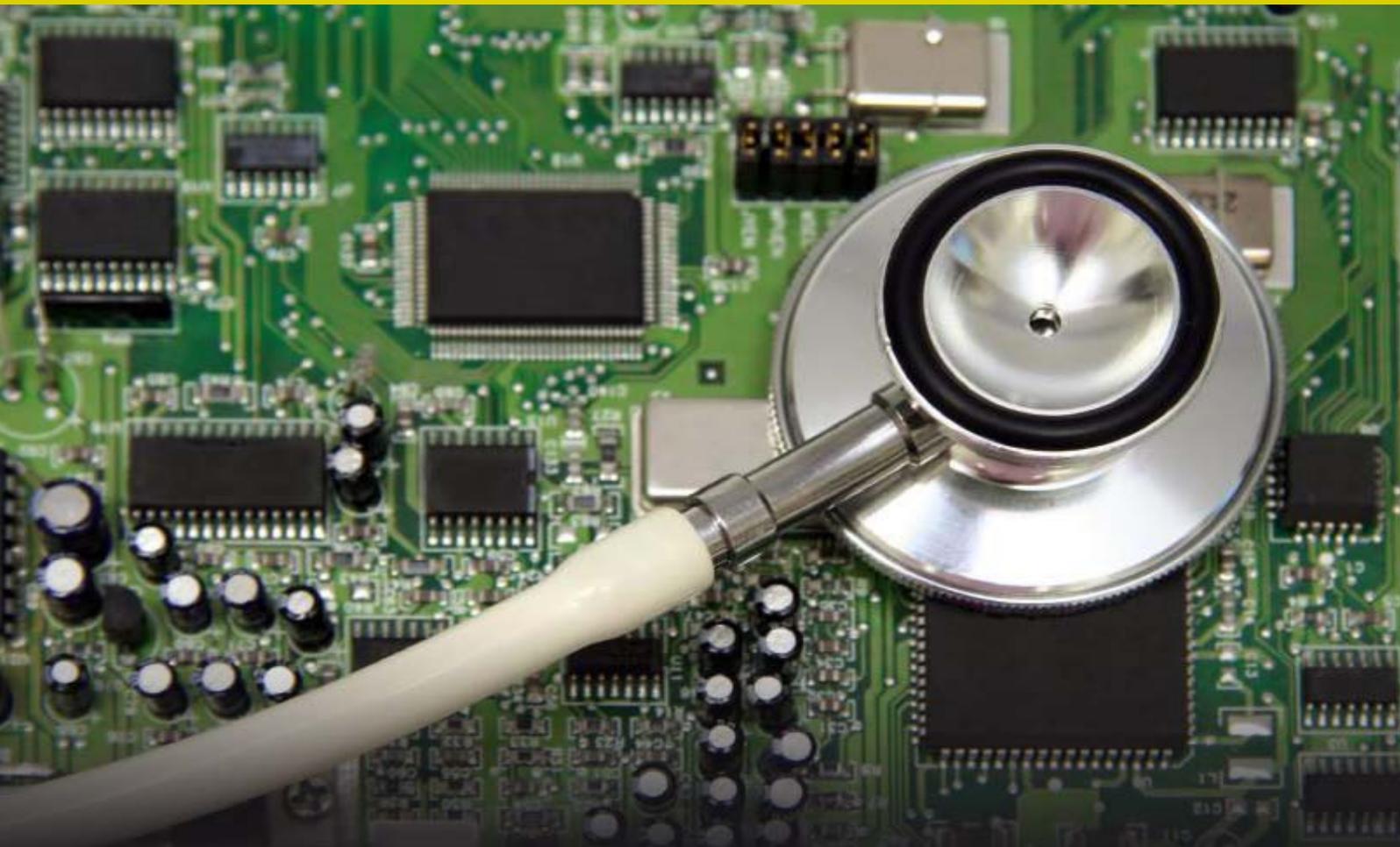


# INCISOR™

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environment

Video enabled  Issue 136

July 2009



## HEALTHCARE INDUSTRY MAKES WIRELESS SELECTION

### THIS ISSUE

LAUNCHING THE WAVENIS OPEN STANDARD ALLIANCE  
CSR – THE FUTURE WILL ARRIVE, EVENTUALLY  
INCISOR WPANEL REVIEW: WILL WIRELESS CHANGE MY LIFE?  
APPLE EMBRACES BLUETOOTH IN THE IPHONE 3G S

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# wireless wellness

If you were a big cheese in either the Bluetooth SIG or the ZigBee Alliance, June brought some big news, and an opportunity to get the champagne out, organise a hoedown/line-dance/Morris Dance or do whatever you do when there is cause for celebration.

The reason? Well, the Continua Alliance announced which short-range wireless technologies it was lending its name to, as it plots its way across the wireless landscape. The healthcare, medical, wellness and sports and fitness markets represent a great deal of incremental business for all involved in the wireless industry food chain.

In the run-up to the announcement, there was a flurry of activity and the telegraph cables were quivering. When the announcement was made, it was Bluetooth low energy and ZigBee that made the cut. Incisor broke the news with an announcement via [my blog](#). If you read the blog, and the comments that followed, you will know that I stirred up some controversy and got accused of bias! The simple message is – if you want to make sure your PR messages are reflected, make sure your target media is getting them. Meantime, for those that haven't been to the blog, you can read about the Continua announcement in this issue.

I'm not biased against any WPAN technology. It is in the interests of our readers that we reflect developments across the board. Incisor may have had a grounding in the Bluetooth industry, but today, all of the SRW technologies have equal relevance to us.

Some technologies are 'bigger' than others, so you read more about them. That is a simple reflection of reality – not bias.

**Vince Holton**

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

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# news



## Continua Health Alliance makes low energy wireless selection

On the 8th of June, the Continua Health Alliance, which is an industry coalition of health care and technology companies, announced that it had elected two wireless technology standards for inclusion in the next version of its interoperability Design Guidelines. Incisor reported this announcement with a blog entry that you can read [here](#). The blog includes the full Continua announcement, and also stirred up some controversy, but we will come back to later.

But back to the real news.

The two wireless standards are intended to support mobile and fixed location devices as defined by the next iteration of the Continua Health Alliance Design Guidelines. The alliance selected Bluetooth low energy wireless technology (pending finalization of the specification) to enable low power mobile devices such as activity monitors and heart rate sensors to be used to monitor a user's health and fitness levels. Continua also selected ZigBee Health Care technology for low power sensors that can be networked in a variety of settings, and utilized in devices such as motion detectors and bed pressure sensors to enhance the daily living of those who require assistance aging independently.

Commenting at the time of the announcement, Rick Crossen, Continua president and chairman of the Board of Directors said, "I am excited to announce the forward progress of Continua and its Version Two Design Guidelines. The selection of Bluetooth low energy wireless technology, pending finalization of the specification, and ZigBee Health Care as standards to be included in the guidelines will expand the ability of Continua

members to deliver compelling products to consumers. Our existing Design Guidelines introduced support for Bluetooth wireless technology and USB. Those standards now will be augmented to allow Continua to deliver expanded use cases to satisfy the broad demands of health and fitness, and aging independently applications."

Understandably, there was some celebrating going on at both the Bluetooth Special Interest group and at the ZigBee Alliance.

"Continua's choice of Bluetooth low energy technology – a specification in development at this time and expected to be adopted by the end of the year – underscores the excitement and need for this Bluetooth wireless standard in the telehealth arena," said Mike Foley, executive director of the Bluetooth SIG. Chosen over several other wireless technologies after a rigorous 10-month review process, Bluetooth technology was selected to enable low power mobile devices such as activity monitors and heart rate sensors to be used to monitor a user's health and fitness levels.

"The Bluetooth SIG brings not only a superb wireless technology to our Design Guidelines, but a state-of-the-art testing and qualification program to our members," said Rick Crossen, Continua president and chairman of the Board of Directors. "The continued choice to work with Bluetooth wireless technology and the Bluetooth SIG is a natural extension for Continua."

Meanwhile, over at the ZigBee Alliance, Bob Heile, chairman of the ZigBee Alliance commented, "The ZigBee Alliance looks forward to a long and productive relationship with the Continua Health Alliance and appreciates their selection of ZigBee Health Care for inclusion in the Continua Health Alliance Design Guidelines. ZigBee Health Care is ready for product manufacturer use today and is

backed by a strong ecosystem of suppliers offering certified platforms to suit any device need."

The radio selection process was conducted by members of the Continua Low Power Radio Sub-Team, the Continua Technical Working Group and the Continua Board of Directors. All teams were aided by experts from the technology and health care industries-at-large, as well as guided by research conducted by an independent third party analysis firm. A rigorous process was employed over the course of 10 months to select from many outstanding technologies.

This is our understanding of how the two technologies fit in: Bluetooth low energy was chosen for solutions and products that are aimed at home health and fitness monitoring, and for applications in the telehealth arena. There are already about 20 million devices in the market place that use Bluetooth technology to enable health and fitness monitoring. Continua's selection of Bluetooth low energy should expand the number of new health and fitness monitoring applications and devices that are available to consumers. The idea is that Bluetooth will make it easier to use devices such as mobile phones, heart monitors, scales and the like to connect and send data to your doctor's office or another concerned party as well as to use it for personal health solutions.

From what we can interpret, ZigBee was chosen for applications where the equipment is in a fixed spot (and so can't travel with you). For example, it will be utilized in devices such as motion detectors and bed pressure sensors, and will interface with one rather than a range of devices. Continua's statement said that it recommends ZigBee for sensing and control in professional settings, and for patient activity and facilities monitoring.

So why did the Incisor blog entry cause controversy? Because we included the



# news



**NOKIA**  
Connecting People

Continua and Bluetooth releases, but not the ZigBee release. That put the folks at the ZigBee Alliance' backs up. We weren't trying to aggravate anybody - the simple truth was that we hadn't been sent the ZigBee release. So we decided to give the ZBA the opportunity to contribute, and you will find a statement from them concerning the Continua announcement elsewhere in this issue (see page 20).

Overall, Continua's announcement signals a positive step forward. The adoption of widely supported and standards-based short-range wireless technologies should accelerate the acceptance and roll-out of the technology across the health and wellness markets.

## CSR launches range of mono Bluetooth headset chips

CSR's new range of BlueCore mono ROM devices for the Bluetooth mono headset market consists of three chips, BC6130, BC6140 and BC6150, and caters for price points and features from low cost to mid-level. Fully compatible with v2.1+EDR of the Bluetooth specification, CSR's new ROM devices include a number of new features including CSR's own Proximity Pairing technology, a faster user interface, Handsfree Profile (HFP) multipoint and programmable audio prompts.

Both BC6140 and BC6150 also support CSR's new fifth generation Clear Voice Capture (CVC) speech processing system which features both far-end and new near-end audio improvements.

Each chip in the range is pin compatible with a previous CSR Bluetooth headset

ROM chip, providing an upgrade path for existing customers. CSR's goal is for manufacturers to easily upgrade their current designs and create a new range of headsets through a single supplier without expensive and time-consuming redevelopment.

All three chips feature CSR's new Proximity Pairing technology. This allows the headset to find the Bluetooth source device that is physically closest to it, and pair with it. Fully compliant with the Bluetooth specification, the headset initiates the pairing activity and the user simply has to accept the incoming pairing invitation on the source device.

CSR told Incisor that Proximity Pairing is the only solution in the world based on Bluetooth that allows users to pair devices in this way. CSR has also included a highly optimised application code, which significantly speeds up the user experience when connecting calls.

"Our new BlueCore ROM devices provide the most comprehensive range of single-chip solutions in the world for mono headsets," said Anthony Murray, Senior Vice President of CSR's Audio and Connectivity Business Unit. "Not only do they cover every segment of the market, but they include unique new features such as Proximity Pairing and CVC 5.0. In Q1 2009 we won around 80% of mono headsets and these new products show why CSR continues to be the silicon of choice for headsets."

The new range of BlueCore mono ROM headset solutions will start sampling in Q2 2009. The new features are also available now as a software update on BlueCore5-Multimedia, CSR's single-chip Bluetooth multimedia silicon for high-end mono headsets.

