an IP-based energy management solution that is MAC and PHY agnostic, allowing for expanded use in new areas and configurations," said Bob Heile, chairman of the ZigBee Alliance. "The TRD outlines a basic architectural structure to achieve our goals. By making it available today and by offering several public comment opportunities, we expect the broader Smart Grid community, who for whatever reason have not been involved to date, to provide guidance that will help create the most effective standard for energy management."

There were two methods of providing commentary on the ZigBee Smart Energy 2.0 TRD: online comment submission or attendance at a public forum. All comments had to have been received by May 7, 2010 and the Alliance will announce future public comment periods based on the successful completion of development milestones.

## Ember ships 10 millionth ZigBee chip

Ember has apparently shipped more than 10 million ZigBee wireless chips, a milestone that coincides with the company celebrating

record revenues and sales bookings, which, a spokesperson told Incisor, left Ember well positioned for almost 300% annual revenue growth in 2010.

Ember says that the growth has been driven by large-scale deployments of smart energy technologies by utilities, device manufacturers, and smart home products for applications in energy management and home security, monitoring and automation.

"As a profitable company and market leader, Ember will continue investing to extend communications and control capabilities out to the billions of devices, appliances and equipment in buildings and homes where most energy efficiency goals will be achieved," said Bob LeFort, Ember CEO. "Smart meters and HAN devices now being equipped with ZigBee-standard Ember chips and networking software are helping create the EnerNet (Energy Network) globally."

Ember's stated game plan for its ZigBee networking systems – chips, ZigBee protocol software and tools – is to simplify the complexity of integrating embedded software, networking and RF for developing low power, wireless products in smart energy, connected home and other remote monitoring and control applications.

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– SAMSUNG ELECTRO-MECHANICS

Technical Director  
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Short Range W/less Lead Eng.  
– FRACTUS

Senior Analyst  
– STRATEGY ANALYTICS

Chief Application Engineer  
– PHILIPS SEMICONDUCTOR

VP of Marketing & Business  
Development  
– ZIGBEE ALLIANCE

Design Engineer  
– CSR

Business Dev. Manager  
– TEXAS INSTRUMENTS

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ASIC Development manager  
– MICROSOFT

Senior manager  
Audio/infotainment architectures  
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Senior product manager  
– BELKIN

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– PLANTRONICS

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Listed on this page are just a few recent Incisor subscribers, added to a database built over 8 years.

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- Read by an estimated 25,000 readers
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Researcher  
– EC JOINT RESEARCH CENTRE

# Why ANT?

## Introducing ANT Wireless

by Dean Anthony Gratton

I THOUGHT I HAD COVERED PRETTY MUCH EVERYTHING WHEN IT CAME TO WIRELESS TECHNOLOGY. AFTER ALL, I HAVE BEEN RESEARCHING, DEVELOPING AND USING WIRELESS TELECOMMUNICATIONS IN SOME GUISE OR ANOTHER OVER THE PAST TWO DECADES AND AM ALWAYS ON THE LOOKOUT FOR SOMETHING NEW THAT WILL CAPTURE MY ATTENTION. WITH THIS IN MIND, I WAS DIRECTED TO ANT WIRELESS ([thisisant.com](http://thisisant.com)). CRIKEY, I WILL HAVE TO BE HONEST HERE; THIS IS THE FIRST TIME I HAVE COME INTO CONTACT WITH THE COMPANY AND ITS TECHNOLOGY AND I DIDN'T WANT TO WASTE THIS OPPORTUNITY TO STUDY AND EXPLORE A LITTLE FURTHER.





So, as it's customary and indeed very trendy in these modern times, I posted a message via Twitter (@grattonboy). What's more, whilst awaiting feedback from my followers, I took a peek at the company's website and came across the words "Why ANT?" A question I hope to answer in my column this month. As for the Twitter feedback, I was delighted to receive several responses from a few ANT Wireless advocates; namely Texas Instruments (ti.com) and Dynastream (dynastream.com).

**The driving force behind ANT**

It's an early Saturday morning and I'm sat here at my computer wrestling with a cup of coffee and listening to the new album from Paloma Faith, 'Do You Want the Truth or Something Beautiful?' I can also smell the full English being prepared by the wife, so I dare say I'll be taking a break from the screen in a while to start the day off with a very traditional British breakfast (yummy!).

Dynastream Innovations Inc. is the driving force behind ANT Wireless. With its offices based in Canada it seemingly has an unrelenting ambition to populate everyday products, in turn creating an ecosystem that enables consumers to monitor a myriad of personal indicators. Okay, so I openly admit that I have paraphrased the company's text and other associated materials from their website – I need to be more analytical and creative, I really need a glass of bubbly! The wife's calling – breakfast is ready! I'm off for breakfast, back in a moment ...

