INCISOR™

for the short range connectivity environment

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ULTRA-WIDEBAND REVISITED

THIS ISSUE

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ultra-wide banned? maybe not...

It's OK, readers, after my intro piece rant last month I have stepped back, taken a chill-pill, and I am opening this issue of Incisor in a much calmer state of mind.

I have been a bit distracted, you see, by the need to spend more time thinking about a technology that has graced Incisor's pages for many years. One which seemed destined for greatness, which burned huge amounts of VC money, which seemed to fail (partly as a result of seemingly being kicked into touch by the Bluetooth Special Interest Group – though that's not really how it happened), yet which, as a result of smouldering embers that just won't die out, seems to be refusing to go away.

I'm talking , of course, about Ultra-Wideband (UWB), the very high speed, low power wireless technology that emerged from developments for military applications – radar, etc.

At one time, UWB looked like it was going to make it to mass adoption on its own, despite the best efforts of factions competing to establish one flavour of UWB over another. Then it looked like UWB's route to greatness was alongside Bluetooth, where it was to underpin the high speed version of Bluetooth. Then that didn't happen, and I don't have space here to go into why. Anyway, it looked like UWB was dead(-ish), and it started to carry with it something of the fragrance of a kipper that has been left behind a radiator for a couple of weeks.

And yet, after a year of apparently self-imposed radio silence from the Ultra-Wideband community, which is now a tiny group of companies, by the way, there have been a few surprising developments. Korean semiconductor giant Samsung has lent its support to UWB. CSR successfully put a product that included UWB support through Bluetooth SIG qualification, and a bunch of UWB-enabled consumer products are starting to appear on the market.

So, what is going on? We set Dean Gratton on the case, and you can learn more in his feature in this issue.

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

INCISORTV FOCUS THIS MONTH:

IncisorTV produced this movie for the Bluetooth Special Interest Group, to promote the ATLAS training programme.

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Intel acquires Infineon's Wireless Solutions business

Infineon Technologies AG and Intel Corporation have entered into a definitive agreement to transfer Infineon's Wireless Solutions (WLS) business to Intel in a cash transaction valued at approximately $1.4 billion.

Intel's PR missive tells us that WLS, a provider of cellular platforms to top tier global phone makers, will operate as a standalone business serving its existing customers. WLS will also contribute to Intel's strategy to make connected computing ubiquitous from smartphones to laptops to embedded computing.

"The global demand for wireless solutions continues to grow at an extraordinary rate," said Paul Otellini, Intel president and CEO. "The acquisition of Infineon's WLS business strengthens the second pillar of our computing strategy -- Internet connectivity -- and enables us to offer a portfolio of products that covers the full range of wireless options from Wi-Fi and 3G to WiMAX and LTE. As more devices compute and connect to the Internet, we are committed to positioning Intel to take advantage of the growth potential in every computing segment, from laptops to handhelds and beyond."

"The sale of WLS is a strategic decision to enhance Infineon's value. We can now fully concentrate our resources towards strong growth in our core segments Automotive (ATV), Industrial & Multimarket (IMM) and Chip Card & Security (CCS). This creates a great perspective for all Infineon customers, employees and shareholders," said Peter Bauer, CEO of Infineon Technologies AG. "We all stand to benefit enormously from this deal. Thanks to the outstanding effort of the employees and the management during the last years, WLS is excellently positioned to grow further with the new owner who is ideally suited for this business."

Intel and Infineon say that the WLS transaction is a strategic decision. Intel's goal is to expand its mobile and embedded product offerings to support additional customers and market segments, including smartphones, tablets, netbooks, notebooks and embedded computing devices.

The board of directors of Intel and the supervisory board and the management board of Infineon have approved the transaction. It is expected to close in the first quarter of 2011, subject to regulatory approvals and other customary closing conditions specified in the definitive agreement.