## Nokia looks to energy harvesting?

Rumours have been circulating that Nokia is looking at energy harvesting technology. Both the UK's Guardian daily newspaper and the MIT Technology review quote a Nokia researcher, who is said to have suggested that Nokia does have a prototype device that harvests energy from radio waves, and is able to harvest 3 to 5 milliwatts. This is enough to power a device in standby mode. The aim is apparently to be able to harvest as much as 50 milliwatts. This could re-charge a device that is turned off.

The idea isn't as far-fetched as it sounds. After all, Nikola Tesla demonstrated wireless electricity way back in 1893, and today's very widely used RFID tags are themselves powered by radio waves.

Nokia's technology - which doesn't really exist, of course - differs from wireless technology seen to date. Legacy systems are based on targeted transmitters and receivers and operate over a limited range. Nokia is apparently planning to use a wideband transceiver that harvests energy across a wide range of radio communications between 500MHz and 10GHz.

While Nokia continues to officially deny the existence not only of the prototype, but also any project centred on energy harvesting, the off-the-company-line researcher believes that Nokia will roll out the technology within three to four years.



## The future of mobile computing is PIE, or is it Wi-PIE?

Jim McGregor, Chief Technology Strategist at market research company In-Stat is staking a claim as the perpetrator of a new industry three letter abbreviation (TLA). In a recent communication, McGregor told Incisor, "ODMs and OEMs alike have proudly displayed their new devices at Computex during June, including everything from mini-notes to gaming desktops. In addition, Qualcomm and Freescale have also started using the new term "Smartbook" to describe what is otherwise known as a mini-note or netbook. According to Qualcomm, the term represents the differentiation from these traditionally x86 devices, by using an ARM-based processor and scaling the applications and usage model of the smartphone to a larger device. Despite all the marketing manoeuvring, it still looks and acts like a mini-note with a Linux operating system (OS)."

"With new features, screen sizes, and performance characteristics, many of the new devices are blurring the lines between product categories, especially mini-notes and thin & light notebooks, "

"As a result, it is becoming increasingly difficult to distinguish computing devices that are targeting interactive usage models for communications and entertainment. So, with great thought and consideration, I have determined that we should have a single term to describe the entire category – PIE (Portable Internet & Entertainment)."

"Now, before you think of this as just another term, please consider the multiple possibilities."

"First, the term PIE fits very well with products from certain vendors, just think of having an Apple PIE. How much more distinctive could you be than that? Also, PIE

lends itself well to creative marketing of new features and models. Depending on the color, you might have a banana cream, chocolate silk or even blueberry. In addition, when vendors are describing their market share, there is no better way than to provide your percentage of the PIE."

"So, no more need for mini-notes, netbooks, smartbooks, thin & light notebooks, ultra-thin notebooks, tablets, or another other name creative marketing folks may dream up, just call it PIE. If it's good for America (referring to apple pie), it must be good for the industry!"

Now, we couldn't help ourselves. We started thinking: most of these devices will have one or more wireless technologies built into them. That being the case, could we possibly extend the TLA so that there is a new term to cover the wireless capabilities of these portable computing devices, and if so, wouldn't that surely be Wi-PIE?

We claim this one.

## Broadcom Bluetooth + Wi-Fi combo in half mini-card

Broadcom has announced three new Bluetooth + Wi-Fi modules designed for notebook PCs and Netbooks. The new Broadcom InConcert modules combine standards-compliant Wi-Fi and Bluetooth chips in the smallest form factor available (the half mini-card).

Although notebooks typically have more board space to accommodate discrete Wi-Fi and Bluetooth chips on separate modules, the growing demand for smaller Netbooks and ultra-mobile PCs (UMPCs) has created the need for more integrated wireless solutions. With the new modules, Broadcom is aiming to help PC vendors seize this opportunity.

"Having shipped millions of single-chip

combo products, it's not a stretch to apply those lessons to create a better solution for PCs," said Michael Hurlston, Vice President and General Manager of Broadcom's Home and Wireless business unit. "Most notebook designs can benefit from better wireless performance and fewer components, but the sweet spot for InConcert modules is Netbooks and UMPCs. Several of our PC customers are using these modules in their next designs to provide the functionality, style and trouble-free user experience that today's consumers demand."

To ensure the best possible wireless experience for PC users, the new InConcert modules have been designed to mitigate interference with very little radio separation. Broadcom's coexistence algorithms manage Bluetooth and Wi-Fi traffic, and are apparently more effective than the standard based 3-wire approach Broadcom says that other vendors use. Coexistence techniques maximize Wi-Fi and Bluetooth throughput when both radios are operating concurrently. Further, Broadcom's coexistence interface is self-sufficient and does not need platform modification, which facilitates easy integration into PC platforms.

Broadcom offers three InConcert modules, all of which feature its BCM2070 Bluetooth 3.0 + High Speed (HS) transceiver. The BCM94312HMGB combines Bluetooth 3.0 and 802.11g. The BCM943225HMB combines Bluetooth 3.0 and 802.11n and the BCM943224HMB combines Bluetooth 3.0 and dual-band 802.11n to offer the additional capacity in the 5 GHz band for applications that require dedicated bandwidth.

The modules use a single antenna system for both Wi-Fi and Bluetooth transmissions, which is claimed to simplify product design and reduce the combined rest of bill of materials (RBOM) cost by up to 25 percent.

Broadcom is now sampling the BCM94312HMGB, BCM943225HMB and BCM943224HMB modules and expects to begin shipping production volumes in the third quarter of 2009.



## Always-on, always-listening voice control for Bluetooth

Did you read in [last month's issue of Incisor](#) that market research company Strategy Analytics was claiming that Bluetooth hands-free wasn't (hands-free)? Well, Sensory, which develops speech technology for consumer products, begs to differ.

Sensory has announced Truly Hands-Free, an enhancement to its BlueGenie Voice Interface, which is a voice control and speech output solution on Bluetooth headsets. Sensory claims that this is the first time that Bluetooth devices - including headsets, car kits and stereo headphones - will benefit from a hands-free trigger or phrase spotting technology.

To make Truly Hands-Free truly hands-free, the BlueGenie Voice Interface is always listening and, according to Sensory, is virtually impervious to background noise so the user can initiate functions without using even one button trigger.

"Hands-free devices today still require a number of tactile interactions that can distract the driver from the task at hand," Todd Mozer, CEO of Sensory told Incisor. "What's been needed all along is a speech controlled technology that doesn't require a button press to get started. The technical challenge - that Sensory is the first and only company to overcome - is an always-on, always-listening technology that activates reliably in noise but doesn't accidentally come on from talk radio or conversations."

Mozer went on to say that trigger or phrase spotting technology is one of the hardest things to do in speech recognition but allows for the truly hands-free experience that's been missing. A simple voice command such as "Hello BlueGenie" now 'wakes up' the car kit to listen for an operational speech command. This new technology from Sensory is claimed to perform well in over 70dB noise. Doesn't this hammer battery life, you ask? Well, according to Sensory, patent-pending low resource technology enables minimal power consumption to avoid excessive battery drain.

Sensory is introducing two new BlueGenie Voice Interface platforms: BlueGenie Car Kit and BlueGenie Stereo.

The BlueGenie mono headset and car kit reference provide similar functionality of voice enabled operational control for pairing, voice dialling, information access, and settings functions. A voice is included to announce calls, answer all queries and give various prompts.

The BlueGenie Stereo reference uses the standard phone functions (voice dialling, info access, settings, etc.) but also includes a superset of commands for setting the up/down music control buttons by voice for functions like volume, tone, balance, fast-forward, playlists, and selections that would otherwise require multiple hardwired buttons.

If you can deal with a cuteness overload, you can see a demo of BlueGenie [here](#).

## TI solutions for HSPA femtocell apps

Texas Instruments (TI) has announced a new family of DSPs (digital signal processors). TI's aim is to enable residential and enterprise femtocell manufacturers and service providers to reduce development time and deliver new products to market quickly.

TI's family of multi-core femtocell solutions includes a portfolio of analog solutions, support for Linux, and software solutions from TI third parties, Continuous Computing and mimoOn. These DSPs provide a complete digital solution for HSPA applications. Using the software reference design available from Continuous Computing and mimoOn, which provides customers with software for Layer 1, 2 and 3 wireless protocol processing, OEMs can develop femtocell products to provide increased wireless connectivity for streaming video files, interactive gaming, music sharing and other bandwidth-intense multimedia tasks.

TI's femtocell product family includes the TMS320TCI6485 with two high-performance

850MHz C64x+ DSP cores delivering 1.7 GHz of overall performance for residential femtocell applications, and the TMS320TCI6489 which includes three 850MHz C64x DSPs delivering 2.55 GHz of performance for enterprise or "super femto" applications. Scaling to meet the varied global requirements of the residential and enterprise market segments, TI's TCI6485 supports up to eight users while the TCI6489 supports up to 32 users. The entire product family is compatible with all major 2G/3G and 4G systems including GSM, CDMA, WCDMA, TD-SCDMA, WiMAX and LTE, and furthermore, is code compatible with other TI DSPs for the wireless infrastructure market, where any previous investments in macro or pico base stations can be reused.

Both the TCI6485 and TCI6489 will sample in 3Q09 and start production in 4Q09.

## Symposium on Personal, Indoor and Mobile Radio Communications

The IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), one of the conferences in the wireless research arena, is being held 13-16 September 2009 in Tokyo, Japan.

PIMRC 2009 will highlight scientific excellence and technological achievements in present and future wireless communications by gathering the leading scientists, researchers, managers and key market players in all areas of wireless communications.

The theme of PIMRC 2009 is "Giga bit Wireless for Real Personal, Indoor and Mobile Radio Communications (PIMRC)" and will focus from the physical layer to applications technologies to realize real PIMRC. The symposium will include technical sessions, panels, workshops and tutorials based on emerging topics, presentations of key research activities in different parts of the world and technical sessions to discuss of the latest achievements.

# news



## CSR CVC brings premium audio quality

CSR has announced the release of the fifth generation of its Clear Voice Capture (CVC) audio enhancements and noise suppression solution.

CVC 5.0 is a modular suite of speech processing algorithms that works with both single and dual-microphone headsets, and brings a range of audio enhancement technologies to the near end user, as well as enhancing speech quality for the far end. CSR claims that its dual-microphone option delivers more than 30dB of dynamic noise suppression in harsh acoustic conditions irrespective of the direction of noise.

CSR's fifth generation CVC features packet loss and bit error concealment technologies to improve the robustness of incoming wireless audio and mask any break-up in signal caused by surrounding RF interference. Such break-up can come from being close to a 'noisy' device such as a microwave oven or simply from cross-body interference.

At the near end the suite of audio enhancements provides a noise suppression algorithm to reduce unwanted noise embedded in the received speech. The software also incorporates an adaptive equaliser that improves intelligibility by shaping the received speech to exploit the naturally sensitive areas of the human hearing system. The system is also able to fully compensate for the background noise the user is experiencing by adapting to external noise levels. An automatic gain control dynamically adjusts the amplitude of the received speech to ensure that the headset user can hear the incoming voice clearly.

CVC 5.0 also provides advanced far end audio enhancements including an acoustic echo canceller to reduce acoustic coupling between the loudspeaker and the microphone, plus single and dual-channel noise suppression algorithms that dynamically process the microphone signals to deliver clear speech at the far end of the link. The speech is further strengthened and amplified through equalisation and gain control.

"CSR is the only company that can offer a complete headset solution with both near and far end audio enhancements," said Anthony Murray, Senior Vice

President of CSR's Audio and Connectivity Business Unit. "Consumers demand a very high level of wireless audio quality and have the right to expect this at both ends. With CVC 5.0, CSR delivers a complete suite of audio enhancements in a single package. We have compensated for many of the common factors that affect Bluetooth headset users; nearby devices, cross-body problems, noisy environments, etc, while maintaining the power-efficiency and wireless performance quality for which CSR is so well known."

Available now, CVC 5.0 features in CSR's new BlueCore ROM mono headset solution BC6140 and as a software feature in BlueCore5-Multimedia. It will also be available on the forthcoming BC6150 chip, and is available in the BlueCore5-Multimedia flash based chip and associated software development kits.

