BEYOND THE WPAN

boldly going where we haven't gone before

You'll be aware by now that Incisor has some new sponsors – Cambridge Consultants and TRaC. Both of these companies operate in the WPAN sector, but they operate outside of it too.

I've already paved the way for some broader content in Incisor, and this month sees a healthy smattering of non-WPAN features. Cambridge Consultants is looking at the DECT market, an ecosystem that has been part of its portfolio since the 'Nineties. As they point out, in over 100 countries DECT has a dedicated licence-free band allocated to it. And then, DECT adds a unique co-existence strategy, in which an established link can seamlessly 'move out of the way' of another DECT system, or indeed any other interference. These are amongst the reasons why Cambridge Consultants believes the DECT market continues to present opportunities.

TRaC, meanwhile, is looking at the business of integrating radio modules. As TRaC says, it is quite simple for a manufacturer to buy in a radio module and incorporate it into its product. However, once this is done it opens up a new challenge when it comes to seeking the necessary certification, qualification or regulatory compliance required to place the finished product on the global market. This is something that is often overlooked – with disastrous consequences for those companies that haven't factored in the time/costs associated with the process.

And then Dean Gratton looks at femtocells – a technology we have touched on previously, but which seems to be having a few issues gaining traction. After all, a femtocell seems to be a way for network operators to get their customers to pay the cost of fixing network coverage problems.

That can't be right, can it?

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

INCISORTV FOCUS THIS MONTH:

The Incisor BiteBack programme visits Seoul, South Korea

FROM INCISOR'S READERS

"Incisor is the industry go-to for wireless updates. It is open to new technologies like NFC, and willing to promote such technologies. I consider it the number 1 online/softcopy publication in the field. Thank you Vince and keep up the accurate integral work".

- Peter Coster, Ecosystem Development Working Group Chairperson, NFC Forum, Japan

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Bluetooth Innovator of the Year

The Bluetooth SIG has awarded Edward Sazonov the title of Bluetooth Innovator of the Year for 2009. Sazonov, who works for Physical Activity Innovations LLC, received this recognition at the official award ceremony held in-line with the Wearable Technologies Show at ispo 2010, the world's largest trade show for sporting goods. The award includes a cash prize of €5,000 and a Bluetooth Qualification Program voucher (QDID) valued at up to US$ 10,000.

Incisor understands that the Innovation World Cup 2009 drew more than 250 entries, which the SIG suggests illustrates the abundance of opportunities for product development with the new Bluetooth low energy wireless technology. "The interest in the Innovation World Cup echoes the great amount of excitement we have seen in response to the announcement of Bluetooth low energy wireless technology" said Mike Foley, Executive Director of the Bluetooth SIG. "Bluetooth low energy technology will open up new market opportunities and also enhance many existing areas of Bluetooth development including home health care and sports and fitness.

Sazonov's winning idea, The Fit Companion, is a small, unobtrusive sensor that when clipped-on to a user's clothing or integrated in to a shoe, provides feedback about their physical activity. The data, transmitted via Bluetooth low energy technology, can help individuals to lose weight and achieve optimal physical activity. Intended for use in both training and daily activities like walking or performing chores, this simple, measuring device may offer a solution for reducing obesity.

As part of the competition the Bluetooth SIG also choose three finalists, whose well

elaborated and original ideas were recognized at the awards ceremony by Robbert de Kock, Secretary General of the World Federation of the Sporting Goods Industry (WFSGI). The Flare Snowsport invented by Patrick Coulbourne from Antware, is a fitness monitoring solution specifically created for winter snow sports that transmits data such as track and heart rate via Bluetooth low energy nodes located at the head and end of trails to a USB port worn on the body. Pool-Mate created by Lisa Durlam from Swimovate and her team is a Bluetooth enabled wrist watch designed for swimmers. The watch measures distance, strokes, calories burned and other performance data and transmits it to the Internet via a mobile phone enabled with Bluetooth low energy technology. The Fertility Manager and Body Monitor developed by Michael Köhler, Edumotion, was recognized as a finalist for the device's applicability for future opportunities in tele-health. This is a small, coin cell based, digital thermometer that can transmit temperature data to a mobile phone via Bluetooth low energy technology for processing with fertility management software.

The Bluetooth SIG Innovation World Cup 2009 was sponsored by Nokia, Freescale Semiconductor, Texas Instruments, Nordic Semiconductor, STMicroelectronics and BrunelThe Bluetooth Innovation World Cup 2010 competition will be opened for entries on June 1, 2010.

Broadcom reports record quarterly net revenue

Broadcom has reported unaudited financial results for its fourth quarter and year ended December 31, 2009. Net revenue for the fourth quarter of 2009 was a record $1.343 billion. This represents an increase in net revenue of 7.1% compared with the

$1.254 billion for the third quarter of 2009 and an increase of 19.2% compared with the $1.127 billion for the fourth quarter of 2008. Net income for the fourth quarter of 2009 was $59.2 million, or $.11 per share (diluted), compared with net income of $84.6 million, or $.16 per share (diluted), for the third quarter of 2009, and net loss of $159.2 million, or $.32 net loss per share (basic and diluted), for the fourth quarter of 2008.

Net revenue for the year ended December 31, 2009 was $4.490 billion. This represents a decrease in net revenue of 3.6% from the $4.658 billion reported for the year ended December 31, 2008. Net income for the year ended December 31, 2009 was $65.3 million, or $.13 per share (diluted), compared with $214.8 million, or $.41 per share (diluted), for the year ended December 31, 2008.

Broadcom also announced that it had agreed in principle to settle the securities class action litigation pending against the company and certain of its current and former officers and directors relating to the company's historical stock option accounting practices. Under the proposed settlement, the claims against Broadcom and its officers and directors will be dismissed with prejudice and released in exchange for a $160.5 million cash payment by Broadcom. The company recorded the settlement amount as a one-time charge.

"Broadcom's performance in 2009 highlights the incredible opportunities within the wired and wireless communications markets and the excellent work of our employees in creating compelling products," said Scott A. McGregor, Broadcom's President and Chief Executive Officer. "In the midst of one of the worst economic downturns, Broadcom gained market share, achieved record quarterly revenue and delivered the strongest cash flow from operations in our history."

news

DEVA gives Bluetooth developers a head start

Technology product design and development specialist Cambridge Consultants has launched DEVA, a development platform for the development of Bluetooth products and mobile accessories. Described as a general-purpose and highly flexible platform, DEVA allows electronics and software engineers to rapidly prototype and test accessory products that deliver new features for users before committing to final product hardware. Cambridge Consultants has worked with CSR's BlueCore-5-Multimedia device to enable the development of highly differentiated products that maintain very low product cost.

DEVA can be used to develop a range of Bluetooth products - from mobile phone accessories and headsets, including for Apple's iPhone, to wireless payment systems, industrial remote control devices, sports activity monitors or telehealth sensors that can be compliant with the Continua Health Alliance's guidelines.

The DEVA platform has been optimised to work with all of Cambridge Consultants' existing software tools and libraries, including its generic Bluetooth tool, xIDE for Interface Express, its Continua Compliant wireless health platform, VENA, and its Internet service accessory platform, CatchNet. DEVA can also be used with CSR's BlueLab development suite.

DEVA includes a 128x128 monochrome LCD display, three user-interface buttons and LEDs allowing rich user interfaces to be developed for the product. With USB, Serial and MicroSD interfaces for data integration, a range of GPIO, and both digital and analogue stereo audio connection, Cambridge Consultants told Incisor that DEVA can support the development of complex products that have the lowest possible cost in their final manufactured form. Being

battery powered, DEVA provides a completely wireless experience.

"DEVA has been designed to provide a comprehensive environment for the development of sophisticated Bluetooth products," said Tim Fowler, Commercial Director at Cambridge Consultants. "Not only does it speed the development of new versions of established Bluetooth products such as headsets with added capabilities, but it is also enabling the rapid development of new devices in many more diverse markets - medical applications are one example. We have utilised our extensive experience in this market to deliver a development platform that gives designers a real head start in creating truly differentiated products."

New sales & marketing boss at Sony Ericsson

Japanese/Swedish partnership Sony Ericsson has appointed Kristian Tear, currently Head of Western Europe Region and Head of Global Customer Accounts to one of its most visible – and surely accountable positions - Head of Global Sales & Marketing effective 1st April. Tear succeeds Anders Runevad, who will return to Ericsson. Kristian Tear will report to Sony Ericsson President Bert Nordberg.

Nordberg commented, "Kristian brings a wealth of experience in the telecoms industry to his new role. At Sony Ericsson he has been driving our strategic partnerships with global operator customers in addition to leading one of our largest and most important sales regions around the world, and I am very pleased that he will be joining my global executive management team. At the same time, I wish to take this opportunity to thank Anders for having led the Sales & Marketing function successfully the past three years and wish him every success for his future." There are presumably varying assessments of success...

Tear joined Sony Ericsson in 2005 from Ericsson, where he held a number of

executive management positions in Asia, Europe and Latin America. His successor, in his position of Head of Western Europe Region and Head of Global Customer Accounts, will apparently be announced 'in due course'.

Like most handset companies, Sony Ericsson has been having a very tough time recently. Tear is facing a big challenge – jobs don't come much more high profile than Head of Sales and Marketing. Deep breaths...

## Automotive Bluetooth key to infotainment success

Strategy Analytics forecasts global automotive Bluetooth to grow from 7.6M units in 2008 to 54.7M units in 2016, representing a CAGR of 28% over the forecast period.

A new report from Strategy Analytics details market developments, Bluetooth connectivity and Bluetooth profile adoption in the automotive market.

The Boston, USA-based company suggests that critical elements for automotive infotainment planning include:

- Selecting the most appropriate Bluetooth profiles;
- Timing the introduction of Bluetooth profiles; and
- Designing solutions that are capable of Bluetooth profile upgrades.