(an hour or so passes ...)

**What is ANT Wireless?**

Back from breakfast and that's exactly what I needed – a burst of energy to resurrect these mid-morning brain cells – a full English has done me the world of good. I have to confess to having a glass of bubbly beside me now. Anyhow, it's the weekend – well that's my excuse!

Okay, back to ANT Wireless – where was I? Yes, I remember, the original supposition, "Why ANT?", but I suppose I should start with explaining what is ANT Wireless? So, as I already mentioned, this is the first time I've come into contact with the technology and, of course, I saw the usual ultra-low-power mantra and automatically relegated it to

the ranks of yet another ZigBee and Z-Wave wannabe. However, when I took a closer look, I saw the technology targeting a different market sector, which is already well-established and proven. The market sector ANT Wireless has cleverly chosen to focus on is within sport and fitness; and personal health and wellness. I was also surprised to learn that the technology has been around for over a decade. I caught up with Brian Blum, Product Marketing Engineer at Texas Instruments (part of the low power RF group). Blum confirmed Texas Instruments' longevity with ANT "TI has over 10 years of partnership with ANT". He explained further "[TI] offers the lowest power, very small packages and extensive expertise working with the ANT network protocol."

**Lifting the lid on ANT Wireless**

Now I am curious; how does this work? I know the company's website provides a high-level view of the technology and associated products, but I wanted a little more. And as social media would have it, as a consequence of my initial Tweet enquiring about ANT Wireless, I was introduced to Catherine Gardiner Aylesworth, Marketing Manager at Dynastream Innovations, who provided me with a wealth of information surrounding ANT Wireless. Now I had what I needed to really lift the lid on ANT Wireless and take on that analytical view of the technology.

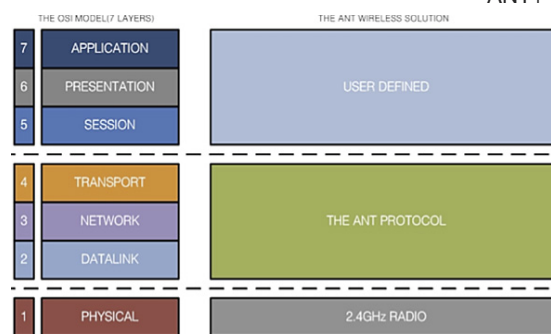


Figure 1: The ANT Wireless solution adheres to the OSI model (7 layers).

The building blocks that make-up the ANT Wireless solution comprise a semiconductor transceiver supporting 2.4GHz typically provided by Nordic Semiconductors (nordicsemi.com). I know, yet another technology competing in the Industrial Scientific and

Medical (ISM) band – just think of all the interference from other similarly enabled products, but I'll get back to that in a moment. The ANT protocol, an established third generation piece of software, sits on top of the physical layer (the radio), as I illustrate in Figure 1. You should also note the ANT Wireless solution aptly adheres to the Open System Interconnection (OSI) reference model, which is typically used within communication systems to ultimately ensure and sustain interoperability. The ANT protocol takes care of the networking fundamentals, where point-to-point, star, tree and mesh networking topologies are all supported and managed.

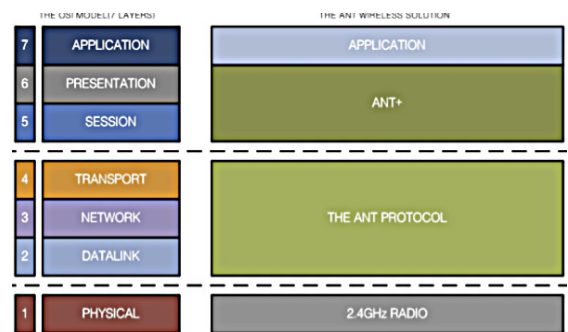


Figure 2: The ANT+ profiles support an open standard enabling manufacturers across the industry to successfully interoperate.

Building an ecosystem using ANT+ In addition to the ANT protocol stack, the company further designed an interoperability layer, built upon the base protocol with multiple device profiles. The open member body is known as the ANT+ Alliance, where manufacturers

across the industry can now reliably develop an ecosystem in which products, irrespective of manufacturer, can coexist and successfully interoperate. The open standard has been well established to satisfy the industry requirements and, as such, the ANT+ Alliance boasts a healthy number of companies (currently standing at 238 members) all advocating and supporting the future of the

technology. In light of the ANT+ building block, I have provided Figure 2 to illustrate how ANT+ fits into the software stack.