## Not 'Bluetooth for dummies', this is Bluetooth for brainy people

When it comes to writing books about technology, a sound platform of knowledge and experience is rather helpful. Somebody that certainly qualifies is Bluetooth SIG alumni Peter Hauser. Now CEO of [The Quality Factory](#), Hauser has ventured into the book publishing business. His first work – Bluetooth 1-2-3 – was written to help those in the industry through Bluetooth product development.

Hauser led the design verification team for Microsoft's first Bluetooth keyboard and mice products, is a former Chair of the Bluetooth HID Working Group, co-author of the Bluetooth HID specification, created and led the Bluetooth Usability Expert Group, and was Quality Assurance Manager for the Bluetooth SIG. He knows his onions.

The target audience for Bluetooth 1-2-3 includes those developing their first product through to those adding to an existing product line. Sections of the book include Planning, Development and Qualification & Testing.

As Bluetooth SIG Specification Programme Manager Peter Cook says in his introduction to the book, "Peter refocused the direction of Bluetooth wireless

technology to concentrate on offering a high quality and secure user experience. His vision of what the Bluetooth user experience could be was contagious among members of the Bluetooth SIG and resulted in a complete reprioritization of the Bluetooth technology roadmap."

Bluetooth 1-2-3 is available at [amazon.com](#).

## Bluetooth stack provider listed in the Qualified Design Listing (QDL) for HDP

A Bluetooth Health Device Profile (HDP) that overcomes bottlenecks by allowing for an interoperable way for health and fitness devices to connect to cell phones, laptops and other communication devices has been developed by MindTree. As a result MindTree has become the first independent Bluetooth stack provider to have its Bluetooth Health Device Profile along with its EtherMind 2.1+EDR stack be successfully listed as a qualified design component by the Bluetooth SIG.

While today's medical devices use Bluetooth as a cable replacement, the use of proprietary methods based on Serial Port Profile (SPP) can prove to be a bottleneck due to lack of interoperability, comments Mindtree. Its Bluetooth HDP is claimed to surmount this bottleneck by allowing for an interoperable way for the health and fitness devices to connect to cell phones, laptops and other communication devices

MindTree's implementation of HDP supports all mandatory and optional features, including those of underlying layers such as Multi Channel Adaptation Protocol (MCAP) and Enhanced L2CAP (eL2CAP).

"Medical devices require efficient implementation of Bluetooth technology as they are typically battery-powered. Our implementation of HDP is perfectly suited for such applications, thanks to its ultra compact footprint and low MIPS," said MindTree CTO of R&D Services, Dr. Raghunath Govindachari. "A multitude of devices like pulse oximeters, blood glucose monitors and digital thermometers are expected to incorporate Bluetooth, which makes this segment very promising."

# news



## New CSR SDK for feature rich stereo headsets

CSR has launched its latest software development kit (SDK), that will allow manufacturers to create a feature-rich stereo Bluetooth headset within a short development time. CSR's Stereo R109 SDK release includes support for CSR's Proximity Pairing technology, dual microphone Clear Voice Capture (CVC) echo and noise suppression technology, DSP-based music enhancements to improve the listening experience and the ability to read and decode music files directly from a memory card – so that any Bluetooth stereo headset can become a portable media player.

Based on CSR's industry leading BlueCore5-Multimedia silicon, the R109 SDK incorporates new features including support for multiple CODECs such as SBC, MP3, AAC and AAC+. CSR's Stereo SDK supports DSP-based music enhancements including 3D stereo separation, five-band equaliser and dynamic range control to improve the end user music listening experience. Furthermore, speech is enhanced during a call using CSR's dual-microphone CVC echo and noise suppression technology.

The R109 SDK supports FastStream, CSR's low latency CODEC technology. It reduces the latency of the audio link (from source to sink) to avoid lip-sync issues when watching video images and listening to the audio on a headset or speakers. According to CSR, competing Bluetooth solutions have a latency of up to 200ms that restricts their use in real-time applications such as gaming, video or mobile TV - comparatively FastStream has a latency of just 40ms.

CSR's R109 SDK also includes CSR's pioneering AuriStream ADPCM CODEC that provides superior voice quality when on a call and reduces power consumption by up to 30%.

"CSR offers the industry's most complete



software solution for Bluetooth stereo headset design," said Anthony Murray, Senior Vice President of CSR's Audio and Connectivity Business Unit. "In the first quarter of 2009 we won all stereo headset designs and around 80% of mono headsets, and this new SDK further strengthens our leadership in the headset market. Not only does it offer support for CSR's leading audio technologies such as FastStream and AuriStream, it also supports more CODECs and features than any competing solution."

CSR's Stereo R109 SDK is available now.

## Motorola headset goes stealthy

Motorola has unveiled its Endeavor HX1, which combines Motorola's CrystalTalk noise cancellation technology with a stealth mode, and claims that this means you can hear and be heard in the fiercest environments. When the stealth mode is activated, bone conduction technology relays only your voice while knocking out the most extreme noise and wind for a revolutionary premium headset experience.

"Motorola Endeavor HX1 adds a new level of audio superiority and is made for people who want the freedom to take hands-free calls despite extreme noise and wind environments," said Wayne White, corporate vice president, companion products, Motorola Mobile Devices.

Motorola tells us that the bone conduction technology it is using is the same as that used by special military forces around the world use. Activated with a touch of a button, the stealth mode triggers bone conduction technology. This technology uses an ear sensor to seal off outside noise, rather than relying on an exposed exterior microphone. As you speak, the sensor taps your vocal vibrations and seamlessly converts them to speech so the listener hears your voice and only your voice.



Motorola's Multipoint technology allows you to connect to more than one device, and you can talk more and charge less with up to seven hours of talk time. We're not quite sure how this works, but apparently, voice prompts instruct you on how to activate the stealth mode and how to pair with handsets.

The Motorola Endeavor HX1 will be available in multiple regions beginning with Asia from July.

## Aftermarket sales dominate mobile phone accessory revenues

According to a recent study from ABI Research, sixty six percent of revenues earned from mobile handset accessories are generated in the aftermarket. This percentage is only expected to grow with time, following a market trend to move more and more accessories "out of the box" and onto retailers' shelves.

Fast-growing accessory groups include Bluetooth headsets and wired headsets for music listening, while others such as add-on GPS receivers are in decline as their functions are progressively moved into the handset itself.

"Mobile operators and mobile phone vendors see that the only return from including a subsidized accessory included in the handset box is customer satisfaction," comments industry analyst Michael Morgan. "While that isn't without some intangible value, on the retail shelf an accessory is a high-margin product that will generate actual income."

Because of that, aftermarket accessories will also show faster growth rates than those included "in-box."

The currently most popular aftermarket accessories are memory cards and protective silicone carrying-cases or sleeves.



# The future will arrive, eventually

By Thomas Carmody, CSR

There were many programmes in the 1980s that told us by the year 2010 we'd be flying around on hover cars full of gadgets, all our food would come in freeze dried format and we'd all be wearing silver suits of some sort. Much the same was thought of Bluetooth when it was first launched in 2000. Consumer programmes spoke of how within five years everything would be Bluetooth-enabled, that there wouldn't be a need for wires anywhere, and that even our cars would become full of extra wireless gadgets and sensors.

While the flying car is perhaps still to be realised, new models of cars are actually starting to look like this. The modern car is packed full of gadgets and features, Bluetooth has transformed the once modest automobile to include a whole range of new and exciting options such as hands-free calling, music streaming from a user's MP3 to the car's speakers or even passenger's headphones. Although Bluetooth is a very power-efficient technology, its power consumption has nonetheless made it impractical for certain types of in-car applications.

However, finally a new lower power version of Bluetooth, known as Bluetooth low energy, has opened the door to car manufacturers to include a range of innovative wireless applications such as monitoring systems that can check tyre pressure and other critical safety information wirelessly.

Two of the leading Asian car manufacturers already boast Bluetooth in over 95% of their new models, a pretty impressive statistic. Thanks to CSR's Connectivity Centre it is easy and cost-effective for manufacturers to include other wireless technologies with Bluetooth as the core, and Bluetooth low energy can involve less than \$1 additional cost in CSR's BC7830 chip.

One key consideration for car manufacturers is saving on weight. This affects the fuel economy, something that is more important now than ever before with the movement towards fuel-efficient and hybrid cars. Including sensors and gadgets all over the car currently means that you need to hard wire each sensor to the main CPU for both data and power. This wiring system adds a little extra to the carefully monitored weight and also requires the engineers to factor in the space required by the cables.



By using Bluetooth low energy to connect these sensors there is no need for any cables and if the car already has Bluetooth, the main dashboard computer requires little extra development to receive the information.

If manufacturers can save weight and design time by using Bluetooth low energy then they will look at what other features can be monitored by a Bluetooth low energy sensor. Tyre pressures could be displayed on a dashboard screen on request or even exact oil and water levels.

In the cabin Bluetooth low energy can open up a whole host of potential applications from remote controls for in car entertainment and garage doors, to security and safety features. There's really little limit. Bluetooth low energy is the technology that can make those unrealistic future gazing predictions a possibility.

Recently CSR has launched RoadTunes ROM to bring wireless connectivity to lower end automotive products where previously cost may have been restrictive. This is well suited to personal navigation devices (PNDs) and aftermarket in-car devices such as Bluetooth-enabled vehicle infotainment and car radio

platforms. With Bluetooth as the core, manufacturers can add Bluetooth low energy, GPS or a number of additional technologies for little extra cost and time thanks to CSR's Connectivity Centre strategy. The more vehicles that have Bluetooth low energy installed the greater the potential applications and use cases. It's the kind of 'snowball' situation we've seen in the case of regular Bluetooth.

Launched last year, CSR's RoadTunes boasted the industry's lowest cost Bluetooth IC with integrated profiles for PNDs and aftermarket in-car systems. It also provided customers with embedded, hands-free echo and noise suppression and Bluetooth stereo audio processing capabilities. By launching the ROM-based version of RoadTunes, CSR has been able to drop the price and opened up Bluetooth to a larger market.

It's truly exciting to look at the automotive environment at the moment. We're going to see big things happening in the world of automotive wireless. 'Tomorrow's World' eat your heart out.

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– VERIZON WIRELESS

Chief Technology Office  
– CONCRETE LOGIC

Distinguished Member of the  
Technical Staff  
– MOTOROLA

RF System Architect  
– ARTIMI

Senior Engineer  
– SAMSUNG ELECTRO-MECHANICS

Technical Director  
– EUREX COMMUNICATIONS

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

R & D Engineer  
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Procurement Manager  
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– AMD

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Digital Cellular RF Product  
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– WEARNES TECH SOLUTIONS

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– CISCO SYSTEMS

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– STMICROELECTRONICS

Marketing, Low Power W/less  
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– GENNUM

Analyst  
– CREDIT SUISSE

Grant Holder  
– TELEFONICA

RF Product Manager  
– MURATA

Sen. Procurement Mgr.  
– PLANTRONICS

CEO  
– PLENUM WIRELESS

Confidential Agent  
– PHILIPPINE BUR. OF IMMIGRATN.

Software Engineer  
– SENNHEISER COMMUNICATIONS

Design Engineer  
– TRIMBLE NAVIGATION

Executive Director  
– OPEN SPECTRUM FOUNDATION

Software Engineer  
– SONY ERICSSON

Development Engineer  
– PARROT

Security Engineer  
– U.S. DEPARTMENT OF STATE

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– WIQUEST

President & CEO  
– USA SIGNAL TECH.

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Bluetooth Qualification Board  
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ASIC Development manager  
– MICROSOFT

Senior manager  
Audio/infotainment architectures  
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Principle engineer  
– PLANTRONICS

Marketing engineer  
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Senior systems engineer  
– GN NETCOM

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& standardisation manager  
– NXP SEMICONDUCTORS

R&D engineer  
– FRANCE TELECOM

## WOULD YOU LIKE TO TARGET THE PEOPLE ON THIS PAGE WHEN MARKETING SHORT RANGE WIRELESS PRODUCTS, APPLICATIONS OR SERVICES?

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
- At 1500+ companies.