"Bluetooth is not just for hands-free calling," commented Mark Fitzgerald, Senior Analyst in the Strategy Analytics Global Automotive Practice. "It is essential for in-vehicle infotainment systems to incorporate appropriate Bluetooth solutions in order to leverage the features and applications of these devices as consumers use more sophisticated portable devices, such as smartphones that integrate audio and video media, text messaging, internet browsing and location-based technologies."

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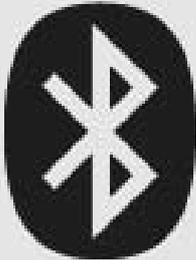
Short range wireless ICs expected to exceed 2B units in 2010 – Bluetooth still leads

ABI Research is predicting that global shipments of Bluetooth, NFC, UWB, 802.15.4 and Wi-Fi ICs are expected to surpass two billion units this year, increasing approximately 20% compared to 2009. Shipments are then forecast to total five billion in 2014.

"Bluetooth ICs made up a significant part of the total short range wireless ICs shipments," says industry analyst Celia Bo. "Bluetooth took more than 55%, followed by Wi-Fi at around 35%; the rest of the shipments were made up of NFC, UWB and 802.15.4 ICs." These numbers bring a certain Bluetooth SIG forecast back into the limelight. A couple of years ago, the SIG was predicting 2 billion Bluetooth chip sales per year by 2010. Should ABI's estimate of those percentage market shares be maintained, then the Bluetooth SIG will have hit its target, just a little bit later than planned.

Mobile handsets maintain the highest adoption rate for Bluetooth ICs, though ABI points out that in addition to data transmission between mobile handset and Bluetooth headset, the application of Bluetooth technology is gradually moving into computers and consumer electronics products such as laptops, UMDs, and the wireless remote pole of game consoles.

Low power consumption and short range transmission are two key technical features of Bluetooth technology, says ABI, adding that Bluetooth low energy (BLE) opens an absolutely new market for products and devices needing low cost and low power wireless connectivity. Likely vertical markets include healthcare, security, and home entertainment.

Chip manufacturing technology migration is driving down chip cost too, and as Bluetooth chip ASPs continue to decline, new business opportunities will be created.

ABI also believes that combination chips, integrating two or more short range wireless technologies to deliver further cost reduction and chip size decreases, are paving the way for another trend in short range wireless IC market development. The three major integration solutions — Bluetooth+FM radio, Bluetooth+Wi-Fi+FM, and Bluetooth+FM+GPS — are forecast to account for more than 30% of all Bluetooth combination chip shipments in 2010. The combination chip using BLE is expected to make up 50% of total Bluetooth combo IC shipments in 2014.

TRaC plans major Investment in the North West of England

TRaC, the largest British testing, certification and validation company, has announced plans for a major investment of £1 million in a new test facility in Up Holland, Lancashire. The investment, which is supported by the North West Regional Development Agency, will create the largest test facility in the North West of England. The new facility will provide local test services, simplifying the certification process.

TRaC operates at seven locations across the UK, as well as offering global reach through worldwide partnerships. The new facility will be much larger than the company's existing Up Holland site that it will replace, and will complement the existing Hull facility. The investment supports the continued growth of TRaC's business in the region.

TRaC provides compliance with EMC (Electromagnetic Compatibility) regulations;

wireless, radio and telecoms standards; and environmental and safety requirements, as well as providing consultancy and support. The company holds a range of accreditations to issue product approvals to national and international standards, providing services that allow customers to certify products for sale in more than 150 countries.

TI delivers quad-radio single chip

Texas Instruments has unveiled its WiLink 7.0 single-chip solution, which it claims is the industry's first offering to integrate WLAN 802.11n, GPS, FM transmit/receive and Bluetooth technologies. TI claims that by integrating these capabilities on a true single chip, the 65-nanometer WiLink 7.0 solution reduces costs by 30 percent, reduces size by 50 percent and delivers superior coexistence performance as compared to today's existing solutions.

"As the first company to put the power of GPS, WLAN, Bluetooth and FM technologies on a single chip, we are excited to have solved some of the market's most complex coexistence challenges," said Haviv Ilan, vice president and general manager, wireless connectivity solutions, TI. "This type of innovation builds on our strong heritage in the wireless market and commitment to spearhead next-generation advancements. With its ability to support simultaneous use of all four radios, the WiLink 7.0 solution will truly revolutionize the way people interact with their devices and connect to the larger world."

The WiLink 7.0 solution is sampling to major OEMs today. Devices using the WiLink 7.0 solution are expected to enter the market by the end of 2010.

news
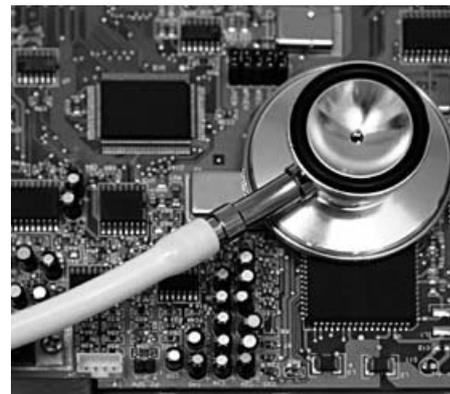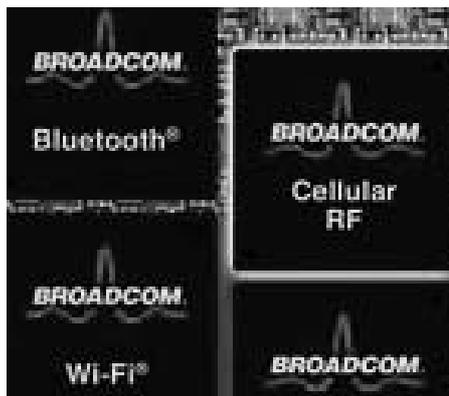
Broadcom pulls out all of the stops

Broadcom has been busy recently. At Mobile World Congress in Barcelona, the company was demonstrating support for the Android operating system across many of its wireless connectivity solutions.

Where Bluetooth is concerned, Broadcom claims that its Bluetooth software stack features Bluetooth profiles for Android that are not available elsewhere and employs the same application interface design as existing BlueZ profiles.

Broadcom is also offering support for Android in its Wi-Fi products, with its OneDriver software stack including source code that is part of the generic Android distribution. The OneDriver stack, which includes Bluetooth 3.0 + HS support, is bundled with Broadcom's Wi-Fi and Bluetooth combo chip solutions. Broadcom says that its Android drivers bring emerging features to Android-based phones, including support for Wi-Fi , WAPI, and 'Soft Access Point' - which allows the Wi-Fi component in a client device to function as an access point enabling connectivity sharing with other devices.

Broadcom supports Android for its GPS receivers, including its navigation solution, full control plane and user plane protocol stacks, and tightly integrated hybrid location services that offer customers a complete location solution for handsets and other mobile devices based on Android.

Commenting on the Android announcements, Robert Rango, EVP and GM for Broadcom's Wireless Connectivity Group said: "Android continues to gain momentum as handset makers seek to offer smartphones and smart feature phones that integrate the key connectivity technologies demanded by today's connected mobile experience. Our support for Android in our key products is helping drive advanced

connectivity options into imaginative new handsets based on this exciting platform."

BY + GPS + FM + media processing

Alongside the Android support announcement, Broadcom has a new Bluetooth + GPS + FM combo chip solution that integrates media processing, providing a connected audio subsystem for multimedia smartphones and other handset devices. This new single-chip solution delivers Bluetooth connectivity while enabling a range of media playback and recording functions that would otherwise have to be performed by the phone's host processor, increasing playback time by as much as 100 percent in multimedia handsets.

And finally ...

Broadcom was demonstrating its Bluetooth Low Energy (BLE) technology in Barcelona, showcasing the way the company is making Bluetooth more relevant to people's lives and expanding it to a new range of low power devices. Broadcom has extended its portfolio of Bluetooth system-on-a-chip (SoC) solutions to enable mobile phones (and other devices) to wirelessly track and monitor health and fitness indicators. Broadcom believes that its implementation of the Bluetooth Health Devices Profile (HDP) helps expand the Bluetooth ecosystem to include very low power health and fitness sensors enabled by Bluetooth.

Broadcom's BLE SoC solutions include hardware and software features that will be made available across many of the company's Bluetooth products over the coming year. The first of these BLE offerings includes the Broadcom InConcert BCM2049 Bluetooth combo chip that supports BLE dual-mode operation.

Broadcom told Incisor it has been pushing Bluetooth into a greater range of products beyond more traditional hands-free and wireless peripheral applications, targeting remote controls for digital televisions and digital music players. BLE technology makes Bluetooth even more attractive for these applications and now adds health and fitness devices to the mix.

Craig Ochikubo, VP and GM for Broadcom's Wireless Personal Area Networking line of business said: "Our expanded BLE offering gives the smartphone more direct insight into its owner's health and fitness, enabling a new level of personalization and life style enrichment than ever before possible."

Embedded Mobile & M2M Device revenues rise

According to Juniper Research, revenues from Mobile Connected M2M and Embedded Devices will rise to $18.9 billion globally by 2014, with consumer and commercial telematics and in-vehicle applications accounting for over a third of the total.

Other areas which will contribute significantly to M2M revenues include Mobile Connected Buildings, driven by security needs, and Utility Metering, driven by regulatory initiatives in Europe and economic stimulus funds in the US:

 "Despite the ongoing downturn in the automotive sector in developed markets, the most promising M2M area remains the automotive industry", says Anthony Cox, Senior Analyst at Juniper Research;   "There has been a slow-down in the adoption of telematics because new car sales have stalled, but we anticipate that by 2014 in developed markets over half of new vehicles will be sold with telematics devices using cellular connections," he says.