There are numerous scenarios that are supported by the ANT Wireless ecosystem and a former colleague, Alexandre (with an 'e') sent me an email explaining how he personally used ANT



Wireless. Alex got the heads-up on the upcoming article on ANT Wireless from reading last month's column and he was happy to share with me a few use cases that explained the technology in context. In his local fitness centre, Alex explained that he has two Garmin GPSs which, in turn, communicate with a heart rate monitor, cadence sensor and a foot pod. All of which can further communicate with standalone equipment within the gym, such as the Forerunner 405 by using the integrated wireless technology.

### The ANT network

But wait! I haven't finished; there's more! The established ANT+ ecosystem uses device profile icons to characterise features and capabilities to its users. The heart-rate monitor can share data with a Smartphone (see [TI's WiLink](#) family for handset manufacturers) or notebook, where performance data can be monitored and tracked. Furthermore, ANT+ enables bicycles to capture data relevant to a rider's performance. In fact, Aylesworth was happy to share the knowledge that the top ten 2009 Tour de France riders used ANT+ enabled devices. So, the technology is indeed very prevalent and covers indoor/outdoor fitness and wellness/health markets – it has done so for many years. The imminent Bluetooth low energy v4.0 specification will want to compete with ANT Wireless, but for Bluetooth, it's very early days, and Bluetooth will need to claw a market share, something ANT has already achieved. It's one to watch and Incisor has already received an insight to upcoming products during the [All Hands Meeting in Seattle](#) – I will definitely come back to this in the coming months.

Okay, back to the overpopulated 2.4GHz ISM band and I'd like to address some of the characteristics of the network. ANT purports that its ultra-low-power network is achieved by efficient data transmission techniques. So, normally nodes within the network are all sleeping consuming mere milliamps. If a node is woken up, it transmits data for the shortest amount of time, as greater power is used during this period; moreover, the node returns to sleep once it's finished. So, in a star, mesh or tree network, for example, where several ANT nodes are interoperating, you can imagine a flurry of activity equivalent to a Mexican wave. In essence, the ANT protocol manages to enforce an efficient packet transmission scheme, in turn, extending the battery life. ANT argues that the scheme used by the ANT protocol is more efficient when compared to ZigBee, as "to send the same amount of useful information as ANT, a ZigBee radio has to transmit for much longer, significantly reducing battery life." ([thisisant.com](#)). Furthermore, with the

efficiency of the ANT packet structure and an optimised overhead, where a section of the packet structure is allocated to preamble, address node destination, sequence number and so on, ANT claims it has a data yielding efficiency of 47%, ensuring that the payload is efficiently transmitted in the shortest amount of time.

### Living with the 2.4GHz-enabled neighbours

I already alluded to the overpopulated space of the ISM band. It is indeed popular, with technologies such as Bluetooth and Wi-Fi, so ANT technology has to coexist within a potentially hostile environment. So, how does the ANT protocol successfully live with its 2.4GHz-enabled neighbours? ANT uses an "adaptive isochronous co-existence scheme," which translates to nodes within the network transmitting in a "clear timeslot within a defined frequency band" ([thisisant.com](#)). Admittedly, it sounds quite neat and succinct, but let's look at this in a little more detail.

The premise of the ANT protocol is to transmit data as efficiently as possible; typically within a window of less than 150µs per message. With such a quick transmission philosophy, ANT allows a single channel to be divided into multiple time slots. A node will adapt to its environment by altering the time in which it transmits a data packet. If there is ambient interference on a particular timeslot, then the node will nudge its transmission interval to shift onto an alternative timeslot. I like this approach to overcoming coexistence and interference issues – it's not completely foolproof, but a node will intelligently adapt using environmental variables to ultimately make a more, if you like, educated decision as to how to coexist effectively. When you compare this with Bluetooth's adaptive frequency hopping (AFH), ANT's scheme does seem a little more intelligent than Bluetooth's premise to increasingly close off channels that have interference (Editor:- Any Bluetooth guys want to comment on that? ☺). Blum confirms the efficiency of Texas Instruments' ANT solution, commenting that it "has excellent coexistence with other 2.4GHz wireless technologies".

### Extending the ecosystem

ANT Wireless is actively looking to extend its current portfolio by establishing new scenarios that begin to overlap with technologies such as ZigBee, Z-Wave and Bluetooth low energy. Dynastream is eager to expand into greener areas, taking advantage of the technology's ultra-low-power features in addition to creating diversified Wireless Sensor Networks

(WSNs), which are typically used in residential and commercial industries. ANT Wireless is certainly an attractive, proven solution. The company also provides development kits, such as the ANT SensRcore, to enable rapid time to market; an off-the-shelf solution that enables companies to ramp-up development effort in the shortest time.