Incisor is not a consumer publication, and therefore doesn't claim to be read by hundreds of thousands, or even millions. We address those people all over the world that are seriously interested in wireless technology – the decision makers and technology influencers.

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Director Product Development  
– GENNUM

Analyst  
– CREDIT SUISSE

Patent Engineer  
– GN STORE NORD

Researcher  
– EC JOINT RESEARCH CENTRE

## Incisor interview:

Christophe Dugas,  
Director of Marketing, Coronis  
President, Wavenis Open Standard Alliance

Geoffrey Riggs,  
Communications Manager, Coronis,  
Secretary, Wavenis Open Standard Alliance

Gabriel Chegaray,  
M2M Program Manager, Orange Labs  
Treasurer, Wavenis Open Standard Alliance



Coronis / Orange interview

# Launching the Wavenis Open Standard Alliance

Montpellier, France –based Coronis is a wireless solutions provider and the inventor of Wavenis, a highly optimized, ultra low power (ULP) wireless technology for Machine to Machine (M2M) and Wireless Sensor Network (WSN) applications. The company was founded in 2000 by former executives of Itron, a company generally accepted to be one of the world's top providers of intelligent metering, data collection and utility software solutions. In June of 2007, Coronis became part of the Elster Group, the world's largest metering company and supplier of high quality integrated metering and utilization solutions.

Incisor first profiled Coronis in February 2005. You can read that first profile [here](#). At the time we commented that this was a company to watch, and we have listened to our own advice – we are still watching them. Recently, Coronis has moved onto a new stage with the establishment of the [Wavenis Open Standard Alliance](#) (Wavenis-OSA), working alongside France Telecom. We decided it was time that we profiled Coronis again, and so we met with Christophe Dugas and Geoffrey Riggs of Coronis, and Gabriel Chegaray of Orange/France Telecom.

**VH:** For those readers that didn't read the earlier profile, what is Wavenis, and where does it fit into the wireless ecosystem?

**CD:** Wavenis is the technology around which Coronis builds the majority of its wireless OEM platforms, finished products and customizable vertical solutions. The Wavenis Communications Platform embraces the Media Access Controller (MAC), Physical layer (PHY) and the Logical Link Control (LLC). The technology operates worldwide in major license-free ISM bands (868, 915 and 433 MHz) and is ideal for low-traffic, 2-way data & M2M applications from 4.8 to 100 kbps (typically 19.2 kbps). To begin with, we defined Wavenis, for standardization, as the base communications platform, with no application stacks. Coronis as well as our customers such as Schneider Electric have implemented their own application stacks on top of Wavenis wireless platform. Schneider used KNX and Coronis our Wavenis application stack. Now, we are looking at the possibility of providing "services" for applications such as smart metering, smart cities, home building & automation, and others as determined by Wavenis-OSA members.

We are often compared with other ULP wireless technologies, but in reality Wavenis provides significant range and power advantages over IEEE 802.15.4 and other so-called ultra-low-power wireless technologies. Although Wavenis operates in the same market as technologies such as ZigBee, Z-Wave, Wireless MBus for example, we did not set out to compete with ZigBee or other low power wireless technologies. Wavenis has been created with the aim of providing a unique, standardised solution.

Alongside other communication technologies, such as Bluetooth and the cellular networks, Wavenis enables Coronis customers and partners to innovate in their own markets with wireless devices. With our partners, we have deployed several million Wavenis-based devices around the world. One of those partners is France Telecom, and specifically Orange, its cellular network operator. Orange has worked with us since 2005, but has now stepped up its commitment to the partnership with Coronis by becoming the second founding partner in the Wavenis-OSA. The Alliance has been established to promote the global use and enhancement of Wavenis. Coronis and Orange recently

staged the first major event for the Wavenis-OSA in Paris, France, and we were extremely impressed at the level of interest that was shown. So much so that in the last few days before the event the venue had to be changed in order to accommodate the number of people that had registered to attend. Don't forget, this is in the middle of a global economic recession!

We are looking outward as well as inward. The Wavenis-OSA plans to collaborate with major industry standards organisations as well as with other proprietary initiatives. Connections will be established with groups such as the Bluetooth SIG, ZigBee and Konnex, as well as with proprietary initiatives such as Z-Wave, io-homecontrol, and independent organizations, as well as with international standardization bodies such as the IEEE, ETSI, EPC Global, ISAD, LPRA, HART, ISA-SP100 and so on.

**GC:** And why is Orange so interested? Well, network operators such as Orange are very keen to broaden their portfolios and to develop business opportunities outside of the voice markets. There is great potential in the M2M and industrial automation



markets, particularly as there is now strong crossover with the world of IP. Orange has a strong interest in ULP and long range technology. We have been a member of the ZigBee Alliance since 2004, and we still are, but Wavenis is very attractive to us due to its very low power consumption combined with long range, and the fact that it is now becoming a standardised solution.

Historically, Wavenis' strength in the wireless metering market was one of the main reasons we partnered with Coronis, but we see that Wavenis also has real potential in smart cities, home security, track and trace and building automation systems due to the extended range that it offers.

Christophe is correct when he suggests that the Wavenis-OSA event in Paris was an important milestone. If we had needed any extra confirmation that we were doing the right thing, the level of interest shown at the first event proved conclusively that this solution has a lot of potential. More than 120 people attended, and they came from a broad cross-section of industries, including semiconductor companies, utilities, meter manufacturers, and - despite the fact that the event was staged by Orange - other network operators as well as direct competitors to Elster.

The message that came back to us was that these people are looking for a global solution, and that they also wanted more than just a radio. They are looking for us to extend activity into the upper layers. Which confirms that it is the right time for us to be looking at profile/service development.

**VH:** The Wavenis Specification only defines the wireless connectivity platform. What is the thinking behind this?

**GC:** The first focus has been to deliver the base connectivity platform - the PHY and MAC, which has been done. That has allowed customers to get up and running, and several million Wavenis devices have now been deployed in real-world installations. The next phase is to make Wavenis a standards-based solution. That is where we are today, and that is what the Wavenis-OSA is now working on. The goal for this phase is to help many companies across the industry begin to develop a range of interoperable products. Once this has been achieved, we can reach out to the wider, bigger market.

And momentum is now growing. Beyond this, we consider that Internet Protocol (IP) could be the right way to go for layer 3 and are prepared to put significant effort to examine the possibility and making it a reality.

**VH:** What is the background to the creation of the Wavenis-OSA, and what stage has the organisation reached?

**GR:** From the very beginning, all the way back to when Wavenis was conceived, it was always the plan to develop a technology that could be opened up to the world. The Coronis founders were realistic about the challenges of taking Wavenis technology to the world market. They knew that the chances of global success were slim if Wavenis was ring-fenced and therefore remained a proprietary solution, or if they chose to blaze the trail alone.

Building products, industrialising them, and making the core technology a global solution takes more than the resources of one relatively small and new company. Therefore, the decision was made at the outset that the technology would be opened up, and other, strong partners would be encouraged to join with Coronis to nurture the technology and to present it to the world as a standard-based offering. This is the thinking behind the creation of the Wavenis-OSA.

This was also one of the key factors in Elster's decision to acquire Coronis - Coronis' value and the potential success of the technology were much greater as a result of opening up the technology to other companies.

The timing of the creation of the Wavenis-OSA was right, too. Coronis has been working closely with Orange since 2005, and the decision to incorporate the Wavenis-OSA was made in 2007. The background work was done, and the organisation was incorporated in June 2008 as a not for profit, independent legal entity in the state of Delaware in the USA. We chose to incorporate in the USA, by the way, because the laws governing such organisations in the USA are more 'supple'.

So that is where we are today. The legal work has been done and the Wavenis-OSA meets all statutory requirements. The foundations to build from are all in place.

**GC:** It's true about the timing being right. You could see that from the over-subscribed attendance at the Wavenis event in Paris at the end of May. Large companies move slowly, but it was apparent from the interest shown that many of them are preparing their roadmap to enter this market. Speaking for my own company, Orange, I can say that the strong interest shown at the event has boosted the profile of Wavenis technology inside my company, and has under-pinned our commitment to the Wavenis-OSA.

**CD:** This is true for my company too. By its acquisition of Coronis, Elster Group had already demonstrated its commitment to Wavenis, but I know that the Elster management was also very impressed by the attendance at the event in Paris.

**GR:** We are not standing still. We are now working to convert the interest we have generated into commitments to the Wavenis-OSA, and there will be further events, including M2M Connected World, which took place in Chicago, USA in June, and Metering Europe, which takes place in Barcelona, Spain in October.

**VH:** How will the relationship work between the two very different companies - Coronis/Elster and Orange/France Telecom - on the Wavenis-OSA board of directors?

**GR:** It is true that on the surface these are two very different organisations and not just in size. However, what we have is a very complimentary relationship and a combined vision of the way forwards. On the Wavenis-OSA board of directors, nobody has any more influence than anybody else, and in practice it is working very well.

**GC:** The Wavenis-OSA board is the same as any other. It has a mission and a vision. Orange and Coronis bring different expertise in radio technology to the table, but the co-operation is mutually-beneficial. There are nine seats on the board, with Coronis and Orange occupying two of them. We are now looking to add seven other companies to fill the remaining board seats, and outside of that there is no limit to the number of companies that can participate at other levels.

**VH:** The Wavenis-OSA is choosing to make Wavenis an industry standard. Why is this felt to be necessary, and what standards body will you work with?

**GC:** The market for low-power wireless devices is very fragmented. Much of what is available is proprietary, with all of the caveats that brings with it, and many of the players in the market are start-ups or small companies. Evolving Wavenis into an open standard allows our customers to avoid the pitfalls of dealing with closed-loop technology, where they could be pinning their mission-critical systems to solutions from companies that may or may not succeed. These same proprietary technology suppliers could potentially change technology direction without consideration for the resource and financial commitments that the customer base may have made.

We are targeting the 'smart city' market - metering and beyond - and there is just no room here for technology that does not have a secure foundation and a long-term future. The smart city concept starts with metering and extends to services within the city, especially equipment that is not designed to be battery powered. At Orange we looked at the possibility of using ZigBee in this environment, but after extensive research we found that ZigBee is →

mainly designed to address very local events. As such, it is not suitable for the type of long-distance metering systems that will be part of the 'smart grid'.

**GR:** The other major reasons to make Wavenis an open standard are well-established. An open standard solution, which is supported by many suppliers, will always be more credible in the eyes of the customer base, and never more so than when those customers are huge, national or multi-national organisations. It is unlikely that a national utilities company will ever commit itself to a proprietary solution from one supplier – the risk is just too great. Beyond that, opening up a technology so that it is supported by many suppliers means that there is also a wide range of interoperable devices that can be implemented across a network. This means that the market is competitive, which is good for the customer, and it also means that if one company's product proves to be unreliable, it can be substituted for another. These are all key benefits – or maybe even requirements – for the large companies that are implementing smart city solutions.

**VH:** Which direction is the alliance heading in as far as the IPR agreement is concerned – royalty free or with royalty payments – and is this likely to form a stumbling block as the alliance goes forward?

**GC:** The core Wavenis technology is royalty free. IP for technology beyond the MAC and PHY is licensable, but has to be declared. We hope, as we go forward, that Wavenis-OSA members will also chose to make their IP freely available.

**CD:** That is right. We want to be able to move forwards with a royalty free comms stack. Sharing IP will benefit the technology and therefore the members of the Wavenis-OSA.