Further findings from the Embedded Mobile and M2M research suggest that operators are starting to view the market for embedded devices and M2M as a market in its own right, rather than an add-on to existing activity. To effectively address the market for embedded devices and M2M, Juniper suggests that operators need to consider reappraising accounting practices and form alliances and partnerships with M2M specialists. There is also a growing trend for SIM cards to be integrated directly into devices, rather than provisioned at a later date in the "aftermarket"

news

Bluetooth SIG addresses Smart Grid

Clean energy initiatives, Smart Grids, remote monitoring and control – all of these are buzzwords for a new phase in the implementation of wireless technology. The Bluetooth SIG has been thinking about this new market and its considerable potential, and has set out to increase the use of wireless technology - specifically Bluetooth, of course, and has formed the Smart Energy Study Group. The team, made up of three sponsoring member companies including CSR, Broadcom and Emerson, will work together to address Smart Energy initiatives sponsored by governmental entities and other organizations interested in energy management throughout the world.

"Wireless technology is a key component in the battle to improve the Smart Grid. With proper short-distance wireless connectivity technology, the meter-to-device relationship will be one that allows users to remotely track, monitor, and adjust their energy use based on utility scales," said Mike Foley, executive director of the Bluetooth SIG.

The Smart Energy Study Group will begin immediately studying all aspects of the smart energy market and possible implications of Bluetooth technology in this arena. To do this, the group will review current available information on Smart Grid wireless technology, formulate a strategy for Bluetooth Smart Energy and make recommendations based on their findings.

The SIG is basing its Smart Grid ambitions on a solid platform. Bluetooth maintains a significant lead in wireless technology penetration in mobile phones – the chosen device for remote monitoring and control of smart grid meters.

"The formation of the Smart Energy Study Group will bring to light and expand the impact that Bluetooth technology will have on the clean energy industry," said Foley. "We have the opportunity to make a difference in the way our country and the world controls energy use and it's imperative that we do all we can to integrate wireless technology into the mix – it will not only benefit the wireless market, but it has the potential to revolutionize the clean energy market as well."

Single mode Bluetooth low energy module employs Nordic µBlue chip

Ultra low power (ULP) RF specialist Nordic Semiconductor ASA tells Incisor that following the Bluetooth SIG's official adoption of Bluetooth low energy, French multi-die system-in-package (SiP) design specialists, Insight SiP, has released what is claimed to be the world's first drop-in single mode Bluetooth low energy SiP module.

The Insight SiP ISP091201 is a self-contained Bluetooth low energy SiP module that includes Nordic's µBlue ("MicroBlue") nRF8001 connectivity-on-chip solution integrating the radio, baseband and software stack (Bluetooth low energy PHY, Link layer and Host), plus an integrated antenna, 16MHz crystal and 15 supporting passive components. The module measures 8 x 12 x 1.4mm.

The ISP091201 is also designed to be fully compliant with FCC and CE EMC requirements and, says Nordic, requires no other external supporting components beyond an external 8-bit microcontroller (used to run the upper Profile and Application layers of the Bluetooth low energy stack) and on-board 3V power source.

The module is housed in a QFN, LGA package and is miniaturized enough to fit into highly space constrained applications such as watches, health and fitness sensors (e.g. pedometer, heart-rate-, blood pressure- and glucose-monitors), remote controls and key fob-style proximity detectors.

Because Bluetooth low energy wireless technology is an interoperable standard, the ISP091201 SiP module will be able to communicate with both single mode Bluetooth low energy chips from other manufacturers.

MindTree Bluetooth low energy stack on TI's WiLink 7.0

Bluetooth IP solutions company MindTree has launched its EtherMind Bluetooth low energy stack on the quad-radio, single-chip WiLink 7.0 solution from Texas Instruments (TI).

MindTree's Bluetooth low energy stack enables a low-power and interoperable wireless communication between a mobile phone and its accessories. This opens up a whole new set of use cases like caller ID displays on watches and data transfers from health devices to the Internet via mobile phones.

The low energy stack, which MindTree has validated at various UnPlug Fests, is optimised for low-memory footprint and has APIs that enable integration with the resident applications on the platform. The stack is built on clean abstraction layers and is written in ANSI C, enabling portability onto a variety of operating systems and platforms.

Texas Instruments lent its support to MindTree's announcement: "MindTree helps our customers turn mobile devices into robust 'gateways,' spurring boundless connections to other devices," said Eran Sandhaus, director of marketing, wireless connectivity solutions group, TI.

MindTree's Bluetooth stack and profiles are qualified for Bluetooth 2.1+EDR, and the company's customer list includes NEC Corporation, GN Netcom and Logitech. The products include headsets, handsets and automotive infotainment platforms.

news

picoChip shows next generation femtocell solutions

picoChip unveiled three new products at Mobile World Congress that the company says allow its customers to address the complete range of femtocell requirements via a single design platform. The new arrivals included two new picoXcell system-on-chip (SoC) devices and an integrated suite of HSPA+ femtocell access point (FAP) software.

The new PC313 and PC323 chips are complete single-chip HSPA+ femtocell SoCs for eight or 24 users respectively, and are scalable to accommodate even more users. The PC2200 FAP software provides all of the core components of a 3GPP standards-defined Home NodeB, enabling manufacturers to more easily develop femtocells.

"As of today, picoXcell offers the most complete and fully proven solutions in the femtocell market," said Nigel Toon, CEO of picoChip. "Just as importantly, we also have the most complete range of products. Operators already value the ability to deliver perfect 'five bar' coverage to domestic users: but the next generation of femtocells will do more than that, changing operator revenue models, enabling new services, and fundamentally revolutionizing the way carriers build networks."

Both the PC323 and PC313 incorporate a high performance 600MHz ARM11 subsystem optimized for low power computing, providing the processing for the RNC stack and other higher level functions. Both can support secure 3GPP luh or SIP/IMS. picoChip claims to have already demonstrated interoperable luh to third-party gateway products. The devices also include hardware support for critical security features for authentication, location, detection, encryption and code protection.

Also in the femtocell market...

picoChip wasn't the only company making a noise about femtocell solutions at Mobile World Congress. Lime Microsystems announced the availability of the LMS6002D, a multi-band multi-standard RF transceiver IC designed for small cell base stations and femtocells, featuring integrated high performance dual ADC and DAC. Lime suggested that this single chip transceiver solution delivers increased levels of integration over the company's analogue version, the LMS6002. The frequency agile transceiver operates at user-selectable frequencies between 375MHz and 4GHz and is suitable for 3G, WiMAX, and LTE operation.

"As more femtocell products come onto the market, cost reductions have become critical, both for established players launching second and third generation products as well as for new entrants seeking to enter the market competitively," said Dr. Ebrahim Bushehri, CEO of Lime Microsystems. "The LMS6002D transceiver meets our customers' demands for cost reduction by increasing the level of integration and reducing component count while maintaining high performance and design flexibility."

The LMS6002D can be digitally configured to operate in the full range of frequency bands between 375MHz and 4GHz, with 16 user-selectable bandwidths of up to 28MHz. It can therefore transmit and receive data across all WCDMA and CDMA bands, as well as those used or planned for WiMAX and LTE. This removes the need for individual transceiver chips for each of the different bands, and allows a small cell base station to be reconfigured rapidly and simply. The resulting reduction in bill of materials reduces costs and inventory for OEMs.

The LMS6002D features dual 12-bit ADC and DAC blocks that provide the necessary

multiplexed parallel interface to all currently available baseband ICs on the market for femtocell applications.

Blue Wonder integrates LTE baseband with 4M Wireless LTE protocol

Blue Wonder Communications, which is an independent design house and licensor of LTE-IP and system solutions, has completed integration of its LTE terminal baseband solution with the 4M Wireless LTE UE protocol stack.

Blue Wonder's BlueGate reference platform utilises its baseband solution and an integrated RF transceiver IC (LMS6002) from Lime Microsystems. This follows on from the prior joint development work between the two companies on the implementation of an LTE reference platform.

Blue Wonder's baseband solution is a complete LTE subsystem that can easily be integrated in System on Chip platforms. It provides a 3GPP Release 8 TDD and FDD multi-mode solution, up to category 4 and is optimized for lowest power consumption and smallest chip area.

The Blue Wonder LTE Physical Layer including Layer 1 software includes interfaces to the 4M Wireless LTE protocol stack. The 4M Wireless PS100 LTE protocol software consists of the complete 3GPP Release 8 compliant stack which includes LTE Layer 2, Layer 3 and NAS protocol layers. The protocol stack is optimized for low power consumption and efficient processor utilization. To enable integration and interoperability testing, 4M Wireless provides a full set of test and debugging tools with its LTE stack. The 4M Wireless stack has been tested with leading eNodeB vendors and, according to Blue Wonder, is incorporated in several LTE products in the market.

Stuff we really like

As with the Creative speakers that we singled out last month, there are sometimes Bluetooth products that we've tested that stand out from the crowd. And we think they deserve an extra mention.

Two good examples are the Jabra Cruiser speakerphone and the Sennheiser PX 210 stereo headset. We've been using both a lot recently – in fact, they both went all the way to Canada with the IncisorTV team for use in the making of our Bluetooth wintersports movie (which will be edited and published just as soon as this issue of Incisor has been finished, honestly!).

Not only did they feature in the movie, but they got a lot of personal use too! The trip involved flying from London to Calgary, in Alberta, and then driving from Calgary to Jasper. That means a long flight – 9 hours or thereabouts – and then a long drive, at both ends of the trip.

In direct contravention of Air Canada's instructions that no Bluetooth devices can be used during the flight (oops!), the Sennheisers provided the distraction of VERY high quality sound throughout. That APT-X codec really does the job – this headset does set new standards.