Growing role for single-chip processors in handsets

The predicted demise of dedicated, single-chip solutions for mobile phones has been exaggerated, according to ABI Research vice president Kevin Burden. “The push in recent cellular handset design has also been to combine as many radios as possible on a single chip. These multi-function Combo ICs have gotten all the attention lately. But standalone ICs still have a very significant place in this market.”

Baseband and connectivity processors are the two components where single-chip ICs shine. Single-chip baseband processor ICs made up just 19% of all baseband processors shipped in 2009, but by 2015 that percentage will have grown to 47%, for a CAGR of more than 21%, according to ABI Research’s latest forecast.

Similarly standalone ICs for connectivity, while losing some ground to combination ICs over time, will still make up 59% of shipments in 2015.

“Partly the continued popularity of standalone IC is due to growth in the low-end handset market, where they are more common than Combo ICs,” notes Burden. “But the smartphone market too (particularly with the spectacular rise of Android-based devices) has a continuing need for standalone ICs in order to boost the performance of selected features, as a way of differentiating one’s product from the competition.”

Different sets of vendors stand to benefit from these sustained single-chip markets, says ABI: for baseband processors these would include Infineon Technologies, ST-Ericsson, Qualcomm, and MediaTek.

Broadcom and Philips aim to transform the remote control experience

Broadcom has partnered with Philips Home Control, which builds wireless input and control solutions, to develop a new generation of remote control devices that are intended to transform the television, set-top box (STB), and Blu-ray Disc player interface experience. Broadcom claims that its Bluetooth technology has been instrumental in introducing and driving the adoption of gestural remote controls for video game consoles and the increasing universe of wirelessly connected devices.

In collaboration with Philips Home Control, Broadcom is now applying Bluetooth and other technologies to enable remotes that can control the home entertainment experience with the wave of a hand, swipe of a finger, or strokes of a miniature keyboard.

Jean-Paul Abrams, General Manager OEM Business, Philips Home Control, told Incisor: “Consumer electronics products are currently undergoing a fast transformation, evolving rapidly from passive devices to more dynamic, connected portals for entertainment, communication and more. Similarly, the remote control is also changing to accommodate the breadth of new features becoming available. Our collaboration with Broadcom will enable a new user experience that lets consumers take greater advantage of these features with intuitive, easy to use remote controls.”

news

BMW puts Parrot inside car

Parrot is supplying it's automotive connectivity solutions to BMW for use in parts of it's range, plus some Mini vehicles.

The Parrot Connectivity Solutions are factory-fitted via two Tier 1 suppliers in various vehicles in the BMW range, such as the 1 Series and 3 Series, the X3 SUV and some versions of the Mini. These vehicles will be marketed in Europe, North America and Japan with vehicle releases taking place between mid-2010 and mid-2011.

These solutions include the latest Bluetooth hands-free telephony features, phonebook synchronization and Parrot's acoustic digital signal processing technologies such as noise reduction and echo cancellation. They can also let drivers place calls vocally through voice recognition functionality.

Any Luddite customers who are not using Bluetooth will still be able to enjoy the music stored on their mobile devices through their vehicles' audio systems, as the solutions feature USB and iPod/iPhone connections.

The BMW systems are based on a Parrot CK5050+ module that has been integrated into existing cars' infotainment architecture; this approach lengthens the life of those platforms and ensures cost-effectiveness and a shorter time to market than using an external standalone connectivity unit.

Eric Riyahi, Parrot's Business Units Director told Incisor : "We are glad to supply our solutions to a major car manufacturer like BMW. High-performance connectivity solutions for telephony and multimedia are increasingly becoming commodities in the automotive market. More and more premium brands are now adopting Parrot's Connectivity Solutions. These can be very easily implemented in existing infotainment systems, allowing them to stay up-do-date and meet consumer needs through device compatibility updates up to twice a year".

Mindtree launches Bluetooth RF IP for SoC integration

Mindtree has launched its Bluetooth RF Intellectual Property (IP) offering, designed to provide sensitivity and Interference Tolerance performance, at 1.2 V, which Mindtree says exceeds Bluetooth specifications. The RF IP complements Mindtree Bluetooth suite of IPs consisting of baseband controller, digital PHY (Physical Layer), stack and profiles.