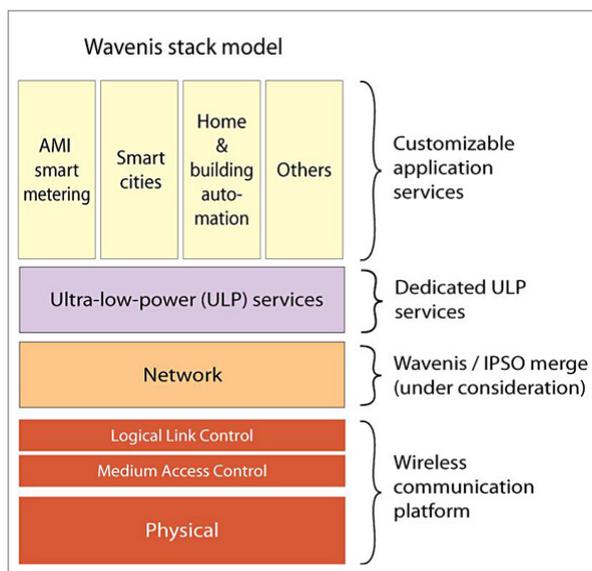
**VH:** Wavenis is focused towards M2M, low power, long range, low radio traffic, low data rate use-cases. This takes the Wavenis Alliance into competition with relatively established competing technologies such as ZigBee, Z-Wave, Bluetooth low energy and - coming from a different direction - energy-harvesting technology from the EnOcean Alliance. EnOcean has gone beyond low-power, to no-power. How will Wavenis compete in this challenging environment?

**CD:** From the very early days, we have sought to co-operate with other standards. We made a proposal to the Bluetooth Special Interest Group (SIG) several years ago to co-develop a low-power technology solution, but there were some elements that weren't deemed 100% suitable. Meanwhile, Nokia came along with Wibree. That has been used as the basis for the Bluetooth low energy offering, but the end-result is still very short-range.

Now we have Konnex, ZigBee, Z-Wave, EnOcean, Wireless M-BUS, io-homecontrol as well as Bluetooth low energy and various other proprietary solutions all seemingly targeting the same market. But Wavenis has the two key advantages of longer range and lower power. We have had a number of cases of customers choosing Wavenis over ZigBee, for example, as a direct result of the long range, low power benefits, plus what is perceived to be greater robustness. Range seems to be the main problem for ZigBee, and we are aware that a new working group has been created within the IEEE – 802.15.4G – to look at a new PHY and the related necessary MAC arrangement, in order to address smart grid market requirements. Using the 'Smart Utility Network' as a working title, they are looking to address the long-range, smart grid market. This is a strong sign that 802.15.4 is not the answer. Coronis and Orange are members of the 802.15.4G group and are contributing ideas.

There will continue to be many solutions competing in this market, many of them operating in the 2.4GHz ISM Band. This is a frequency band that undoubtedly offers a global solution, but practice shows that for this type of technology, the lower frequency bands offer a better range. In the M2M market, and for carriers looking to deploy smart city networks, Wavenis' long-range capability and installed base of millions of units make it a very serious candidate.

**GR:** We are also open to new ideas and ways to develop Wavenis in this competitive →



# Wavenis<sup>®</sup> technology platform

## Scalable wireless mesh networking

Wavenis-enabled wireless products support mesh network configurations scalable up to any size. Data exchange can be partially or entirely automated, depending on the application. Wavenis wireless technology provides the ultra-low-power and long-range connections required by today's most demanding networked devices, including:

- Ultra-low power consumption
- Long wireless range capability
- Robustness against physical and electrical interference
- Openness to WAN and complementary wireless technologies
- Developer APIs and product development toolkit

## General Wavenis features

- Ultra-low-power and long-range wireless sensor network solutions
- Multiple-year battery life
- Operates in license-free ISM 433 MHz, 868 MHz, 915 MHz frequency bands
- ETS300-220 / FCC15.247 compliant
- Fast FHSS, data interleaving, FEC
- Resistant to physical barriers and electrical interference
- Point-to-point, point-to-multipoint (broadcast, polling), and repeater modes
- Tree, star, and mesh network topologies
- Self-configuration and dynamic routing algorithm optimized for ULP networks
- Scalable wireless mesh network topologies
- Relaxed synchronization schemes
- Designed for reliability, power savings, network coexistence
- IP compatibility currently being studied

environment. Energy harvesting, which is the cornerstone of EnOcean's offering, is the Holy Grail of wireless solutions providers. So yes, we are investigating energy-harvesting as a future enhancement of Wavenis technology, as well as other options including using solar panels to provide power for rechargeable batteries.

**CD:** It is true, energy-harvesting will be important, but there is a restriction. All of the current technologies are capable of two-way communication, although in the case of existing energy harvesting technologies such as EnOcean, this is very limited due to the very small amount of power that is available. This prevents the use of energy-harvesting solutions in some applications, and these are applications where Wavenis currently shines. For example, where expanded two-way communication is needed, or where the system is using mesh networking, self-healing or self-routing techniques.

We also believe that the Wavenis solution will be very cost-effective. Coronis has

invested in and developed a system-on-chip (SoC) solution to sell alongside the existing package of silicon, PCB and IP. It is down to all of the partners selling Wavenis' based systems to set their own prices, and these must of course be competitive if they wish to do business.

**VH:** So, what is the future roadmap for Wavenis and the Wavenis Alliance?

**GC:** We are planning that the first spec for radio connectivity will be available by the end of 2009, and so far we are on track to hit this target. Then, during 2010, we plan to complete the spec for the routing layer, and through our representatives we are co-operating and synching with the work that the Internet Engineering Task Force (IETF) is doing in the area of wireless sensor networks.

We will also allow companies joining the Wavenis-OSA to contribute to and steer the way that the technology and the standard is developed. Many of these companies are not wireless experts,

though they will bring new knowledge and expertise to the table.

**CD:** As the organisation grows we will add working groups to look at specific areas of development. At the moment we are forming a Service Application Working Group, and others will follow. At the networking layer we are looking to integrate the IP layer, while Coronis, Orange and Cisco are co-operating over routing.

There is no question that in the long term, Wavenis and the Internet Protocol will come together, and the Wavenis-OSA will continue to develop the technology so that it becomes a widely-adopted standard for long-range, lower power wireless network systems.



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



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



[www.wavenis-osa.org](http://www.wavenis-osa.org)

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# INCISOR W-PANeL

**THIS MONTH: WILL SHORT RANGE WIRELESS TECHNOLOGY REALLY CHANGE THE LIFE OF THE AVERAGE MAN IN THE STREET?**

Incisor expert panel of the most influential spokespeople in the short-range wireless industry speaks on short-range wireless technologies in the cellular handset

Introduced by Vince Holton

Welcome to this feature in which the Incisor WPANel speaks on a topic of interest to short-range wireless industry observers.

The members of the Incisor WPANel are the senior executives from the organisations that manage the administration and development of Bluetooth, DECT/CAT-iq, EnOcean, NFC, Wi-Fi, UWB/Wireless USB and ZigBee technologies.

The ongoing WPANel members are Mike Foley, exec director of the Bluetooth SIG, Erich Kamperschroer, chairman of the DECT Forum, Graham Martin, chairman of the EnOcean Alliance, Koichi Tagawa, chairman of the NFC Forum, Edgar Figueroa, executive director of the Wi-Fi Alliance and Bob Heile, chairman of the ZigBee Alliance. Each of these is an expert in short-range wireless technology.

Last month the WPANel group gave us their views on how many SRW technologies can the handset take? These can be read in [last month's issue](#).

**This month's topic: will short range wireless technology really change the lives of the average man, woman or child in the street?**

I asked the panel to consider what they each thought would be the most wide-ranging, pervasive impact of wireless technology on the global consumer population in the next 5-10 years?

Could it be, I asked?

- Simple stuff like the transition from Infra Red to RF-based remote controls for all of the CE devices that we use.
- Will we really see the rat's nest of cables behind all of our desks, TVs, home entertainment systems disappear? We have been hearing for many years that this was going to happen, but looking around me now it still seems a long way off – and I work in the wireless business!
- Will we really all start living in 'smart homes', where light switches, climate control and security systems all interact effortlessly – and, most important, without being hard-wired to each other?
- Will our phones – those in our homes as well as cellular handsets – become the multi-media, hyper-connected powerhouses that we are being lead to believe? Managing our media, telling our friends what our heart-rate was on the bike ride into work, buying, watching and distributing movies, paying for our caramel macchiato at Starbucks and letting us know whether our ageing grandmother has left the safe confines of her care home? Maybe the technology can do it, but will the systems be in place to make it work? →



So, the key question was – will short range wireless technology really change our lives? Once again, the Incisor WPANel provides an insight based on unrivalled levels of industry knowledge.

If you have views, or suggestions as to how we can develop the WPANel concept, or topics you would like to see covered, email me at vholton@incisor.tv.

**Vince Holton**  
**Publisher, Incisor & IncisorTV**

## The Incisor W-PANel responds

### Will short range wireless technology really change our lives?



**Mike Foley**  
**Executive director,**  
**Bluetooth Special**  
**Interest Group**

Low energy wireless technology, specifically Bluetooth low energy technology, will enable many applications that add convenience to our everyday lives. These include those we have heard about for years: mobile payments, home automation and the list goes on and on. While those applications are very exciting, I believe we have the opportunity to do more with Bluetooth low energy. We have the opportunity to enhance people's lives by transforming health and wellness—healthcare is not just about treatment, but prevention. Perhaps this subject is nearer to me as Americans tend to lead in the unhealthy lifestyle category. Many of us live sedentary lifestyles and eat too much and I, personally, have fallen prey to the overabundance trap. While Bluetooth low energy technology will not change people's long learned habits overnight, it will clearly raise awareness.

This Spring, the Bluetooth SIG staff conducted a health and fitness contest. During the contest I wore a pedometer to track my activity level. It was sad to see the level of my inactivity displayed in clear numbers each day, but since the pedometer was a simple, stand alone device my results were gone at the end of the day. The lack of history made it far too easy to stop wearing the device and tracking my progress. If, on the other hand, my progress wasn't out-of-sight out-of-mind each night I may have been more motivated. If the pedometer sent the number of steps I took via Bluetooth technology to my mobile phone, which then forwarded the information to my personal fitness web site I could track trends. Rather than a glum glance at my daily results, I would have had a longer term view – and motivation for hard work. While this is interesting in and of itself, it becomes really interesting when steps aren't the only information tracked on my fitness web page.

Imagine the benefits of having a bathroom scale that uploads my weight each morning along with a heart rate monitor sending beats/minutes as I exercise. With all this information it would be easy to see trends and to quickly understand what works and what doesn't for my health. I'd be better equipped to make the proper decisions to live a healthier life.

It's no secret that health care costs have spiraled out of control. The medical industry is challenged with delivering high quality care while at the same time reducing costs – very current and very conflicting goals that haven't yet been resolved. Bluetooth low energy technology will transform this industry by helping to resolve these conflicts whether through fitness on the prevention side or monitoring on the treatment side. It is well documented that patients heal much more quickly in familiar surroundings than in hospitals. However, patients are also generally non-compliant. They often fabricate information before visiting the doctor, which results in diagnoses being made without correct information. Bluetooth technology will allow for transparent remote monitoring of patients. Imagine patients recovering comfortably at home no longer having to fill out journals regarding the medication they take or record details of their exercise routines. With the introduction of Bluetooth low energy technology, record keeping will be automated such that it is always accurate. Doctors' offices will be able to remotely monitor the information being collected to catch abnormalities early, before a patient is in dire condition.

Bluetooth technology will also enable doctors to monitor their patients—working with them to make sure they don't become patients. Earlier, I talked about tracking my personal fitness levels with Bluetooth technology. Taking this one step further, I could capture my exercise, weight and other information and then share the details with my doctor. Together, we would use that information to develop a personal wellness plan that is based on real data about my individual performance and trends. A real prescription for wellness that will help me live a healthier life and, over the long-term, reduce the cost of my healthcare.

While it is always great to work on technology that adds convenience to consumers' lives, I believe the greatest legacy for Bluetooth technology will be how it improved people's lives by enhancing their fitness and healthcare and ensuring they receive the best possible level of care if they do fall ill.



**Erich Kamperschroer,**  
**Chairman,**  
**the DECT Forum**

In the next few years, daily consumer communication will become more comfortable, cost-effective and easier to use

for the customer. For the first time ever "simple" telephony will emerge as an entity of voice and content.

This becomes possible with the introduction of CAT-iq, the wireless broadband technology for voice and data connectivity in homes, houses, and smaller offices.

The implementation of CAT-iq into Internet Access Devices (IADs) is not a vision, it is a fact. With this, CAT-iq is the second standard wireless technology, alongside the WLAN, to serve a wireless in-home network, and offers connectivity to both telephony-WAN and internet-WAN networks.