A rubbish iPhone picture, but you can see how we would need something to take our minds off the terrain!

Then, for five hours of driving in each direction, the Jabra Cruiser was the perfect in-car companion. Not only did it fulfil the basic speakerphone function, but it also took an A2DP music stream from the iPhone and sent it over an FM link to the superb Bose sound system in the hired SUV. This functionality isn't new, but the difference is that Jabra has made it work properly. As we drove through a nighttime blizzard in the Columbia Icefield Parkway, seemingly hundreds of miles from civilisation, we just didn't care – we had Bob Marley playing and a grin on our faces - this was bliss!

Hats off to both Sennheiser and Jabra for moving the game on. We've said it before and we will say it again – it is great when Bluetooth products work well and provide a great experience for the user.

Snippets

LTE Chipset makers position for Long Term Endeavour

 LTE is a great and truly evolutionary communications platform and will become the dominant 4G technology, according to market research firm In-Stat. However, deployment of LTE will be gradual and protracted, the company predicts. Nevertheless, chipset manufacturers, such as Broadcom, Infineon and Qualcomm, have established LTE product development plans. Further, market entrants, including companies such as Altair Semiconductor, Beceem, BitWave, Comsys, Sequans and Wavesat, are hoping the shift to LTE opens new opportunity.

"Leading 3G baseband chipsets providers will not necessarily keep their leadership in LTE," says Allen Nogee, In-Stat analyst. "The changes in platforms and technologies are disruptive enough to create major competitive shifts."

new products

Jabra expands range again

Danish company GN Netcom seems determined to squeeze other Bluetooth accessory companies with its Jabra products. Another month sees another set of announcements.

The Clipper Bluetooth stereo headset is a tiny clip-on device with noise-blocking stereo headphones. Jabra describes the Clipper as having minimalistic controls and smooth Scandinavian styling.

If you are listening to music when a call comes in, calls will automatically override the sound of any music and at the touch of one multi function button users can pause, skip tracks or alter the volume. Weighing just 20 grams, Jabra suggests that the Clipper neatly clips onto your clothing - e.g. your jacket, sweater or bag; it will also give you a warning signal if you start to head out of range (within 10 m).

The Jabra Clipper is compatible with any Bluetooth 2.1 –enabled device that supports the EDR, A2DP and AVRCP profiles. The Clipper also has the ability to connect to two different devices at the same time courtesy of Jabra's Multiuse technology, or you can connect it to your PC to listen to music. Noise-blocking in-ear buds are provided which eliminate external sounds, or the Clipper can also be used with any 3.5mm headphones.

The Jabra Clipper provides 6 hours talk time and 8 days standby time, has a retail price of £39.00 and is available now.

Extreme-ly good headset

It may not feature a radical set of ergonomics like the recently announced Jabra Stone (see IncisorTV video feature), but Jabra's latest headset is setting out to provide very high quality audio. The Jabra

Extreme features Noise Blackout Extreme. This uses dual microphones and automatic volume control to enhance call quality, and, according to Jabra, provides twice as much background noise reduction (24dB) as the company's previous Noise Blackout technology (12dB). In addition, a new Ultimate-fit Eargel has been developed to guarantee superior comfort for all day use.

The headset will be available nationwide in selected retailers, priced in the UK at around £59.99

... adds voice activated messaging

Jabra has partnered with Dial2Do, a technology company that enables voice-activated hands-free communications, to deliver voice activated services on selected Jabra headsets and speakerphones. Using the service, Jabra SP200, CRUISER and BT2080 UK customers will be able to send and listen to emails, texts and Twitter updates by simply speaking into their device.

Dial2Do allows users to send and listen to email and text messages as well as post to social networking sites using only voice. Users dial a UK local access number, speak the desired command and then messages which are converted into text are sent to the intended recipient. Jabra told Incisor that as mobile phone usage while driving continues to grow as a major problem despite legislation to prevent it, Dial2Do is an ideal option for people who spend time in the car and still want to stay connected, legally.

Consumers who purchase the Jabra CRUISER, SP200, and BT2080 will receive a special insert in each box that contains a voucher code. The voucher can be used to activate a complimentary 90-day subscription to the Dial2Do Pro service. New users can establish accounts at the Dial2Do web site.

After the 90-day period expires, users can continue using their account for £3.99/month or £39.99 for the year. Those who choose not to continue can still use Dial2Do Basic, a free service that allows users to speak reminders and memos which are then sent as text to their email accounts.

Supertooth wants to be your buddy

SuperTooth has joined the ranks of Bluetooth companies providing speaker phone solutions for car sun visors, and showcased its latest product - the Buddy - at Mobile World Congress.

Boasting an impressive 20 hours talk time and 1000 hours standby time, 'Buddy' is claimed to be hassle-free and easy to use thanks to full auto pairing with the latest Bluetooth 2.1 enabled handsets. Phones using previous Bluetooth specifications can also be connected – all you have to do is initiate the standard pairing process.

Supertooth is claiming another feature that sadly failed to work on many early in-car Bluetooth solutions - with its auto connect function, you can leave the device switched on and when you return to your vehicle a short time later, Buddy will apparently recognise and reconnect to your mobile as soon as you open your car door. We haven't tested the Buddy yet, so we can't comment on this.

You can connect to 2 mobile phones simultaneously – practical if you have both a personal and a professional mobile.

Buddy can be attached to your car's sun visor with its magnetic clip. Charging is handled by a USB cable and in-car charger provided with the product. The recommended retail price is £49 in the UK, and you will be able to Buddy-up from March onwards.

![Cambridge Consultants]

Tim Whittaker, Cambridge Consultants

DECT – its merits live on!

By Tim Whittaker, System Architect, Cambridge Consultants

DECT stands for Digital Enhanced Cordless Telecommunications, and it's been around the block a few times. The project emerged from two makers of enterprise-grade phone systems in the 1980s, and became a standard not only for large PBX systems, but also for home and small office systems of just one or two handsets. The economy of scale achieved through the use of standard chips and software led within a few years to a unique combination of wireline quality, enterprise-level reliability, and discount-store prices.

An interesting piece of technology history – and nice to see that the best technical solution doesn't always lose because of economic or political muscle – but why is this very mature (read 'ageing') standard still extremely compelling in today's high-tech markets?

With one of the largest independent wireless development teams in the world, Cambridge Consultants has a record of creating 'world firsts' in wireless communications, starting its investment in DECT software and reference designs in the nineties, fuelling the rapid growth of new low-cost phones. This highly versatile and capable standard very soon offered strong advantages to a range of other wireless applications, where other standards simply could not compete. Within a few years DECT had secured its place as an excellent technical platform providing solutions to all manner of high-end professional communications requirements. The volume from mass-market telephony – with well over a billion installed to date – provides very low-cost silicon delivering high-end telecommunications.

What differentiates DECT from all of the other popular wireless standards around us today? Foremost, in more than 100 countries it has a dedicated licence-free band allocated. DECT adds a unique co-existence strategy, in which an established link can seamlessly 'move out of the way' of another DECT system, or indeed any other interference: early cognitive radio. Because it deals in

managed connections, DECT is excellent for any form of streamed data, operating without contention for radio resource. As it was designed for large systems (many exceeding 10,000 users), it scales well, automatically spreading load between its base stations. Finally, the permitted power of more than 200mW – and a robust modulation scheme – gives it a range of well over 200 metres in almost any type of building.

These qualities make DECT an excellent radio choice in a diverse range of markets. An example is high integrity communications in healthcare. Post-

operative heart patients have to be monitored carefully with electrocardiographs (ECG). At the same time, they recover much more quickly if they are able to move about and take gentle exercise. Therefore a portable ECG monitor in continuous contact with a nursing management system offers huge advantages. A large hospital can have over 1,000 of these mobile patients, which is a challenge for the design of a reliable wireless system. DECT's provenance in large-scale telephone systems and seamless handover between base stations makes it an excellent fit to the application.

In the USA, a dedicated band is available for medical telemetry, and radio designers at Cambridge Consultants developed a DECT-based solution for the US's leading provider, Philips Medical, to take advantage of this whilst still achieving a low unit cost.

Wireline telephony quality in the 1990s was a 'must-have' for DECT, because approval for terminals to connect to the network was in the hands of the telcos or their regulators. But modern network technology offers voice over IP with better quality, as well as the possibility of video and supporting data. The DECT community is responding to this with a set of new standards called [1]CAT-iq™ which today are delivering high-definition (wide-band) voice and enhanced security options, and in the near future multiple calls, call screening, software upgrade of phones, data services including remote control, and reliable internet radio services. The CAT-iq initiative includes comprehensive conformance testing so that devices showing its logo will be assured interoperability between different manufacturers. This February's DECT forum saw ultra-low-power demonstrated in a sensor network, many integrated access devices for single-box Internet access for both wide-band voice and computers (via Wi-Fi). Motorola with Benetton even released a DECT smartphone on the Google Android platform.

Cambridge Consultants has been delivering wide-band audio over DECT long before CAT-iq, in devices such as a professional intercom product used in television studios and at events such as the Olympics, and a multi-channel radio microphone system for teleconference and multi-track voice logging among its design successes.

At the same time, DECT with its superior range is rapidly becoming of interest in M2M communications, and an Ultra-Low-Power mode is being standardised (as part of CAT-iq release 4) for a range of applications including domestic energy management, enabling communication between the energy utilities' systems and our household appliances, to manage our personal carbon footprint. DECT already has a low-power paging mode for alerting telephones to an incoming call, and the changes for ULP operation are an extension of this function to give lower duty cycles, and therefore very long battery life.