The RF IP offers a small die size and ultra low power consumption, making it suitable for integration onto a System-on-Chip (SoC). Mindtree suggests that as market segments such as medical, healthcare, and automotive ramp up Bluetooth adoption and set top boxes and digital TVs emerge as new Bluetooth segments, the increased volume of Bluetooth shipments will bring down costs. This will in turn necessitate the integration of Bluetooth onto the main SoC of a product or a combination SoC for connectivity along with WLAN, FM and GPS.

"We are seeing tremendous market demand for a complete Bluetooth solution. With the introduction of our RF IP, we are geared to address all the Bluetooth needs of our customers – from antenna to software," said Dr. Rajesh Zele, Vice President, R&D Services, Mindtree. "Our Bluetooth RF IP enables our customers to 'Just Add Bluetooth' to any SoC without having to go through expensive multiple spins to get the sensitive RF IPs working in the digital noise dominated substrate."

The Bluetooth RF IP is targeted at the 65nm RF CMOS process and will be available to customers in the fourth quarter of 2010.

RivieraWaves announces Bluetooth low energy qualified baseband IP

RivieraWaves has qualified its Bluetooth low energy baseband Intellectual Property (IP), and claims a world first. "We are very proud to release the first qualified Bluetooth low energy baseband IP in the world", said Ange Aznar, President and CEO of RivieraWaves. "This strengthens our leadership and footprint in the Bluetooth market, while increasing the confidence of our customers currently integrating our Bluetooth low energy technology".

RivieraWaves says it will soon ship a complete dual mode Bluetooth low energy IP line, also known as Bluetooth 4.0. This will include a complete radio transceiver IP containing the RF synthesizer, Low Noise Amplifier, Power amplifier, ADC, DAC and RF switches, as well as the digital modem and the controller. The RivieraWaves Bluetooth 2.1+EDR RF IP has already been upgraded to support Bluetooth 3.0 and 4.0 specifications.

RivieraWaves is describing itself as the only "one stop shop" company providing complete solutions for Wi-Fi and Bluetooth, Bluetooth low energy (aka Bluetooth 4.0) and Bluetooth high speed (aka Bluetooth 3.0+HS) for standalone chips, or for integration into combo chips or application/baseband processors. The IP offering is composed of hardware, software and analog/RF components.

news

Shipments of Bluetooth, NFC, UWB, 802.15.4 and Wi-Fi ICs Will Increase 20% in 2010

According to ABI Research, the market for short range wireless ICs is forecast to expand this year; total shipments of Bluetooth, NFC, UWB, 802.15.4 and Wi-Fi ICs will increase approximately 20% compared to 2009. “Bluetooth ICs still lead the short-range wireless IC market,” says ABI Research industry analyst Celia Bo. “Unit shipments are expected to exceed 58% of the total short-range wireless IC shipments in 2010. Wi-Fi ICs rank second place in this market, making up approximately 35% of the total shipments, with the rest of the shipments accounted for by NFC, UWB and 502.15.4 ICs.”

Cellular handsets and accessories are taking a significant portion of the market for Bluetooth-enabled products in 2010, accounting for almost 75% of total shipments. This is followed by the notebook and UMD segments, taking approximately 12%. The demand for Bluetooth-enabled consumer electronic and home entertainment products is expected to grow steadily over the next five years. Shipments of portable media players are forecast to grow tenfold in 2015 as compared to 2010, and the total shipments of networked game consoles and handheld game consoles are expected to show a 14% CAGR between 2010 and 2015.

Bo added, “Combination chip solutions that integrate two or more short-range wireless technologies will be broadly deployed in hundreds of millions of electronic devices due to their advantages of lower cost and smaller chip size, paving the way for expansion of the short-range wireless IC market.”