The CAT-iq technology delivers complementary use cases to the WLAN technology. The deployment of CAT-iq has started with HD voice (CAT-iq 2.0) and will provide content download from the Internet (CAT-iq 3.0). With the next generation of CAT-iq (4.0), various use cases are intended such as emergency call buttons for ailing people, hands-free talking devices, and integrating devices such as smoke detectors into a cost-efficient home network. CAT-iq 4.0 opens the opportunity to all vendors to integrate their application very cost efficiently into an existing and mature home network with connectivity to the telephone network and to the Internet.

The CAT-iq wireless technology is designed to make life easier for the user: easy installation, comfort, security, useful and effective application, and low power technology for combined voice and data connectivity are the benefits for the end-customer.



**Edgar Figueroa,**  
**Wi-Fi Alliance**  
**Executive Director**

Looking ahead five years, there is no question that consumers around the world will have wireless experience that's further reaching, higher performing, and more seamless than it is today. Personally and as the Executive Director of the Wi-Fi Alliance, I am especially excited about the promise of wireless technology in automating our homes and enabling energy conservation. Here in the US, funding provided by the Obama administration is likely to jump-start some of this activity, and I think we will see real innovation and growth in consumer adoption in this area over the next three years.

Another trend we're likely to see take hold over the next five years is increased seamlessness between different wireless technologies. With Wi-Fi, cellular and other technologies already so pervasive, new purpose-built wireless technologies to address specific needs such as in-room video transfer emerging, and with innovation in the semiconductor industry to support multiple technologies on a single chip, we will certainly see more and more consumer electronics devices with multiple wireless



technologies on board. And with so many technologies available, the need for seamless interworking and handoff is clear. A variety of organizations are looking at ways to make the experience more transparent to the user – so that the technology “disappears” behind the exciting content and communication that’s always available. In five years, I expect that for most consumers, it will seem a foregone conclusion to have the device choose the best-suited connection technology for a particular application or usage environment, to migrate from cellular to Wi-Fi while conducting a voice call, and to easily authenticate in and roam between Wi-Fi hotspots.

But that’s not all. Wireless technology, and Wi-Fi in particular, will also reach beyond the consumer experience to have a positive impact on communities and people in need around the world. This is already happening, and will continue to expand. Today in India, the Aravind Eye Care system is able to provide high-quality cataract surgery and other services to people in remote villages which lack local medical care.

Since the villages lack wired broadband infrastructure, AECS leverages a long-distance Wi-Fi link to connect doctors to patients via videoconference, bringing professional eye care to hundreds of thousands of people each year. This high-impact project is a terrific example of how Wi-Fi and other wireless technologies can reach beyond providing conveniences such as cable replacement to help improve the lives of people all over the world.



**Bob Heile**  
Chairman,  
ZigBee Alliance

I wouldn't be involved with ZigBee if I didn't believe it has the ability to change our world for the better. There is no doubt that the continued widespread adoption of ZigBee wireless sensors will improve the quality, comfort, convenience, safety and, with the latest endorsement by the Continua Alliance, the health of our lives.

When you consider that billions of ZigBee sensors will be deployed around the world in homes, businesses, health care, industrial environments and public areas, it is clear that we will have more information than we've ever had before. That information will be analyzed and used to help us make changes when needed. We'll have greater understanding about how our actions are impacting ourselves, each other and the environment and that will inspire many to create new solutions. To be sure, technology innovation spurs the global economy, but sensors, widely deployed, have the ability to make lasting change that benefits us all



**Graham Martin,**  
Chairman,  
EnOcean Alliance

With the entire world now aware of and active in reducing our energy consumption, buildings that consume 40% of our total energy requirements are obviously a key area of focus and investment in energy efficiency in the coming years. To achieve maximum efficiency at lowest cost, wireless sensors are required to monitor and control all aspects of our homes and buildings. These will also help to make our daily lives more comfortable and safer. User-friendly interfaces through, for example, the internet, mobile phones or in high-tech smart homes will also help to raise the awareness of the technology and its advantages in our day to day environment.

Lights that automatically switch on and off according to occupancy or natural light levels; hotel rooms that can only be powered with the keycard put into the holder; heating and air-conditioning that is automatically switched off when doors or windows are opened; lights dimmed or electrical appliances turned down when energy in the area becomes scarce; and a video call to your mobile phone when a visitor or intruder is standing at your front door are all examples of wireless, battery-less technology deployments which are already implemented in multiple buildings today and will become increasingly popular in time. However, I think rather than this being a revolution, it will be more of an evolution over many years whilst architects, builders, electricians, utility companies and other building professionals gradually deploy the technology into new builds and retrofits, also raising consumer awareness and enabling mass adoption.

Industry Analyst IDTechEx has, like many others, stressed the future importance of wireless sensors, stating, however, that over 90% of such sensors will have to be maintenance free (no tedious and expensive battery maintenance) to enable mass market success. That confirms that EnOcean – already proven and deployed in over 100,000 buildings – is a “next generation” technology, which will therefore be the long-term winner and the household name in this field.



**Koichi Tagawa,**  
Chairman,  
NFC Forum

We're already seeing the pervasive impact of wireless technology among the millions of consumers in those areas of the world where Wi-Fi, Bluetooth, and NFC have been widely deployed. Although we often think of consumer impact primarily in terms of applications --

contactless payments, for example -- these deployments have shown us that the true impact of wireless is far greater than simply changing how we perform certain daily tasks.

At the NFC Forum, we've seen that the wireless-enabled world is one with fewer hard barriers between our online and physical lives. For example, the peer-to-peer capabilities of NFC are beginning to foster greater social and business networking as we simply touch phones together to share information. The use of NFC tags, which we expect to expand globally and exponentially in the next five years, allows us to link to any website with a touch of our mobile device. This means no more cumbersome typing of URLs on those tiny keyboards. The NFC-enabled “mobile wallet” will mean consumers' cards are in their phone, and they won't have to carry the stack of loyalty and credit cards that we see today. As these barriers melt away, consumers will discover not only unprecedented ease and convenience in their daily lives, but also a new-found freedom to do what they want to do, know what they want to know, and share what they want to share -- no matter where they are. The impact this freedom will have -- on both businesses and consumers -- cannot be overstated.

Wireless technology is providing marketers with the data to better gauge consumer sentiment at point-of-sale, leading to product and service improvements. It is enabling the elderly and disabled to be more empowered and independent. It can make any environment an information-rich place of learning for both children and adults. It is promoting wellness, improving the quality of life, and reducing healthcare costs by enabling better monitoring of key health metrics. It can help travellers overcome barriers of language and culture as never before. The list goes on. It's also important to note that these benefits are not exclusive to the developed world. Because many wireless technologies, such as NFC tags, are inexpensive and mobile networks are proliferating rapidly around the globe, consumers in developing countries will likely experience the greatest impact of all. It is not unreasonable to think that wireless technology will be the key enabler of sustained development in chronically impoverished nations.

And that's just the beginning. The Internet is an apt parallel. When the developers of the ARPAnet created it in 1969, their only goal was to enable broader sharing of scarce computing resources. The ubiquity of the Internet, combined with the invention of the hyperlink and the browser, profoundly changed the world. Today, we are witnessing the first wave of the wireless impact. As technologies such as NFC become ubiquitous, new innovations that work with wireless technology will similarly take us in new and unexpected directions.



# An Alliance of Kings: Apple Embraces Bluetooth in the iPhone 3GS

by Dean Anthony Gratton

Last weekend we saw, and were quite possibly a part of, the staggeringly long queues outside every Apple Store in the UK, Europe and America. Apparently, there was frantic clawing at the chance to take home the latest box of Apple magic that is the new iPhone 3GS (and that was just the O2 staff!). In fact, no sooner than Apple announced the release date of their latest model at their annual World Wide Developer Conference (WWDC) than cries of "I want that one" could be heard all across little Britain! And beyond. Expectations rose and excitement grew outside the shop windows as we waited and watched with all the reverence of one about to meet a member of the royal family.

Apple's reputation and popularity has spurred a public admiration and respect, grown out of the company's enduring commitment to excellence. Many feel that this merit is owed, in no small part, to the inspired vision and leadership of Steve Jobs, a feeling echoed by the fact that Apple's shares both rose and fell in line with news of his health and its subsequent affect on his role within the company. After all, if Apple can be considered technology royalty, then Mr Jobs would undoubtedly be the reigning monarch (King Jobs? – eessh! Shame about the name) within the Apple HQ palace, and when the palace speaks, we all listen intently. We listened, for example, when they told us that short-range technologies would replace the need for an internal CD-ROM drive in the MacBook Air and, while competing manufacturers sniggered at their foolishness, many are now following their lead – just take a look at NetBooks, all designed with wireless communications in mind! Similarly, the news surrounding the inclusion of stereo Bluetooth in the new iPhone sparked a great deal of discussion. Some had assumed that Apple had grown despondent with the technology, as its half-hearted attempt at providing Bluetooth support in previous iPhone models hadn't gone unnoticed by the media and consumers alike, and it seemed likely that Apple would ditch the technology altogether in its latest offering.



Suspicious were further roused when Apple announced its discontinuation of the iPhone Bluetooth headset, sparking rumours of Apple's dissatisfaction with the technology in general. Furthermore, it was suggested that Apple's Bluetooth capabilities and support hadn't been seen to be much of a priority. Now those same speculators are chomping on their words with v.2.1 +Enhanced Data Rate (EDR) technology, along with support for the Advanced Audio Distribution Profile (or A2DP). Indeed, stereo Bluetooth plays a princely role in the new iPhone architecture. Moreover, Bluetooth seems to have finally found its place in the monarchy, broadening its scope and bestowing upon itself the capability for numerous future applications, making it a valuable addition to the iPhone's new software architecture.

But let's talk about interoperability – a bone of much contention with previous Bluetooth-enabled iPhone support. The iPhone v3.0 A2DP support for stereo audio opens the door to a much wider

variety of audio accessory consumer adoption, to include stereo speakers, headphones, home-audio connectivity and far easier car-audio integration.

Furthermore, the implementation of auto-discovery and Apple's Bonjour over Bluetooth for peer-to-peer connectivity means that users will be able to 'see' and connect to other iPhones or devices in such applications as network games or in utility based applications, such as printer connection or fax facilities where access-sharing is key to success. It seems Apple has an agenda to supplement the capabilities of the iPhone so as to dramatically reduce the use of the supposedly battery-sapping Wi-Fi. So great, in fact, is Apple's confidence in the new technology that it is making it available for the first time in second generation iPods via the v3.0 upgrade, thereby providing the foundation for tremendous new application potential.

Remotely connecting your iPhone to your MacBook to synchronise data will also



be easier from now on and the tethering capabilities of the v3.0 OS now allow the use of the iPhone as a 3G modem (sounds like the Dial-up Networking Profile!). However, Apple representatives have said that enabling this kind of tethering will require support from carriers, such as O2 and AT&T. Opinions are that it may be offered as a pay-to-play application, but others in the industry feel that the carriers may be thinking with their wallets and not want to be so generous.

After all why combine services when you can get customers to pay for two accounts? Either way, the potential is there and it opens up exciting new possibilities. So it seems that Bluetooth is firmly back in the limelight, although the real star has to be the stereo capability itself, allowing users the opportunity to wirelessly enjoy their music and VoIP calls in greater clarity, both inside the house and in their cars by using compatible car stereos. Likewise, manufacturers just can't get enough of the product possibilities, for example Plantronics has recently released its latest stereo Bluetooth 590E headset, boasting that it offers digital sound quality with the obvious freedom. Motorola, Nokia, Sony and Jabra, to name but a few, have similarly all received excellent reviews for their iPhone geared stereo headphones. Fortunately for them, it seems that customers just can't get enough of the products on offer, with sales of Bluetooth stereo headsets up significantly since the new iPhone's launch. This uptake has no doubt been cleverly fuelled by the prominent placement of the headsets around all iPhone retailer stores on launch day, something that Apple is particularly good at orchestrating.