Whilst DECT was targeted at symmetrical data rates in telephony, its designers provided for asymmetric operation for collection of large amounts of data. This mode of operation allows very low-cost telemetry without expensive and cumbersome wiring in the industrial, mining and exploration fields. Sensor units can be deployed quickly and formed automatically into networks using DECT's radio resource management procedures, requiring only a relatively small number of data concentration nodes.

DECT has been around for a while, but this is a thoroughly good thing: the system design and software are well proven, and the hardware cost is about the same as that of Bluetooth. With an active developer community, and a range of unique advantages DECT is a serious contender for a whole range of high-reliability local area communications – not just for telephones!

www.cambridgeconsultants.com

[1]CAT-iq is a registered trade-mark of the DECT Forum. The initials stand for Cordless Advanced Technology – internet quality

INCISOR TV
Video presentations

Snippets

Nu Horizons distributes connectBlue

Nu Horizons Electronics Corp. a distributor of semiconductor, display, illumination, power, system and telecommunication solutions, has signed a distribution agreement with wireless solutions provider connectBlue. The agreement, which is effective immediately, involves the distribution of connectBlue's OEM Modules, Serial Port Adapters, Ethernet Port Adapters, and Wireless Network Platform products within Australia, Canada, China, Hong Kong, India, Malaysia, Mexico, New Zealand, Singapore, Taiwan, Thailand and the United States.

Joe Lomako, TRaC

Radio Module Integration – What do I need to do for compliance?

By Joe Lomako, Business Development Manager, TRaC

Technology is advancing at an incredible pace and this is particularly evident in the world of radio technology. Radio devices are being incorporated into all manner of products to provide a wide range of benefits and applications; from smart metering so that a consumer can monitor the amount of electricity they (or members of their family!) are using, to medical devices sending remotely gathered patient data, to a near field device that allows you to pay for your train ride. And this isn't even scratching the surface. So clearly radio technology is permeating all facets of life and makes us wonder what we would have done without it!

We as consumers now take this for granted. We think nothing of what really operates the keyfob for our cars, the wireless controller for our games console or the vending machine that informs the supplier when it needs refilling.

Typically, these devices all contain a radio section of some sort, which could operate on a variety of available technologies such as Bluetooth®, ZigBee and GSM to name but a few. The designing of the radio section is in itself a considerable task and for a manufacturer whose traditional product or expertise is not radio, the most practical solution is to buy in a pre-designed and pre-approved module to provide the radio interface. It's as simple as that, isn't it?

Yes! It is quite simple for the manufacturer to buy in a radio module and incorporate it into their product. There are numerous kits available which facilitate this. However, once this is done it opens up a new challenge when it comes to seeking the necessary certification, qualification or regulatory compliance required to place the finished product on the global market. So, to achieve the appropriate level of compliance, what needs to be considered? What needs to be done to make sure nothing is overlooked? At TRaC we are asked these questions daily (in fact, I received a call on this very subject whilst in the middle of the writing this article), so perhaps a brief introduction into what should be considered when integrating radio modules will go some way to help?
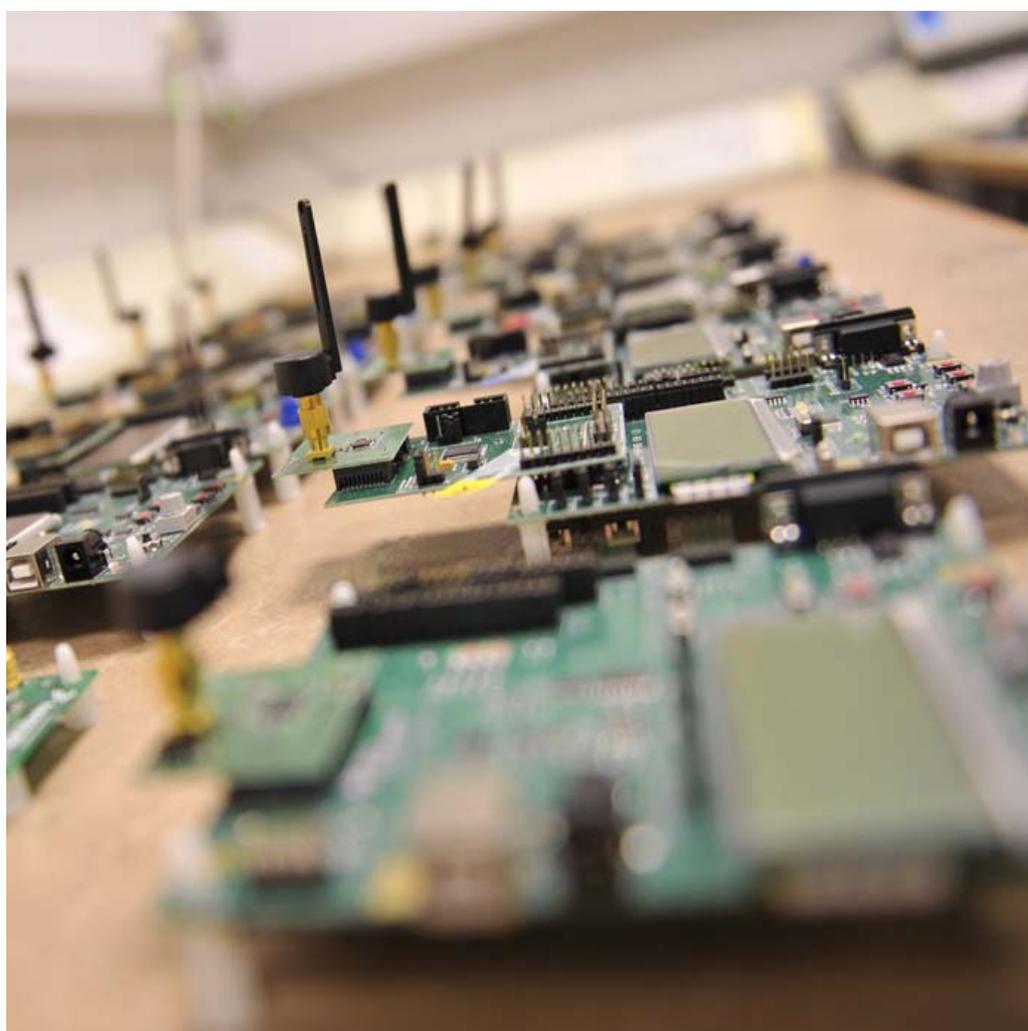
Regulatory Compliance and Brand Certification

The regulatory compliance process is well established globally with the EU and the US having predominantly defining roles and one of the simplest methods of achieving compliance is to perform testing to a recognised test standard at an accredited test house.

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In the EU, the compliance requirements for most technology products are usually covered by the RTTE, EMC or LV Directives. These define the requirements for radio, EMC and safety performance and in the US the requirements are primarily covered by the FCC regulations.

Other countries such as Japan also have an established compliance program, whilst countries such as Brazil may require in-country testing for radio products. Other countries world-wide usually accept CE or FCC compliance reports but these requirements do change and consultation with an approvals expert will avoid any confusion. (For simplicity we will only consider CE and FCC in this article)

In addition to this, if a technology such as Bluetooth, ZigBee or GSM is employed and there is a desire to apply the appropriate logo to the end product, then it may also be necessary to go through the appropriate "qualification" or "certification" procedure to ensure that the finished product meets the criteria in line with the branding.

It is not uncommon for the compliance requirements of a radio product to be mis-interpreted. For example, on occasion it has been believed that completing the appropriate qualification or certification program for Bluetooth or Zigbee respectively, is all that is required. There was no awareness, or it was not considered, that there are mandatory legal regulatory requirements that need to be satisfied.

In fact the OEM must consider all regulatory requirements for the country in which they intend to market their product.

Therefore it is important that the target markets and all compliance requirements are fully established at the budgeting stage to avoid any nasty shocks in the future.

Modular Approval

Before a manufacturer can place their radio module on the market, it has to satisfy the necessary requirements of the territory in which it is to be deployed. In Europe it must satisfy the R&TTE Directive, which includes Radio Performance, EMC and Safety and in the US it must satisfy

the modular approval requirements under CFR 47 part 15C.

Once this is completed the manufacturer can make their "Declaration of Conformity" for the EU or file their product with the FCC, before finally placing the module on the market for third party OEM's to incorporate into their final product.

The advantages here for the OEM are, firstly, they do not have to hard-design in the radio and secondly the OEM does not normally have to repeat the radio testing if the module is installed in line with the manufacturer's instructions.

European Compliance

So, as a real example, let's go back to the manufacturer incorporating the radio module in his product which is for sale in the EU market only.

In the EU if a product is primarily a radio device then only the R&TTE Directive would apply and cover all of the Radio, EMC and safety requirements. However, when a combination of technologies are brought together, the relevant directive(s) which apply to the product may change and crucially the standards which apply.

Consider a traditional lighting product, which was previously covered under the EMC & LV Directives. Nice and simple! The lighting product is then re-designed to incorporate a ZigBee (or Bluetooth) module.

The EMC and LV Directives provide product specific standards for EMC emissions and immunity and the LV Directive, the safety requirements. However, when a radio module is introduced, which is essentially a 2.4GHz radio, the principal directive which applies becomes the R&TTE Directive, which demands that the Radio, EMC and Safety requirements are satisfied. However, the single European act stipulates that all relevant directives must be applied, and since the EMC directive hosts product specific standards for the EMC of lighting products then this must also be considered in addition to the test standards for radio products.

Since the module is pre-approved it is not usually necessary to repeat all of the radio specific testing which verifies the radio parameters, however, since there is a

completely diverse field of applications for modules it may be prudent, and indeed shows due diligence, to re-test the spurious radiated emissions (RSE), which is only a small amount of the overall radio test.