The Bluetooth+FM radio integration solution is taking the highest market share among the major integration solutions of “combo” chips today, followed by Bluetooth+Wi-Fi+FM radio and Bluetooth+FM radio+GPS solutions. Bluetooth’s integration with Bluetooth Low Energy (BLE) wireless technology will be adopted widely from next year and is projected to account for more than 50% of total Bluetooth combo IC shipments in 2015.

CSR Harmony software platform for PC users

CSR has announced CSR Harmony, a connectivity software framework that enables a wireless experience for Windows-based PCs, integrating Bluetooth v4.0 + High Speed, Wi-Fi and GPS functionality. CSR is aiming Harmony at users looking at wireless connectivity options including health and fitness, high-end audio and ultra-low power accessories.

CSR Harmony also provides a premium audio experience, supporting wide-band mono audio and also the new apt-X lossless stereo codec (for those that haven’t been paying attention, CSR bought APTX recently). The apt-X codec delivers CD-quality audio over the Bluetooth link with virtually no latency. Lip-sync issues common with normal Bluetooth stereo headsets are apparently a thing of the past. In addition to high-end audio, CSR Harmony enables the Bluetooth and Bluetooth low energy ecosphere of devices including a new range of wireless connected low energy health and fitness products such as heart rate monitors and pedometers.

"PC users now expect a broad range of wireless functionality to be integrated in the PC as standard," commented Eric Neilson, Senior Product Marketing Manager for PCs in CSR's Audio and Consumer Business Unit. "As PCs begin to interact with the low energy devices, sensors, and alternate radios that proliferate around the home, office and around the world, CSR Harmony will open up a vast range of new possibilities offered by Bluetooth low energy and Bluetooth High Speed that is limited only by the creativity of consumer electronics designers. CSR Harmony also provides an excellent route through our audio enhancements for users to enjoy games and music on their PCs the way they were meant to be heard, but without the need for wires."

CSR Harmony supports Windows XP, Windows Vista and Windows 7 operating systems, and is also designed to support future Windows releases.

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Bluetooth Low Energy - next year's success story?

Tim Whittaker, Cambridge Consultants.

By Tim Whittaker, System Architect, Cambridge Consultants

Bluetooth Low Energy (BLE) has attracted a large amount of attention in the last year, as an extension of the Bluetooth standard that addresses a set of product applications that are truly differentiated from classic Bluetooth applications. With its considerable experience in Bluetooth having spun out Cambridge Silicon Radio (CSR) at the start of the last decade, Cambridge Consultants is active at the forefront of this exciting new technology area.

BLE is designed to be compatible with classic (i.e. Basic or Enhanced Rate) Bluetooth in a number of ways, but optimised to deliver small amounts of data with extremely low power consumption. With likely synergy with the Bluetooth implementation in mobile phones, there is a good chance that BLE devices will become very popular and therefore very cheap, with a single mode chip costing under a dollar.

BLE is designed so that it can be added on to a classic Bluetooth chip at low or zero additional cost; in fact there are several million dual-mode (combined classic and BLE) chips already built into phones, although the phone software does not yet support BLE, not least because the details of the protocol have only recently been finalised.

BLE is not a direct substitute for classic Bluetooth. It uses a different radio scheme (designed to co-exist with classic Bluetooth) with 40 channels (compared to 79), using a substantially different radio access protocol designed for very rapid connection set-up with very short connection set-up times. Whilst classic Bluetooth could transfer data fairly efficiently over an established link, the energy cost of maintaining a quiescent link was high – leading to standby time of perhaps a week. The alternative to this, establishing a connection on demand, takes many seconds – scarcely adequate for a remote control!

None of the classic Bluetooth profiles are supported by BLE. A new Generic Attribute (GATT) profile is defined. An Attribute is a small data object defined by the SIG for a particular purpose, with this format:

Universally Unique Identifier (UUID) allocated by SIG 2 bytes (for commonly used attributes) or 16 bytes	Handle – identifies instance of this attribute in this link 2 bytes	Payload, in format defined by SIG for this UUID (number(s), string, etc.) 20 bytes, to fit into a single packet over the air. (Longer if the two ends agree a fragmentation and reassembly scheme)

Commands are specified for reading and writing attributes in various ways including broadcast, unacknowledged and acknowledged transmission. In addition, GATT defines objects called Characteristics – which describe how Attribute data is used – and Services – which cluster Characteristics to represent a typical function at the application level. Examples of services include clinical thermometer, or a battery monitoring function.