The capabilities of Bluetooth's iPhone features don't stop there. On stage at the Apple unveiling of the iPhone 3GS was LifeScan, a company founded by the well-known Johnson & Johnson. LifeScan produce a wireless blood glucose meter, which connects via

Bluetooth to an insulin pump. The demonstration at the event showed how the meter could potentially synchronise with an iPhone application to track glucose readings and to then transmit them over the Internet to a patient's GP. Eyebrows were raised and applause was given as the audience witnessed the ever increasing potential offered by the two-way Bluetooth data connection. Gasps of gratitude followed the revelation that, as part of the new developers kit, the company is opening its user interface to a plethora of applications, which hitherto would not have been able to provide such measured and detailed control. Needless to say, by the end of the presentation, the crowd was almost on its knees and one could almost hear the internal chanting of "all hail to the mighty Apple" being echoed around the room.

With such loyal adopters, it can be hard to find anyone, other than employees of Microsoft perhaps, with a bad word to say about Apple, and even they are slowly jumping ship and swimming towards the new Apple kingdom. However, there are some who have been quick to point out potential problems with the new alliance. In particular, there are reports from some corners of the industry that conflicts are becoming evident between Wi-Fi and monaural Bluetooth functionality within the iPhone. Some initial testing seems to suggest that Wi-Fi signal strength decreases when stereo Bluetooth is being used – what's more, it's suggested that Wi-Fi behaves unpredictably during network gaming. Similarly, it has been suggested that the Wi-Fi signal strength decreases dramatically when using monaural Bluetooth, making it practically unusable for Wi-Fi-enabled web surfing. Switching off Wi-Fi and using the 3G network seems to solve these problems and it may come down to some 'bugs' that need to be ironed out by Apple, but it does potentially raise new coexistence issues between the two technologies. Another article perhaps?

So it seems that it's very much high times for Apple and its new royal baby. The older sister, iPod, as mentioned previously,

also contains the Broadcom Bluetooth chipset that its younger sibling carries, providing potential for VoIP capabilities and peer-to-peer gaming applications. It's manna from heaven for developers who are looking to emerge themselves in an ever increasing demand-driven mobile marketplace and manna from heaven for Apple too, which has seen its BoM (Bill of Materials) drop from \$250 for an 8GB 2.0 iPhone to just \$178 for a new 16GB 3GS model due to the drop in component prices. This allows flexibility in pricing, but it seems that the carriers no longer need to be generous with their upgrades, as is evident by the vast number of consumers who are happy to pay time and time again for the latest rendition of their Apple-logo incrustated goodies. "It's like buying a slice of heaven in a box" said one eager consumer as he queued in line at 7.30am on Friday 19th June. "I just can't wait to see what they come up with next and whatever it is, I want one".

And so it seems that the public has crowned the King of technology yet again. Apple stands victorious in the face of its rivals, ready to further woo its followers with a new bevy of applications and accessories. It does so with the same architectural courtiers in tow, each bringing their unique gifts to the end product but with one difference; this time around Bluetooth is firmly by its side.

#### About the author

*Dr Dean Anthony Gratton is a bestselling author, writer and telecommunications consultant. 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

### Wi-Fi / WLAN

#### Embedded Wi-Fi in PIC microcontroller designs

Microchip Technology has announced the availability of the ZeroG Wireless ZG2100M and ZG2101M Wi-Fi Modules, ZeroG IEEE 802.11 Development Kit for

Explorer 16 and the ZeroG Wi-Fi PICtail/PICtail Plus Daughter Board. Microchip and ZeroG Wireless signed a multi-year, non-exclusive deal, which began with a joint engineering program to develop an optimized Wi-Fi solution for embedded designers and resulted in

modules for Microchip's 8-, 16- and 32-bit PIC microcontrollers (MCUs) and dsPIC Digital Signal Controllers (DSCs). The ZeroG Wireless "Wi-Fi I/O" is a low-power, low-system-cost Wi-Fi solution that provides Wi-Fi connectivity for nearly any electronic device.



# ZigBee enters health care market

**ZigBee was endorsed by the Continua Health Alliance for the Low Power LAN category because of its superior power efficiency and networking capabilities. ZigBee gives users networking flexibility to cover entire campuses and connect thousands of devices on a single network. The completed ZigBee Health Care public application profile will be used for medical, patient and facilities monitoring, health care and fitness devices that may be at home or in clinical or group care facilities. Since ZigBee will not take down Wi-Fi networks, patient critical networks remain safe.**

During actual product demonstrations at a Continua member meeting in March, ZigBee Health Care performed as promised. It scored the highest by far of all the candidate technologies in terms of its alignment to Continua's technical requirements and vision. A number of ZigBee members are currently developing products to meet the new Continua guidelines.

Importantly, ZigBee provides flexible, robust and customizable security for different scenarios. Its robust and industry-vetted levels of security are in use today for products from straightforward consumer electronics remote controls to battle-hardened electronic commerce and privacy-critical health care applications.

Beyond Continua's endorsement, ZigBee Health Care also supports the use of long battery-lived, body-worn devices, offering product manufacturers and health care organizations a valuable choice. ZigBee is already used in a growing number of hospitals today, proving its safety and reliability. ZigBee's localization services mean that devices can be tracked and located. Real-world products prove its ability to communicate for the longest periods of time on inexpensive coin-cell batteries. ZigBee Health Care offers support for all the IEEE 11073 devices:

- Glucose meters
- Pulse oximeters
- Electrocardiographs
- Weight scales
- Thermometers



- Blood pressure monitors and respirometers
- Cardiovascular fitness monitor
- Strength fitness monitor
- Independent living activity hub
- Medication monitors

ZigBee Health Care can be used for products globally. It is designed with simplicity in mind, making it easy for people to use and allowing them to maintain their independence and mobility. Wearable products already in the market using coin-cell batteries last several years between battery changes.

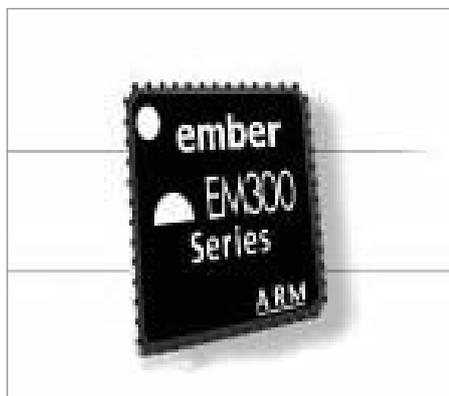
ZigBee Health Care will play an important role in moderating the sharp increase in health care costs. Products based on this standard will reduce costs associated with the development and manufacturing of new medical devices. While standards are a proven way to deliver enormous economy of scale benefits for components, they also play a key role in our individual lives. ZigBee Health Care will bring an unprecedented ability to simplify the control and monitoring of patients and functions in hospitals, elderly care facilities and even homes.

Several trends in the healthcare and wellness areas are reshaping the medical and fitness industries. The shift from reactive to proactive healthcare and wellness is fueling an increased vigilance towards healthy lifestyles while creating improved methods for fitness and chronic disease management. The missing piece of this puzzle has been wireless connectivity and more specifically, robust, low power wireless connectivity.

Free from wires, people can easily use a variety of monitors and maintain their independence. ZigBee Health Care will foster safe, healthy and independent living conditions for the disabled or elderly and offer new choices for reliable chronic disease monitoring, personal wellness monitoring and personal fitness monitoring.

This unique combination of benefits presented by ZigBee Health Care eliminates physical, mobility and emotional barriers and allows industry, governments and individuals to embrace this critical technology for reducing health care costs. Ultimately, ZigBee allows a new class of assistive tools that deliver vital life saving and life affirming benefits that can serve us all.

# low energy wireless news



## Ember unveils high performance ZigBee chips

Ember unveiled its next-generation ZigBee chip family - the EM300 Series system on chips (SoCs) - during June. Ember claims that the chips pack the industry's highest wireless networking performance and application code space into the lowest power-consuming chip set.

The EM300 family offers ZigBee developers a combination of an ARM microprocessor, an IEEE 802.15.4 radio and larger memory in response to the increasing demands of sensor network applications.

The new EM300 Series products include the EM351, which integrates an ARM Cortex-M3 processor, 2.4 GHz IEEE 802.15.4 RF transceiver, 128 KB Flash, 12 KB RAM and EmberZNet PRO network protocol stack supporting the ZigBee PRO Feature Set, while the EM357 is optimized for more sophisticated applications that require more memory. It has the features of the ME351 plus 192 KB rather than 128 KB Flash.

A lot of emphasis was placed on the extra range of the new chips, which Ember claims is twice that of the competition - virtually eliminating the need for an external power amplifier (PA) in Europe and Asia. Ember also claims significantly better message latency and data throughput and at least 25 percent longer battery life than any other solution currently available in the market.

Ember acknowledged that one of the key features enabling the EM300 series' performance and functionality is the ARM Cortex-M3 processor which delivers 'exceptional' code density, computational performance and system response to interrupts. Plus an extensive support infrastructure.

"With the quickly expanding market for ZigBee in general and smart energy in particular, our

customers are demanding even higher levels of performance and software capabilities that differentiate their ZigBee solutions. They want more powerful processors and radios, stronger security and more memory space to accommodate their code, all without consuming additional power. The EM300 Series delivers on all counts," said Bob LeFort, Ember CEO.

The EM300 Series SoCs will be generally available in late Q3 2009.

## Emerson joins ZigBee board

Emerson, which is a global manufacturing and technology company servicing the industrial, commercial and consumer markets, is now a Promoter level member and the newest member of the ZigBee Alliance Board of Directors.

Several Emerson business platforms are expected to become active in the Alliance, starting with Emerson Climate Technologies, a provider of heating, ventilation, air conditioning and refrigeration solutions for residential, industrial and commercial applications, and its White-Rodgers division, which specializes in climate-control technologies.

Emerson joins Ember, Freescale, Huawei, Itron, Landis+Gyr, Philips, Reliant Energy, Samsung, Schneider, STMicroelectronics, Tendril and Texas Instruments on the ZigBee Alliance Board of Directors.

"The ZigBee Alliance welcomes the active support of Emerson and its expertise in the development and manufacture of a wide range of technologies used in industrial, commercial and consumer markets," said Bob Heile, chairman of the ZigBee Alliance. "The ZigBee Alliance continues to achieve success in energy, building management and health care because of the strength of our ecosystem and the support of our members. Emerson is a leading manufacturer of a variety of global

products and will provide valuable support to advance ZigBee further."

## NFC Forum unveils target N-Mark

The NFC Forum has introduced its target mark, a stylized letter "N" that enables consumers to easily locate embedded NFC tags (see above).

The N-Mark indicates the spot where an NFC device can read an NFC tag to establish a connection. By holding an NFC-enabled device close to the N-Mark, consumers can "pick up" information stored on NFC tags embedded in everyday objects such as posters, bus stop signs, parking permits, street signs, medicines, magazine pages and food packaging.

The NFC Forum is planning that NFC tags will be rolled out across a wide range of industries, including public transit, retail and healthcare. Suggested applications included: downloading transit schedules, maps, film trailers, retail coupons, and cooking recipes from smart posters; ordering taxi service or meals via embedded tags on signs and menus; signing up for SMS retail offers at store displays; obtaining detailed prescription information or verifying drug authenticity by reading tags on prescription bottles. Consumers can perform all of these actions simply by touching an NFC-enabled device, such as a mobile phone, to the N-Mark.

"The ability to read information stored on embedded tags is one of NFC's essential capabilities, which also include enabling contactless payments and file transfers between devices," said Koichi Tagawa, chairman of the NFC Forum. "Because it marks the opening of a new world of information to consumers, the launch of the NFC Forum N-Mark is a key milestone in the global commercialization and promotion of NFC technology."

The NFC Forum N-Mark is available to anyone for download free of charge from the NFC Forum website via a click-through license.

# wi-fi / wlan news



## ZeroG demos Wi-Fi interoperability with Bonjour technology

ZeroG Wireless has been demonstrating its implementation of Bonjour technology. Using an iPhone and a ZeroG Wireless equipped Microchip development kit, the demonstration highlights how a ZeroG Wi-Fi based system effectively uses the Bonjour technology from Apple to connect to networks.