### Until next month ...

The ANT subject matter is lengthy and, if I'm honest, this column is merely the tip of the iceberg. Perhaps in the coming months I can look at specific features of ANT Wireless, with more in-depth coverage of competing technologies, as well as exploring particular aspects of its architecture. Anyhow, this is where Dr G signs off for this month and I think I will take the dogs for a walk to stretch my legs and, I dare say, to burn off the calories from that wonderful full English!

### 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.



You can contact Dean at [incisor@deanratton.com](mailto:incisor@deanratton.com) and follow him on Twitter @grattonboy. You can read more about his work at [www.deanratton.com](http://www.deanratton.com).

# Smart Grids and the New Utility

By Mead Alexander Eblan,  
Technology Strategist, Maravedis

We are collectively encumbered by an electrical grid based on century-old technology and a 50-year old infrastructure. Over the past couple of years, Maravedis has witnessed an increasing number of its customers peeking under the utility hood to get better involved in emerging Smart Grid initiatives. Hence, we've joined up with graduate students at the University of Maryland University College to canvas the Smart Grid landscape, talk to industry leaders, and essentially study "Smart Grids and the New Utility" to get a clear understanding of what 'Smart Grid' means to its growing community of interested parties – particularly carriers and telecom vendors.

Where does the 'Smart Grid' rank among company priorities; what are the key drivers, obstacles and trends impacting its deployment; what technologies are being deployed, where does wireless and 4G have a play; and who are the utilities, telecommunication operators, solutions providers, and vendors leading the charge? Moreover, how is the 'consumer sphere' reacting and what can they expect regarding new features, functionalities, services and pricing models as intelligence gets backed into the Grid from generation to transmission, and distribution to the home.

What we're finding is electricity is indeed seeking a 'new normal' – a Smart Grid that will transform electricity as a commodity and fully realize the Grid's real capacity as a modern infrastructure. Vendors that can provide solutions for real-time monitoring, data aggregation and consumer feedback get to the front of the line, because the New Grid will reward conservation versus consumption.

Thus far, Maravedis has learned the following from interviewing network equipment manufacturers, utility companies, wireless vendors and carriers:

- Standards protocols need to be agreed on, from device to network, and especially across utilities (IOU, Muni and Coops, all who are regulated differently); driving the



- need for 'utility-agnostic' devices
- While most of the Smart Grid focus is on 'micro-energy management' within the household, the onslaught of Plug-in Hybrid Electric Vehicles (PHEV) will require new macro-energy levels of management
- Use of licensed spectrum is preferred over unlicensed, placing WiMAX and LTE at an advantage for wireless smart meter communication and the backhauling of aggregated usage data
- Wireless carriers see Smart Grid initiatives helping drive machine-to-machine (M2M) services
- Like the Kindle and the iPad, smart meters offer new opportunities in monetizing 3G wireless services

Will utilities ultimately emerge as a new breed of carrier after embracing IP technologies, wireless access, and intelligent 2-way devices? While the consensus is no, for a number of reasons which are covered in our upcoming 'Smart Grid and the New Utility' report, we did find some interesting examples of electricity coops rolling out triple play services that included Internet access, television and wireless solutions. America's 1st grid was constructed in

New York almost 120 years ago, while the Grid of the future must cope with a projected 30% increase in demand over the next 10 years. Meanwhile, the sense of urgency regarding the need to upgrade electricity networks has become more pronounced from the recent explosions at the Upper Big Branch coal mines of West Virginia and the Deep Horizon oil rig.

Exploiting new energy resources comes with personal and societal costs we shouldn't have to accept. By embracing 'energy efficiencies' the promise of making our electricity grid 'smart' takes us beyond mere conservation. It recognizes a notion once touted by Amory Lovins at the World Science Forum in New York City back in 2006: "Technology is improving faster for efficient end-use than for energy supply."

Just as we learned that the development of the Internet wasn't only about "faster access", Smart Grids won't only be about 'smart meters' - the winners will be 'smart' applications, vendors, and solutions providers.

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# wi-fi / wlan news



## Wi-Fi's biggest enemy: Interference

Ruckus Wireless claims to be supporting Cisco Systems, which has recently been validating the need to confront one of Wi-Fi's biggest problems: interference.

In concert with Cisco's recent CleanAir announcement, Ruckus has been outlining advances in RF management technologies that go beyond discovery of interfering objects and conventional interference mitigation techniques involving disruptive, WLAN-wide channel and power adjustments.