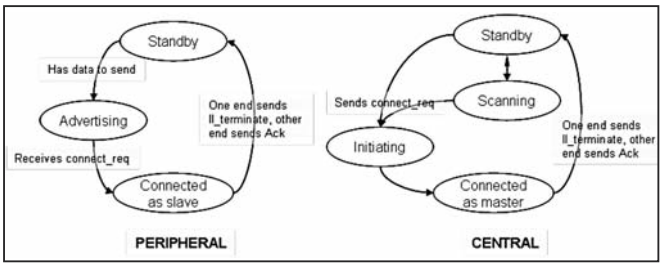
A more secure encryption algorithm (AES128) is included in the BLE specification, which is important for key application areas like home automation and healthcare.

BLE introduces the concept of Central and Peripheral units. A remote controller or a BLE-equipped watch are examples of peripherals, while the corresponding television or mobile phone act as central devices. A BLE peripheral device spends most of its time in a Standby – deep sleep – state, drawing less than 1 µA from its battery. The central device in a BLE piconet is normally in the Scanning state either continuously or occasionally if latency is less critical.

When a peripheral has something to send, it enters the Advertising state, where it sends out a short packet on one of three 'advertising' channels, and awaits a

response. If none, it repeats on the next advertising channel and then on the third, then waits a short time (100ms) before trying the cycle again. Three channels, widely spaced in the 2.4GHz band and avoiding the most popular Wi-Fi channels, are specified for robustness of communications.

When a device in Scanning mode receives a packet on an advertising channel, it may simply accept the advertised data without response, or respond with a Connect Request packet, in which case it enters the Connected state as master (for timing, frequency hop sequence etc.) for the duration of the connection. The device that was in Advertising state becomes the slave. One or more data packets can then be sent between master and slave, followed by a Link Layer Terminate packet (from either end) and its acknowledgement to end the connection.



If the central device is in Scanning state continuously, this whole process takes 3-4ms. If the central unit enters Scanning state less frequently, then Advertising needs to be repeated, until an advertisement coincides with a scan.

Looking at the example of a remote control unit being used perhaps 50 times a day, and its television scanning continuously (as it has a mains power supply), the battery life from a 2032 size coin cell is estimated to be 11½ years – assuming that its shelf life exceeds this! This is the real advantage of BLE – the transceivers are designed to draw transmit and receive currents compatible with this type of battery, and the average current in most applications is sub-microampere.

Cambridge Consultants has been part of the Bluetooth story since its early days, with our software and silicon IP in the majority of Bluetooth devices shipped to date. Today, Cambridge Consultants is at the forefront of development with the latest BLE technology, in areas such as medical device technology. Cambridge Consultants' Vena™ health device profile (Bluetooth HDP) software was the first to market, transmitting data between a portable medical device and a 'manager' device, using classic Bluetooth to deliver data in the formats specified in the IEEE 11073 family of standards, as specified by the Continua Alliance.

BLE is set to revolutionise many medical applications, allowing drug dosing devices, glucometers and other low-power devices to become connected devices, eliminating human errors in the data that they collect or use, but with the same sort of battery life as their predecessors. However, IEEE 11073 is a connection-oriented data protocol, and BLE is designed to transmit small data objects in a connectionless manner. The Continua and Bluetooth experts are working now to map IEEE data formats on to the Bluetooth GATT, to ensure that every BLE medical device will talk to a BLE manager – this will be part of Continua version 2.0, expected in the middle of next year.