FCC Compliance

The FCC tends to deal primarily with emissions, and they have very specific rules on modular approval. Under FCC CFR 47 Part 15C, covering intentional radiators, the integrator must install the module in line with the instructions on the Grant of Equipment Authorisation. If it is not installed in line with the Grant then further testing and certification will be required.

The end product incorporating the module must meet with the applicable equipment authorisation procedure; be that a Declaration of Conformity (DoC) or Verification. In most cases this would require testing of the end product incorporating the radio module to the unintentional radio requirements of CFR 47 part 15B.

However there are situations, for example if there is a modification of an antenna, in which this process requires further input from an expert, so if an integrator is in any doubt, about any territory, they must seek the advice and services of a compliance expert to ensure that they do not leave themselves open to placing non-compliant products on the market. It's only a phone call or an email away.

Global Market Access

Further to the examples given above, when seeking global market access, many countries accept CE and FCC reports as a demonstration of the radio compliance, but there is usually a multifarious process which must be traversed to achieve that coveted certificate of compliance.

So in conclusion to the subject of modular integration it really is usually a fairly simple process, however, this does not suggest that complacency should be allowed to creep in. Indeed it can be a simple process to get it right, but it is equally simple to get it wrong.

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The Marmite affair: Femtocells

by Dean Anthony Gratton

VINCE AND I JUST GOT OFF THE PHONE WITH RUPERT BAINES, VICE PRESIDENT OF MARKETING AT PICOCHIP (PICOCHIP.COM). FOLLOWING THE CALL, VINCE AND I COMPARED NOTES AND WERE CONFIDENT THAT PICOCHIP HAD A VERY BRIGHT AND PROSPEROUS FUTURE, AND INDEED A HEALTHY PORTFOLIO, TO LOOK FORWARD TO. BUT LATER, THOUGHTS OF EVENTS OUTSIDE THE CONTEXT OF OUR CHAT WITH PICOCHIP SEEMED TO WHISPER ANOTHER SIDE OF THE STORY IN OUR EARS; THAT OF THE UNFORTUNATE JUSTIFICATION OF MOBILE NETWORK OPERATORS (MNOS) IMPOSING A LEVY ONTO CONSUMERS TO PAY FOR A FEMTOCELL PRODUCT WHERE THERE WAS INSUFFICIENT CELL COVERAGE.

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With this argument of morals still buzzing in my head, I've come straight to my computer, as I wanted to get this down and off my chest with as much clarity as possible. First things first – some mood music, so I need to start iTunes and select an album to set the scene. Alicia Keys, The Element of Freedom – perfect! I need to share my love and hate relationship of Femtocells with you! Indeed, a true Marmite affair. And I'm now gesturing to the wife (Sarah). "Coffee," "coffee please darling" (it's 9:00am in the morning and I couldn't morally start the wine, could I?). I'm still waiting for the coffee (looking towards the door of my office and reaching for a large intake of breath, I now find myself shouting): "Sarah!" ...

What are Femtocells and why are they needed?

Whilst I await the arrival of my coffee, I suppose I'd better start with a small introduction to Femtocells, just in case there are some who remain puzzled as to its function. The Femtocell was originally coined an Access Point Base Station and its primary purpose is to extend mobile phone (or cell) coverage to the home or small business in instances where consumers experience poor network coverage. A Femtocell relies on a consumer's DSL or cable connection within the home or small business to support the back-end infrastructure, and typically the Femtocell would support no more than five simultaneous users.

Normally, a mobile network operator simply erects a mast with several antennas commonly known as a Base Transceiver Station (BTS), or just simply a Base Station (BS). One or more BTSs cover an area or region, which is sufficient to provide a mobile service. The BTS(s) are managed by a Base Station Controller (BSC), which is further managed by a centralised Mobile Switching Centre (or MSC). As you can imagine supporting and implementing such an infrastructure is considerably expensive and detrimental to capital expenditure for the mobile network operators. Additionally, the persistent maintenance and its support has further repercussions for operational expenditure. It's the associated cost (a significant factor) and the influx of mobile consumers, which have resulted in operators seeking alternative technologies to accommodate the exponential growth in mobile phone users.

Lovely, an excellent opportunity to take a moment here and return to the

love and hate relationship I have with Femtocells, as my coffee has arrived, "thank you, darling".

Understanding the motivation with Femtocells

So, returning to my opening paragraph, where I mentioned, Vince and I spent an hour or so on the phone discussing the various pros and cons of Femtocells with Rupert. We also covered a breadth of other subjects including Long-term Evolution (LTE) – the next evolutionary step towards 4G, but I'll tuck that into another article in the coming months. Hang on, please don't misunderstand me, picoChip is having a superb time with its silicon offering for Femtocell-based products – these guys are thrilled. Rupert was totally elated and enthusiastic about both current sales and picoChip's future portfolio. I just hope he forgives me for the grilling I gave him but it's easy to get carried away on the positives and I wanted to get the whole story. With this in mind, I explained to Rupert that the use cases being conceived by manufacturers are generally ill-thought and don't actually serve the consumer – I personally consider it to be a contrived mechanism, aimed at seducing the consumer to buy-in and am still frustrated that the whole business model hasn't moved forward. I was growing a little tired of hearing the same use case scenarios without any motivational scaffolding, as to why consumers should be drawn into purchasing these products when it's ultimately the mobile network operators' responsibility.

The issue I have, as already mentioned is primarily the business model, along with those mobile network operators. I am desperately trying to understand its intention for the end consumer –

ultimately the individual who has to purchase such equipment. If I understand correctly, the current focus of motivation for the mobile network operator is that a Femtocell can be used in an area where there is insufficient network coverage. The consumer can purchase a Femtocell to extend his or her cell coverage to a home or business. I would imagine the letter that such an operator would write, notifying the very frustrated consumer of their poor service, would begin "Dear Valued Customer," yeah right! – not a good start then. Yes, I'm afraid I am being sarcastic, but please, let's not scoff too much. After all, it's a return to a good old fashioned marketing technique and indeed, a reliable one to boot, since they already know a text message won't reach their intended consumer-base!

So, what's new?

You might be one frustrated consumer but hey, you continue to relinquish your monthly premium via direct debit in fear of being greeted by some supercilious bailiff requesting your outstanding payment or else! Not that I've had any firsthand experience with such tawdry! I simply wanted to make the point that 'customers' are expected to pay regardless of the quality of coverage – is this acceptable? I think not! What's more, we are administratively shackled to pay an additional monthly premium to make use of a service that was already promised when we signed up – you know that 18- or 24-month tie-in!

I am still amazed to read the blurb surrounding the 'added-value', of Femtocells. They allow you to not only call your home (Ah yes, I can see how that would work: "what's for supper, darling?") but remotely control it via your mobile phone - I'm not talking about a home with wheels by the way. I suppose it would translate to ensuring your house is heated when you arrive home at the end of the day or, if you have been away for a period of time, turning on and off lights to give the impression of someone being home. You can even be notified if the alarm system within your home has been triggered. Surely, having the Internet within the home has already provided these amazing and beneficial use cases but I'll let you be the judge of whether we should start throwing Femtocell street parties in its honour.

A flaw in the Femtocell business model So, I'll be perfectly honest with you; I   ➔

think the Femtocell business model is flawed. Many manufacturers are incessantly inventing some God enlightened use case (commonly known as the killer app), aimed at infusing sufficient motivation for a consumer to pay an additional monthly premium for a service that, strictly speaking, they are already entitled to! Undoubtedly, this simply reeks of desperation and inevitably conjures up futile scenarios, which remain unworkable despite it being the 21st century! I saw recently Vodafone (UK) attempting to offer the Femtocell at a reduced one-off purchase price or include it in your monthly premium – either way, you're still paying too much. Okay, more coffee is needed and I have already bleated enough about the additional premiums and how they are unacceptable. So ultimately how do Femtocells move forward?

Well, it's simple! If a consumer is located in an area where there is a poor service, then for heaven's sake provide the product to that consumer for free. Sit back down - that's right, I said free! Stop attempting to conceive use cases, which remain unrealistic, unusable and concentrate on the business at hand; that is, you want your consumer to remain within your network and to continue to pay that all important monthly premium. I recall a few years ago a series of paperware slides explaining the benefits of Femtocells. In essence, what I witnessed was operators eager to reduce operational and capital expenditure, as the erection of cell masts, ancillary equipment and technology, and their associated maintenance had become increasingly difficult to absorb. I'm sure everyone understands and appreciates the difficulties in the economic downturn and the ensuing credit crisis. The customer is king but keeping their custom assures that the network operators will always have the keys to their kingdoms.

Profitability versus cell coverage

I also understand profitability is important, but customers are the enablers of profit – they are ultimately our judges and executioners. It's inevitable that the cost of a basic Femtocell product should be realistically affordable. The build cost (bill of materials, research and development, software licenses and so on) of a product to an operator and, in turn, to a consumer versus erecting new cell masts and its associated infrastructure would surely, in the medium- to long-term, reduce the capital and operational expenditure – anyhow, I'm sure you guys can do the maths.

In fact, I did hear a rumour and I'm not sure if it's true (someone please confirm!), Vodafone are now offering Femtocell products for free. If that is indeed true, I can certainly understand why companies such as picoChip and their VP of

Marketing are effervescent. Naturally, manufacturers can now discard these numerous use cases and focus on the core problem – offer a product that simply provides and extends a 3G service to your home. Consumers can continue to take advantage of the bundled minutes and text messages per month, along with their data use and everyone is happy – right?

It's just a Smartphone, isn't it?