Bonjour is Apple Inc's trade name for its implementation of the IETF Zeroconf protocols, a technology created to dramatically simplify the creation and configuration of wired and wireless networks. Bonjour enables automatic discovery of computers, devices, and services on IP networks. It uses industry standard IP protocols to allow devices to automatically discover each other without the need to enter IP addresses or configure DNS servers.

ZeroG's implementation of the IETF Zeroconf protocols allows customers to create Wi-Fi enabled devices that can be quickly added to a network and easily configured for operation. For example, a Wi-Fi enabled thermostat can be configured to join your home network by any Bonjour-enabled device, such as iPhones, Macintosh computers or Windows-based PCs.

"The ZeroG Wireless implementation of the Zeroconf protocols demonstrates that even very simple electronic systems can reap the benefits of this technology," said Tim Colleran, vice president of marketing at ZeroG Wireless. Colleran continued, "The Internet of Things needs to be driven by easy-to-use technologies and the combination of Bonjour technology from Apple and ZeroG Wi-Fi is a big step forward in making this happen."

The ZG2100M and ZG2101M modules, which are CE and ROHS compliant, are available now. Development kits featuring the ZG2100M are also available. ZeroG's Bonjour implementation will be made available to customers in Q3 2009.

## Network manager brings event-based forensics to WLANs

Meru Networks has introduced E(z)RF Network Manager 2.0, and claims this is the first wireless LAN management system to record every client-network wireless protocol interaction, rather than merely gathering aggregate statistics.

Meru's E(z)RF Network Manager 2.0 uses continuous event recording, data mining and a knowledge-based inference engine to reduce troubleshooting time - and user downtime, says Meru - from days to minutes.

With knowledge of every past RF event, the system allows network managers to "rewind" the WLAN, recreating past event sequences to quickly pinpoint the causes of client problems - even long after those problems have occurred. The system also automatically correlates across all recorded events to make highly accurate inferences about problems that may not yet have even been reported.

Scalable, so as to be able to accommodate growing enterprise requirements, E(z)RF allows management of up to 25,000 access points and hundreds of controllers across multiple geographic regions. From a single console, users can drill down and view activity details at each level of the infrastructure: controllers, access points (APs) and individual wireless client devices.

E(z)RF Network Manager 2.0 is available immediately. A visualization package providing network-wide heatmaps is available as an add-on option.

## How to WLAN-enable a whole harbour

When the Volvo Ocean Race visited Stockholm (14th - 25th June), all of the [Skeppsbron quay](#) in front of the Royal Palace was transformed into a single wireless network for data traffic. The network was built by DataCom, a Meru Networks distributor in Stockholm, working in co-operation with the Swedish software company Clavister

When building the wireless network, the DataCom team had to overcome a number of unusual challenges in the form of tall buildings and varying weather conditions. The network covered almost an entire kilometer, with 200 Mbit capacity.

The network accommodated all data traffic for television, radio, sponsors, sailing and service teams, guests and the general public. The stretch of almost one kilometer was achieved by a wireless network including 22 WLAN access points, more than 1 km fiber, 1.5 kilometers of copper cable and about 100 other components in the form of switches, servers, firewalls and controllers.

The network had to handle broadcast-quality moving images at high speeds both internally within the network and externally to the Internet. Performance is 1 Gbit internally and 200 MB externally to the Internet. Firewalls protected the network from external access and ensure that no improper data was transmitted (such as illegal file sharing).

# New 2009 events for UWB testing and standardisation

In last month's issue of Incisor, we reported that despite rumours of its demise, the UWB community was continuing work to bring the technology to market, and had embarked on a series of interoperability test sessions. We now hear that the Wireless Alliance for Testing Experiment and Research, or WALTER, as it is known, has announced the organisation of 3 new UWB technology testing and standardisation events to be held in Europe.

We hadn't heard of WALTER prior to hearing from Franck Le Gall, the WALTER project coordinator. Le Gall explained that WALTER is a project co-financed by the European Commission under the 7th framework program for RTD. Started in January 2008, it will last 2 years and brings together 8 organisations from Europe and China. The project addresses the need for broadband test beds by overcoming the technical issues of measuring low level, high data rate radio signals. The resulting worldwide interconnected test beds will address the short term needs of industry and regulators but also the longer-term needs of research communities.

The first of the three events is called the 'Detect And Avoid (DAA) Evaluation' event, and takes place in Italy during July. The European WALTER and EUWB projects are organizing this measurement event in order to evaluate the initial draft proposal certification procedures for the upcoming ETSI DAA UWB harmonized standard. During the event, manufacturers of DAA enabled UWB devices have been invited to provide devices which could at least cover some parts of the proposed procedures. According to Le Gall, devices only supporting the detect part are also

welcome if the required information is available to the measurement equipment for evaluation of the detection and identification time.

The second event, which also takes place in Italy during July, is for WiMedia PHY and Platform Conformance and Interoperability testing of PHY and MAC (platform) implementations based on the

WiMedia standard. The PHY testing is provided by onsite support of Agilent and the platform testing by onsite support of Ellisys. The testing is intended to be in compliance with corresponding WiMedia certification procedures. This event is aimed at companies with implementations based on the WiMedia standard, and who are looking at the possibility of executing the compliance and interop tests on their devices in the transition time between the activities of WiMedia and the newly started activities in the receiving SIGs (Bluetooth SIG and USB-IF).

The final event, which will be held in France during October, is a workshop on the contribution of an EU project to the standardisation process, UWB in this case. After having worked on the project for more than one year, the WALTER Project will run this workshop to present its activities and results, with the following main objectives:

- To provide an overview on the current regulatory, standardization and research status of UWB technology.
- To present European research activities results on UWB, including the mitigation techniques of Detect And Avoid (DAA). To describe the WALTER solutions for Testing and Measuring DAA.
- To identify the main challenges in the UWB testing and measurements, including the problem of noise.

This seems like a worthy venture, and we wish the project well. Incisor will stay in touch with Franck Le Gall and will provide an update after the events.



## Snippets

### European DECT cordless phone market dips in 2008

Having shown consistent yearly growth over the past 10 years the European consumer DECT cordless phone market declined in 2008, with both mature Western European markets and emerging Eastern European markets suffering, according to market researchers MZA. Total handset shipments

fell by 5% to 56.5 million in 2008 with declines in Eastern European territories being stronger than within Western Europe. Sales of professional multi-cellular DECT cordless phones in Europe grew marginally in 2008 compared to 2007, but the volumes are significantly lower (around 1.4 million handsets in 2008) and failed to outweigh the slump in consumer demand.

The consumer cordless phone market has faced increasing pressure as mobile penetration increases and consumers focus their buying attention on other market segments. This situation has obviously been further compounded by the global economic downturn and the knock on effects on consumer confidence and expenditure.

# uwb / wireless usb news



## Staccato Communications augments management team

Staccato Communications, which regular Incisor readers will know as one of the key trailblazers in the world of ultra-wideband (UWB) and wireless USB communications, has brought Andreas Melder in to fill the position of vice president of marketing and business development. Melder will lead worldwide marketing and business development efforts for the company and will report to Andrew Vought, CEO of Staccato Communications.

"Andreas is a very talented leader with highly relevant experience in Staccato's addressable markets," said Vought. "He brings strong business leadership to Staccato and a broad range of technical and business experiences that will help us extend our reach globally and advance the market for our wireless PAN technologies. His appointment is a further demonstration of Staccato's commitment to the growth and success of the rapidly-evolving digital lifestyle marketplace."

Prior to joining Staccato Communications, Melder was senior vice president of Intellon Corporation, the world leader in HomePlug powerline communications. Among other successes while at Intellon, Melder was instrumental in building the necessary market momentum for HomePlug technology – helping it achieve the global recognition and dominant market position that it enjoys today.

Melder was also a founder of Microtune, Inc., a developer of broadband and wireless RF and analog-intensive integrated devices, targeting the home networking, consumer electronics and

automotive markets. Additionally, Melder was part of the management team that led Tripath Technology to the public markets. Tripath focused on providing highly efficient and linear power amplification to the communications, digital media and consumer electronics markets.

"Staccato Communications has a strong legacy of RF software and silicon design and has positioned itself as the leader in UWB and wireless USB solutions," said Melder. "I am delighted to be joining forces with Staccato's extraordinary management and outstanding engineering teams as well their highly experienced, world-class investors. The market timing is ideal to build upon the company's fundamental engineering excellence and core competencies and to accelerate the expansion into the many high-growth markets to be served by our unique solutions."

## UWB – Is the egg finally about to hatch?

- asks IMS Research

IMS Research seems to be on the same page of the hymn sheet as Incisor. It says that despite frequent declarations by many that 'UWB is dead', recently it feels as though support is starting to grow – not just from those pushing the technology, but also from independent industry experts and device manufacturers. So why, it says, are we not seeing more of UWB, either in the form of W-USB or other variations, in products being shipped today?

UWB is currently facing the very common 'chicken/egg' technology scenario. PC manufacturers (one of the key markets) want more enabled peripherals, such as docking stations, before they will commit

to including the technology as standard in their PCs. Concurrently, PC peripheral manufacturers want high PC attach rates before they will integrate the technology into their own products. This has a knock-on effect, meaning consumers do not want to pay a premium to include a technology which offers only a limited supporting ecosystem. In the medium term, this is an issue that looks set to be addressed by a combination of external dongles and by offering consumers the option of configured-to-order W-USB enabled products, as is currently the case with a number of notebook PC manufacturers.

Commenting on the line-up on display at Computex this year, IMS feels that this ecosystem is slowly starting to ramp up. Examples include Alereon's demonstration of a W-USB Apple iPhone/iPod peripheral reference design, enabling wireless synchronisation to iTunes on a Windows or MAC operating system, with future enhancements offering connectivity to HDTVs. Also gaining press at Computex was Leyio's W-USB hard drive, which is said to enable data-transfer at 10Mbps – four times faster than Wi-Fi and 100 times faster than classic Bluetooth.

Lisa Arrowsmith, Market Analyst for IMS Research explained, 'Coming back to the tech-age adage, wireless-enabled peripherals are not much use without wireless-enabled devices to connect to. Yet those proclaiming that UWB is already dead seem to be speaking prematurely. One only needs to look at the current state of technologies such as Bluetooth, which everybody seems to forget was also at one point declared dead and buried, to see that it is possible to recover and introduce a successful technology despite the press's death knell'.

# events



DATE	EVENT	LOCATION	NOTES	LINK
July 21 2009	Wi-Fi Alliance Regional Symposium	Tokyo, Japan	-	<a href="http://www.wi-fi.org/events_overview.php?id=232">http://www.wi-fi.org/events_overview.php?id=232</a>
July 22 - 24 2009	Expo Comm Wireless Japan	Tokyo, Japan	-	<a href="http://www.expocomm.com/wirelessjapan/index.html">http://www.expocomm.com/wirelessjapan/index.html</a>
Sept 1 - 3 2009	4G Wireless Evolution Conference	Los Angeles, California, USA	-	<a href="http://www.wi-fi.org/events_overview.php?id=227">http://www.wi-fi.org/events_overview.php?id=227</a>
Sept 2 - 3 2009	Wireless China	Beijing, China	-	<a href="http://www.wirelesschina-summit.com/">http://www.wirelesschina-summit.com/</a>
Sept 13 - 16 2009	Personal, Indoor and Mobile Radio Communications Symposium 2009 (PIMRC'09)	Tokyo, Japan	The theme of the PIMRC'09 is "Giga bit Wireless for Real Personal, Indoor and Mobile Radio Communications (PIMRC)"	<a href="http://www.pimrc2009.org/">http://www.pimrc2009.org/</a>
Oct 5 - 9 2009	Bluetooth SIG UnPlugFest 34	Stuttgart, Germany	-	<a href="https://www.bluetooth.org/Events/sig_events.htm#DevelopersConf">https://www.bluetooth.org/Events/sig_events.htm#DevelopersConf</a>
Oct 7 - 9 2009	CTIA Wireless I.T. & Entertainment 2009	San Diego Convention - Centre, San Diego, California, USA	-	<a href="http://www.ctiawireless.com">www.ctiawireless.com</a>

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