So, how successful will BLE be? As with classic Bluetooth, the level of success depends heavily on the mobile handset manufacturers. If a successful volume base is forged through the established market based on cellular, the resulting low cost will create myriad opportunities in new market areas. If BLE-enabled smart-phones also allow applications to access the GATT directly, then developers can create BLE profiles independently of the phone platform, and that will really make BLE highly successful.

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Patrick Pordage
Marketing Communications Director
Cambridge Consultants.

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Reaching popular Internet services – without updating vehicle head units

The constant need for OEMs to keep pace with consumer devices and related Internet-based applications is a challenge for the automotive industry. A new car radio may be out-of-date before it reaches the market. The OEM is under pressure because end users expect to bring their mobile phone's latest connectivity features into the vehicle.

One approach has been to install a specific piece of software or "app" in both the mobile phone and the head unit, assuring the functionality of a popular internet service. However, if acceptable market coverage and sufficient quality are going to be achieved, this creates a significant amount of different software versions and interoperability testing.

Mecel, which has been supplying Bluetooth software to the automotive industry since a decade back, realized that an alternative approach could be applied, and one that would minimize the effort of getting access to the latest and most popular end user Internet services. These include Spotify, Pandora, Internet radio, Facebook, Twitter, on-line news-papers, traffic information and other location based services.

By using the AVRCP1.4 (Audio Video Remote Control Profile) Bluetooth profile, initially designed to allow browsing of audio/video content over Bluetooth, most mobile phone connectivity features can be transferred to the head unit. The idea came from Mecel's Bluetooth team during the development of the AVRCP profile and has been thoroughly verified, functioning well at several OEM tech shows and exhibitions.

By creating an application in the mobile phone that transforms the API of the desired feature (e.g. Spotify, Pandora, Internet radio etc) to AVRCP1.4 commands, the head unit will then be able to run and control these programs by just having support for the AVRCP profile. No specific software for the head unit will be required, which helps the OEMs, since they can then limit the number of software versions of their connectivity products.

At the same time, the strategy will keep the infotainment system attractive long after it has been launched onto the market, since the user can purchase "apps" for their phones that will make new features available in vehicles simply by relying on AVRCP1.4.

OEMs will be able to provide a large amount of popular end user programs such as streaming services, traffic information, e-newspapers etc. Everything that is list-based is a potential candidate to be transferred to the head unit over the AVRCP1.4 Bluetooth profile.

If you want to know more, then get in touch with Mecel, which is showing demos where Spotify is run on a head unit over AVRCP1.4. We'll assume you know how to use Google ....

low energy wireless news

Blueradios and TI deliver Bluetooth LE and ZigBee module

Blueradios has introduced a product it calls nBlue, a self-contained Bluetooth low-energy nano ampere network module that utilizes the Texas Instruments CC2540 system-on-chip, integrating an antenna, radio, microcontroller, and software stack into a 11.8x17.6x1.9mm package. A pin-for-pin compatible nBee, BR-ZB-2A ZigBee nano ampere network module is also available with the TI CC2530 processor, and both are fully compliant with FCC and CE EMC requirements.

According to Blueradios announcement, the modules require no external supporting components. A single 3.0 volt coin battery can support one second connection intervals for a year. They are small enough to fit into highly space constrained applications, such as watches, health and fitness sensors, remote controls and key fob style devices. The firmware design allows the modules to be controlled by an external microcontroller using AT commands or for custom applications loaded directly on to the module.

Bluetooth low energy, part of Bluetooth Ver. 4.0, specifies two types of implementation: single mode and dual mode. Single mode chips implement the low energy specification and consume a fraction of the power of classic Bluetooth, allowing the short-range wireless standard to extend to coin cell battery applications. Dual mode chips combine low energy with the power of classic Bluetooth and, says Blueradios, are likely to become a de facto feature in almost all new Bluetooth enabled cellular phones and computers. Since Bluetooth low energy technology is an interoperable standard, the Blueradios modules will be able to communicate with both single and dual mode devices from all manufacturers. “Our clients buy our products because they are reliable and easy to integrate, enabling them to quickly deploy cost-effective solutions,” said Mark Kramer, president and founder of Blueradios.