The current use cases for a Smartphone or just your standard phone remain realistic and useable. As such, if the statistics are to be believed, the younger generation of mobile phone users are more likely to use a mobile phone within their home to make and receive calls, text or even to access the Internet for social media with sites such as Twitter, Facebook or MySpace, then this is what a Femtcoell product should ultimately support. Its purpose, in a nutshell, is to extend the cell coverage where it's not technically or economically feasible to do so. So, dispose of these nonsensical use cases where you can dial into the home and switch on the coffee machine and let's remain pragmatic. Yes, it's wonderful to speculate and to casually throw in a blue-sky notion once in a while, but a Smartphone, or just your basic mobile phone, is just that – irrespective of manufacturer, albeit iPhone, Samsung or a Nokia – you simply surf, text and make calls.

Until next month …

So that's it – for this month anyway; Dr G is bringing this rant to an end. I'm sure you understand it's an emotive subject, and so it should be as it ultimately affects us all. But it's now 10:18am and I still can't justify quaffing unnecessary quantities of red wine – perhaps I need therapy after all! I dare say, another coffee will have to suffice for now; where's the wife? "Sarah!", "Sarah!" …

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

You can contact Dean at incisor@deangratton.com and follow him on Twitter @grattonboy, but you can read more about his work at www.deangratton.com.

Snippets

picoChip announces new femtocell customers

picoChip has announced that Alpha Networks, Argela, Askey, C&S Micro, Contela and Zyxel are the latest customers to use its PC302 picoXcell SoC in HSPA+ femtocell designs. These six new customers apparently bring the total number of manufacturers using the picoXcell solution for femtocells to over 20.

picoChip claims to be the only company with products qualified for major carriers' networks and shipping in volume. The market is moving into volume deployment, with ten carriers now offering commercial service and sixty more in trials.

Anritsu wins R&TTE approval

Anritsu Corporation claims that its ME7873L LTE RF Conformance Test System has become the first in the world to achieve European Radio equipment and Telecommunications Terminal Equipment (R&TTE) approval for its test functions for next-generation LTE devices.

"This provides a key function in bringing LTE devices to market, and demonstrates how Anritsu is leading the test industry in providing these critical solutions to the device vendors and test houses. LTE device manufacturers and Test Houses using the ME7873L can now be assured of a compliant and reliable platform for making these tests and ensuring compliance with the relevant EU legislation." commented Jonathan Borrill, Director of Marketing at Anritsu.

Cambridge Consultants celebrates 50 years of innovation

Incisor's sponsor partners have ranged from start-ups to long-established businesses. One of our latest partners, Cambridge Consultants, the company described as "those experts of disruptive technologies" by the Financial Times, celebrates its 50th year in 2010. Established by three Cambridge University graduates in 1960, the company has grown into a world leading technology product development firm, employing over 300 engineers, technologists and scientists at offices in both Cambridge, UK and Boston, USA.

The company's work for both large multinationals and early stage start ups can be seen all around us, from the round tea bag you use to make your morning beverage, to the ground-to-air radio system used to control air traffic in US airspace; and from the Bluetooth chip in your mobile phone, to the ultra low-cost optoelectronics in one of the world's most successful pregnancy testing kits. Its effect can also be seen in the wealth created by the 20 businesses it has spun out since 1975, including CSR, the world's largest manufacturer of Bluetooth chips, and Xaar, Domino and Inca Digital, three of the world's leading companies, founded on ink jet printing technology originally conceived at Cambridge Consultants. Combined, these four spin outs alone employ 3,500 people and generated more than $1billion in revenue in 2008.

"1960 was a time of great social, cultural and technological change," commented Dr Brian Moon, CEO of Cambridge Consultants. "JFK had won the US presidency and thrown down a challenge to his country's scientists to put a man on the moon before the end of the decade. The effect of this challenge was felt around the world, and almost certainly inspired our founders to create a business that aimed initially to provide British industry with ready access to a new breed of highly qualified, forward-thinking, recently graduated technologists."

Cambridge Consultants was forged in the "white heat" of Harold Wilson's technological revolution, and has remained at the leading-edge of technology

innovation to this day. Although best known as the key driving force behind the creation of 'Silicon Fen', Europe's leading high-technology cluster, Cambridge Consultants' reach now goes well beyond its roots. Today it is an integral part of the Altran Group, an 18,000 strong global engineering firm with a presence in 26 countries and a turnover of more than €1.6bn. Indeed, in recognition of the company's global impact, it was awarded the 2009 Queen's Award for International Trade. With about 60% of its business coming from the US and Asia, Cambridge Consultants has matured into a truly global business, developing more inhalers than any pharmaceutical company, leading the way for smart energy management, and housing one of the world's largest independent wireless development teams.

Dr Moon continues: "What we now do is help our clients achieve competitive advantage very quickly through the application of novel technology, or indeed, the novel application of existing technology. Today, this work is helping many of our clients gain market share as the economy recovers from the effects of the global recession. Whatever market our clients are in, from medical diagnostics to satellite communications, this work

requires our teams to look ahead, and so that is very much the theme of our celebrations and activity this year."

To launch the company's 50th anniversary celebrations, Cambridge Consultants looked - as usual - to the future, asking a class of 10 year olds at the Milton Road Primary School in Cambridge, UK to write a diary entry for a typical day in 2060, when they would be 60 years old. The children were asked to focus particularly on the part that technology may play in their lives in fifty years time. Amongst the nuclear powered hover-cars, robo-doctors dispensing spray-able medicines and holographic phone displays was the constant theme of climate change which, in many of the diary entries, had yet to be fully solved.

"We have come very far in the last fifty years and should be very proud of our achievements", concludes Dr Moon. "But I, like the children in our competition, suspect that we have more challenging times ahead of us. As we seek technological solutions to some of the world's most pressing and urgent needs, the watchwords will be efficiency, simplicity and renewability. But one thing we can be sure of is that the world is not running out of technology."

low energy wireless news

NFC Forum forges collaborative links with leadership groups

The NFC Forum has formed liaisons with three industry-leading organizations key to the NFC global ecosystem: EMVCo, the GSM Association and the Smart Card Alliance. An NFC Forum spokesperson told Incisor that these liaisons broaden and strengthen the Forum's collaborative ties with key associations and standards bodies. As a first step in the liaisons, the Forum has signed a Memorandum of Understanding (MOU) with each organization that outlines how they will collaborate to further the development of the NFC market and NFC-based solutions.

As far as who does what is concerned, EMVCo's primary role is apparently to manage, maintain and enhance the EMV Integrated Circuit Card Specifications to ensure interoperability and acceptance of payment system integrated circuit cards on a worldwide basis. EMVCo will share relevant technical information with the NFC Forum that will enable the certification of properly-provisioned NFC devices in order to make POS payments (in Card Emulation mode) wherever such payments can be made with EMVCo contactless card products and to act as POS devices (in Reader/Writer mode) within the EMVCo contactless payment infrastructure.

The GSM Association (GSMA), meanwhile, represents the interests of the worldwide mobile communications industry. The new partnership will facilitate the NFC Forum and GSMA working together by exchanging information relating to each other's programs through written comments, commenting on technical specifications, certification and testing requirements, sharing documents of interest and relevance to members of both organizations, collaborating on joint marketing activities such as seminar sessions, white papers and presentations, and attending each other's meetings as appropriate.

The Smart Card Alliance is teaming up with the

NFC Forum on several joint marketing initiatives, including educational programs for vertical markets such as retail and transport. Other programs under discussion include presentations at each other's events and meetings, a joint event targeting the retail market in the U.S., and the provision for regular information sharing between the NFC Forum Marketing Committee and Smart Card Alliance Contactless and Mobile Payments Council.

Ember Strengthens ZigBee sales channels in Europe

Ember has appointed Texim Europe and Ismosys as channel partners for its ZigBee networking systems. Ember's ZigBee networking systems are aimed at those developing low-power, wireless products in Smart Energy, connected home and other remote monitoring and control applications.

According to Bert Lutje Berenbroek, Ember's vice president of sales for EMEA, Ember is poised for significant growth in Europe fuelled in part by smart grid regulations and climate change initiatives which are going to change the way utility companies and their customers manage energy and water consumption in residential and commercial buildings. "The appointment of Texim Europe and Ismosys reflects a strategic realignment of Ember's sales channels to meet customer needs and to efficiently and effectively cover the entire process from customer acquisition to fulfillment and technical support," Berenbroek said.

Ismosys is the principal trading division of the Spectrum Electronics Group, a Pan-European organization founded in the UK in 1994 to provide sales, marketing and operations support to Tier-1 customers and associated design, manufacturing and software partners. Ismosys has offices throughout Europe including UK, Benelux, Central Europe, France, Spain, Italy and Scandinavia as well as in Israel and Turkey. Ismosys will focus on demand creation for Ember products in EMEA.

Texim Europe provides the technology component and module solutions for electronic applications, and is headquartered in Haaksbergen, The Netherlands, with sales offices in Belgium, Germany, Denmark, UK and Austria. In addition to demand creation in its main territories, Texim Europe will be responsible for demand fulfillment and technical support of Ember customers in EMEA.

ZigBee Alliance certifies sub-1GHz platforms

Ember has appointed Texim Europe and IsmosThe ZigBee Alliance (ZBA) is now offering certification for ZigBee platforms designed to operate in the regional sub-1 GHz unlicensed frequencies. The move, a ZBA spokesperson told Incisor, ensures original equipment manufacturers a source of tested platforms for use in sub-1 GHz applications.

The Alliance recently completed its first series of multi-vendor interoperability tests for sub-1 GHz platforms. These platforms will become the Golden Units against which all other platforms seeking certification will be compared. They offer the same underlying functions and capabilities as existing ZigBee Compliant Platforms operating at 2.4 GHz.

"Adding sub-1 GHz ZigBee compliant platforms meets rising market demands for frequency choice, " said Tom Herbst, engineering director at Cisco Systems. "Having these new ZigBee platforms will give product manufacturers more opportunities, and encouragement, to use ZigBee."