"Wi-Fi is proliferating at an accelerated pace with new Wi-Fi enabled devices hitting the market every day. Interference in the unlicensed spectrum is rising quickly on IT managers' agendas. Cisco has clearly recognized this," said Steve Martin, VP of Engineering for Ruckus Wireless. "However, Cisco's approach, like others before it, simply camouflages the problem. Wi-Fi access points using conventional antenna systems are fundamentally incapable of adapting to a changing RF environment," said Martin. "Without explicit, dynamic control over how and where RF energy is transmitted, there is no way to respond to real time interference even as it is detected. Our patented Smart Wi-Fi technologies effectively mitigate interference by automatically rejecting radio noise and steering Wi-Fi transmissions to the best signal path on-the-fly."

Martin noted that the biggest source of

WLAN interference often stems from enterprises' own Wi-Fi networks. "Co-channel interference from adjacent access points is the primary culprit of wireless performance problems facing companies today. And it's only getting worse."

Unlike other Wi-Fi systems, says Ruckus, its Wireless APs integrate intelligent antenna array and dynamic adaptation technologies that form and direct Wi-Fi transmissions over the best available signal path in real time. Known as BeamFlex, this technology provides up to 10dB of signal gain thereby reducing the number of APs required for any given coverage while increasing the stability of client connections at long distances and challenging locations. BeamFlex also delivers up to 17dB of interference rejection, which plays a role in sustaining WLAN reliability and consistent performance.

"Interference is better dealt with at the AP without disrupting the rest of the WLAN. Our systems take active control of signal steering to diminish the impact of interference without human intervention while taking into consideration the impact on the client," said Martin.

## connectBlue expands Wireless LAN Ethernet port adapter series

connectBlue has a new pair of rugged Ethernet port adapters based either on IEEE 802.11a/n or IEEE 802.11b/g/n, and is

aiming them at industrial applications where the Ethernet cable needs to be replaced with a robust wireless connection.

The adapters – the RWE231i (2.4GHz) and Rugged Wireless LAN Ethernet Port Adapter - RWE241i (5GHz) are designed for mobile, rotating and temporary installations where there is a need for replacing the Ethernet cable with a maintenance-free wireless connection, or to connect to an existing Wireless LAN infrastructure.

"Both products have applied the IEEE 802.11n flavour which is the standard that enables higher transmission speeds and increased band widths," said Rolf Nilsson, CEO of connectBlue. "Further, with the 5GHz version the customer can choose between several non-overlapping channels, which is a very rare feature. Both our new products are particularly useful when our customers want to connect to an existing 802.11n infrastructure without forcing the access point to use the lower performing 802.11bg compatibility mode."

The products support WEP64, WEP128, WPA-PSK, WPA2-PSK, TKIP, CCMP (AES), LEAP, PEAP are radio type approved for Europe, US and Canada (R&TTE, FCC, IC), and are configurable to optimize for Profinet.

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# events



DATE	EVENT	LOCATION	NOTES	LINK
May 20 2010	EnOcean Alliance Open House exhibition	Hilton London Tower Bridge, London	-	<a href="http://www.enocean-alliance.org/">http://www.enocean-alliance.org/</a>
May 26 - 27 2010	Energy harvesting & storage Europe / Wireless Sensor Networks Summit	Munich, Germany	-	<a href="http://www.idtechex.com/energyharvestingandstorageeurope10/en/">http://www.idtechex.com/energyharvestingandstorageeurope10/en/</a>
June 7 - 11 2010	Bluetooth SIG UnPlugFest 36	Beijing, China	-	<a href="http://www.bluetooth.org">www.bluetooth.org</a>
June 8 - 10 2010	Connections US	Santa Clara, California, USA	Digital living conference & showcase	<a href="http://www.parksassociates.com/events/connections/2010/">http://www.parksassociates.com/events/connections/2010/</a>
June 14 - 16 2010	CAT-iq 2.0 Plug Fest	ETSI Premises, Sophia Antipolis, France	-	<a href="http://www.dect.org/">http://www.dect.org/</a>
June 15 - 18 2010	Smart Grid Interoperability Summit	Toronto, Canada	-	<a href="http://www.smartgridinterop.com/">http://www.smartgridinterop.com/</a>
Oct 4 - 8 2010	Bluetooth SIG UnPlugFest 37	Barcelona, Spain	-	<a href="http://www.bluetooth.org">www.bluetooth.org</a>
Oct 19 - 20 2010	CAT-iq Market & Developer Conference	High-Tech-Campus, Eindhoven (The Netherlands)	-	<a href="http://www.catiqconference.com">www.catiqconference.com</a>

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