Home Energy Gateway ref platform for smart grid initiative from Freescale

Freescale Semiconductor demonstrated a Home Energy Gateway (HEG) reference platform at the recent Metering Europe conference. The HEG platform is targeted at OEMs and utilities that are planning to start developing services in support of the smart grid. It includes features to support services such as collecting power consumption data from various sources, controlling activation and deactivation of Home Area Network (HAN) appliances, generating dashboards to provide feedback about power usage, providing control menus to control appliances and supporting a ubiquitous link to the WAN for remote control/readout.

“We have optimised Freescale’s Home Energy Gateway platform with cost and time to market in mind for development of home energy and smart In-home displays, enabling the vision of a smarter and greener home,” said Bruno Baylac, director of Freescale’s Industrial and Multi-market segment marketing.

Government stimulus plans for smart grid deployment and consumers’ needs to optimize home energy consumption are contributing factors to growth of the HAN market. In addition, the maturity and standardization of dedicated technologies like ZigBee and homeowners’ increasing familiarity with in-home networks like Wi-Fi, are speeding up acceptance of HAN services.

The HEG platform is powered by one of Freescale’s ARM9-based i.MX processors which will launch soon and runs on a Linux or the Microsoft Windows Embedded Compact 7 pre-release operating system. The HEG reference platform integrates a variety of connectivity options to meet the different regional standards and preferred communication protocols associated with smart grid deployments planned around the world.

British Gas supports smart energy

The UK’s largest energy supplier, British Gas recently announced the UK’s first commercial-scale smart meter deployment.

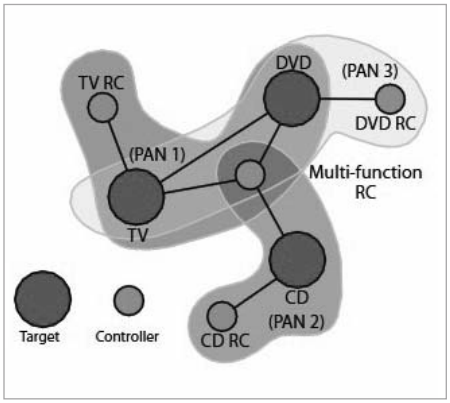
In the UK’s largest smart energy initiative to date, British Gas is planning to provide a million customers with electricity and gas smart meters, along with touch-screen in-home energy management displays.

“It’s the first step in our commitment to lead the UK into a new realm of energy management as part of which we will roll out two million smart meters to customers by 2012,” said Petter Allison, Director Smart Metering, British Gas. “ZigBee as the preferred standard for smart meters and Home Area Networks combined with the over-the-air upgradeability of Ember-enabled low-power networking solutions will ensure we can keep our consumers always up-to-date with the latest capabilities and performance improvements.”

British Gas has teamed with Ember for its ZigBee networking systems – chips, ZigBee protocol software and tools.

“Europe is at the forefront of smart metering, driven largely by the European Union’s goal of having 80 percent of households enjoying the benefits of smart energy by 2020,” said Bert Lutje Berenbroek, Ember vice president of sales for EMEA. “Ember’s ZigBee technology is optimized for large-scale deployments like the ones in the UK and other parts of Europe, giving utilities and consumers new energy efficiency capabilities such as demand response, time-of-use pricing programs, energy monitoring, pay-as-you-use and net metering programs.”

low energy wireless news



Danfoss thermostat enables energy savings of 23%

Danfoss, which is a manufacturer of refrigeration and heating technology, will soon be launching its new 'living by Danfoss' series. This range includes an electronic radiator thermostat based on Z-Wave technology. It allows location-independent remote regulation of radiators temperature in houses via one central display. Home owners and tenants thereby always have an overview of and control over their temperature settings, which allows energy and associated cost savings to be made.