Atmel Corporation, Exegin Technologies and ZMDI are leading this effort in conjunction with ZBA accredited test houses including National Technical Systems, TRaC Global and TÜV Rheinland.

The ZigBee specification has always supported sub-1 GHz platforms, but offering certification of platforms built to the specification requires at least three independent implementations for initial testing and validation.

low energy wireless news
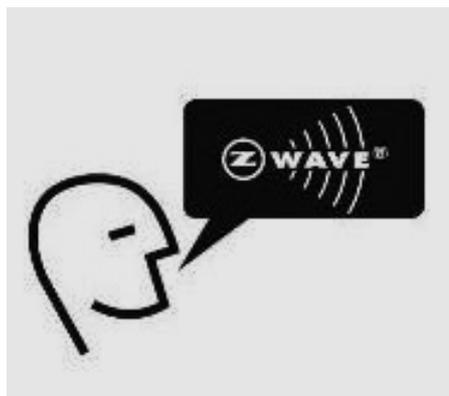
Z-Wave to go

Danish company QEES has designed a new remote control system based on Z-Wave wireless technology. This enables easy operation of a number of devices including lights, dimmers, shutters and thermostats, for instance. The system has been specially designed as a key ring pendant and fits inside a pocket making it a portable tool for controlling lights and thermostats when entering or leaving the house or flat. Additionally the new QEES wall switch performs the same control function and also uses the Z-Wave wireless protocol, so it can be fitted without the need to install wiring.

The QEES key ring pendant makes it possible to manage all Z-Wave compliant appliances in a home network. These can be allocated to a total of four different programme groups, thereby making it possible for the user to control devices individually, as a group or as part of a particular scenario. For example, when leaving home, the user can ensure that all devices currently in standby mode are turned off by pressing a single button. Garage doors can also be connected to the network and operated from inside a car using the key ring pendant. The remote control unit has an operating range up to 400ft.

The same functionality is also used to integrate the QEES Z-Wave compliant wall switch into home networks. The switch is battery powered and can therefore be installed anywhere without the need for electrical wiring. The Z-Wave wireless system allows existing electrical configurations to be adapted to new requirements in rooms, whether as a result of furniture being rearranged or renovation work being carried out.

Traditional wireless systems establish a direct connection between the transmitter and the receiver. The signal is therefore gradually weakened by each individual obstacle it encounters, such as walls and

furniture. In the worst case, the signal is actually interrupted. In contrast, Z-Wave technology involves the use of a bi-directional wireless system. In other words, automatic feedback is provided to confirm the execution of each individual function. The system uses the 868.42 MHz frequency, which is reserved for short range wireless communication.

Pepper One: first European certification centre for Z-Wave

Pepper One GmbH has opened the first certification centre for Z-Wave devices in Europe.

In order to ensure their functional capability and interoperability, Pepper One deals with the development, improvement and certification of Z-Wave products. Its services include comprehensive test programmes, assistance in preparing products and documentation, development services upon customer request and also maintenance contracts and support.

In order to receive a Z-Wave certification for a new product, the customer initially carries out a self-certification. The results of this test are then checked by Sigma Designs and, upon acceptance, passed on to Pepper One. This is where the actual certification process begins, with this taking between two and five days.

Following the checks, any problems that occur and prevent certification are comprehensively documented. The so-called ad hoc period then begins in which the manufacturer has the opportunity to resolve any problems. Once this phase is concluded, Pepper begins a new trial until all conditions for a certification are fulfilled.

Alexander Hische, Managing Director of Pepper One GmbH, explains: "With the

Z-Wave certification programme we are ensuring the reliable deployment of future-oriented home control products. Pepper One is characterised by the rapid and personalised support we offer our customers. Direct contact between manufacturers and our engineers makes it possible to react quickly to any problems that occur."

TI RF range extender for low-power wireless

TI has introduced a radio frequency (RF) range extender for low-power wireless applications at 850 to 950 MHz, such as wireless sensor networks, automatic meter reading (AMR), and wireless industrial controls, consumer and audio systems. The single-chip CC1190 integrates a power amplifier (PA), a low-noise amplifier (LNA), switches and RF matching.

The CC1190 works with TI's CC1101 sub-1 GHz transceiver and the CC430 or CC1110 systems-on-chip. The CC1190+CC1101 solution can provide up to +149-dB link budget. Customers that need to extend the range of their existing industrial sensors or utility energy meters will apparently be able to eliminate repeaters or routers, reducing overall system costs.

TI claims that the new chip increases link budget by providing a power amplifier for increased output power, and an LNA with low noise figure for improved receiver sensitivity. The CC1190 also provides a seamless interface to sub-1 GHz low-power RF devices from TI, up to 27-dBm (0.5 W) output power and a 6-dB typical sensitivity improvement with CC11xx and CC430.

The CC1190 is available now in a ROHS-compliant, 4-mm x 4-mm QFN-16 package.

wi-fi / high speed wireless news

Atlona and Wisair partner over W-USB DisplayDock for Mac

Atlona Technologies has already been playing in the short-range, high-speed market with its wireless USB or VGA to HDMI adapter with Audio, the HDAiR. Now, it has once again teamed up with Wisair, the provider of single-chip based UWB and Wireless USB solutions to release the all new AT-PCLink. This wireless USB DisplayDock Set is designed as a solution for Mac OS as well as Windows, enabling MacBook and Notebook PC owners alike to enjoy a whole new user experience.

This new USB DisplayDock solution allows Mac and PC users to connect to a monitor, keyboard, mouse and speakers, via a single wireless link with a single adapter that connects to a USB port. The AT-PCLink will wirelessly send video signal and audio at distances up to 30ft at resolutions up to 1440x1050. Atlona claims simple, plug and play installation of this unit, requiring no network installation.

The Wireless USB DisplayDock Set operating with MacBook will be available for the public 'soon', says Atlona, with an MSRP of $199.00

... And Wisair links with InFocus

Continuing to push UWB technology into focused market applications (pun not intended), Wisair has also joined forces with InFocus Corporation, which is big in digital projection technology. The latest enhance-ment to Focus' wireless solution eliminates the need to have wired connections between laptops and select InFocus projectors, with support for Mac OS and audio.

Based on UWB technology from Wisair, the InFocus DisplayLink Wireless system, allows presenters to connect to InFocus DisplayLink-enabled projectors and share HD content on the big screen without wires.

First launched in August 2009 with initial support for Windows OS platforms, the system is now made available for MacBook, MacBook Pro and MacBook Air platforms with audio support. MacBook platforms do not have VGA or HDMI connectors, which are the most common connectors in Projectors. For a complete audio-video experience today, Mac users need to connect at least 3 cable adapters: a mini-DisplayPort or mini-DVI to VGA adapter cable, a VGA cable that connects to the projector for the video and yet another cable for the audio. The new InFocus wireless solution allows Mac users to transfer video, audio and also the projector's control, via a single wireless link with a single adapter that connects to a USB port, which can be found on all MacBook platforms.

Stephen John, Product Manager at InFocus commented, "We are excited to offer our Wireless DisplayLink system to Mac platforms users and reach additional market segments in which MacBooks are so popular. Since the product launched in August 2009 we've seen a clear demand to support Mac OS and we are pleased that Wisair enhanced its wireless solution to enable it. The additional audio support, together with the ability to control the projector over the wireless link, provides presenters and their audience with a complete audio-visual-control experience, enabled by the UWB wireless technology. To get this experience today users have to use two or three cables and now they can simply plug an adapter into a USB port and get audio, video and control wirelessly. InFocus is determined to continue adding features and capabilities to our Wireless DisplayLink system and intends to closely work with Wisair to define and implement such capabilities as

a software update. This will allow our current customers as well as future customers to benefit from those future enhancements."

The system will be available with Mac OS support at the end of March 2010.

connectBlue Dev Kit Collection for W-LAN

connectBlue, best known for its wireless industrial solutions, has launched ten Wireless LAN Development Kits designed to evaluate the connectBlue third generation OWL221a and OWL222a Wireless LAN modules.

The Wireless LAN Development Kit collection spans over a wide variety of customer development needs. For instance, the manufacturer can choose a complete out-of-the box testing system or choose a software kit for integration into an existing system for evaluation.

The kits contain both hardware and software and are either shipped directly to the customer or via a connectBlue certified distributor. The software development kits can be downloaded via FTP server technology.

The connectBlue Wireless LAN modules included in the complete kits are compliant with IEEE 802.11a/b/g and single stream 802.11n, utilize internal antenna or external antenna, a 3.3 - 5.5 VDC, SPI or SDIO interface and are fully radio type approved (FCC, IC and R&TTE). Additional features include dual-band operation (2.4GHz and 5GHz), minimal host processor load, integrated controller & SRAM/ROM, advanced power save features and compatibility with the connectBlue Bluetooth and ZigBee / IEE 802.15.4 module standard.

events

DATE	EVENT	LOCATION	NOTES	LINK
Mar 2 - 6 2010	CeBIT	CeBIT Messe, Hannover, Germany	-	http://www.cebit.de/
Mar 22 - 25 2010	International CTIA Wireless 2010	Las Vegas, Nevada, USA	-	http://www.ctia.org/conventions_events/wireless/
April 1 2010	Connected Home	Houten, The Netherlands	- -	http://www.connectedhomeevent.eu/uk_index.html
April 19 - 22 2010	Bluetooth SIG All Hands Meeting	Fairmont Olympic Hotel, Seattle, USA	-	www.bluetooth.org
April 27 - 28 2010	LTE Forum 2010	Stockholm, Sweden	-	http://www.lteforum2010.com
June 8 - 10 2010	Connections US	Santa Clara, California, USA	Digital living conference & showcase	http://www.parksassociates.com/events/connections/2010/

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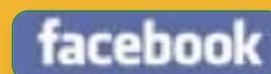
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