Heating elements remain the largest consumers of energy in Germany. Danfoss told Incisor that the development of the 'living by' series has been based on feedback from consumers throughout Europe, with their responses being almost uniform in nature: a large majority placed considerable value on heating controls offering a high level of convenience and comfort while at the same time saving energy costs. The electronic radiator thermostats provide help in this respect, as the Aachen University study showed that replacing an "old" radiator thermostat with an electronic Danfoss radiator thermostat enabled energy savings of 23 percent to be made.

The thermostats give users the opportunity to define heating intervals. Domestic residences are therefore only heated when required. The temperature can be set individually for each room – for example a living room can remain warm during the day whereas a bedroom can be heated to a pleasant temperature just prior to bedtime. The Z-Wave chips integrated into the living connect thermostats also allow these devices to be included in home control networks other than Danfoss networks, as they can communicate with Z-Wave compatible devices from other manufacturers including those that are Internet and smart phone enabled.

RFID Systems Revenue to Exceed $6 Billion in 2011

Latest RFID forecasts from ABI Research indicate that the value of the overall market – including both traditional applications such as access control, automobile immobilization, electronic toll collection and e-ID/ID documents as well as "modernizing" applications such as animal ID, asset management, baggage handling, cargo tracking/security, contactless payment and ticketing, RTLS, and supply chain management – will pass the $6 billion mark next year.

These forecasts and key market trends are part of the 2010 edition of the firm's annual overview of the whole RFID market. Practice director Michael Liard sums up the "big picture" as generally optimistic despite last year's economic woes, and growing more so. "In response to the weakened economy, most RFID and RTLS value chain participants reported reductions to marketing expenditure, staff, and on-hand inventory levels beginning in late 2008 and continuing throughout 2009."

As the end of 2009 approached, however, ABI Research's conversations with vendors and solutions providers apparently grew more positive – the market was growing, orders were being placed and user interest was picking up across industries. "Overall 2009 continued the forward momentum for both RFID solution providers and the user community," says Liard. "That trend continues in 2010." The latest research indicates CAGRs of between 21.7% and 28.8% for the five primary applications over the period 2010-2014.

Emblematic of the industry's generally cheerful outlook is Wal-Mart's recent multi-billion unit passive UHF RFID apparel tag and 15,000+ handheld reader RFP order and its expected US rollout, which some observers believe has sparked renewed interest in RFID for item-level tracking.

TI delivers 2.4-GHz SoC for ZigBee RF4CE remote controls

Texas Instruments claims to be shipping the first fully optimized IEEE 802.15.4 system-on-chip for remote control applications. The TI CC2533 enables single-chip remote controls to be built with lower power, higher reliability and lower bill-of-materials (BOM) cost than alternative devices, and provides a solution for home entertainment devices (TVs, set top boxes, Blu-Ray players and home theaters). TI also offers the free RemoTI protocol stack with reference designs and sample applications to implement remote controls and target controllers.

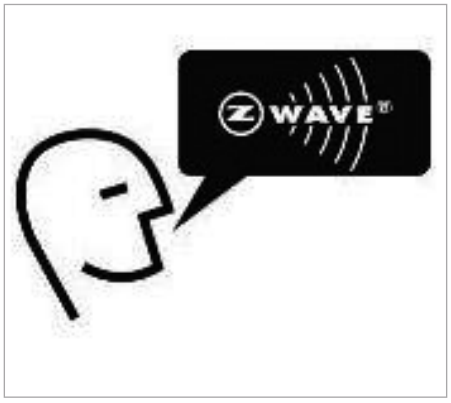
"Texas Instruments has played a critical role in the development of the ZigBee RF4CE standard and TI's portfolio of low-power RF hardware and software will drive even stronger penetration of RF4CE in next-generation consumer electronics," said Bas Driesen, chairman of the RF4CE Steering Committee. "As consumers continue to demand new capabilities and innovation, ZigBee RF4CE delivers the enabling technology to give users a unique and improved living room experience."

ZigBee RF4CE, first announced in March 2009, is a standardized specification for radio-frequency communications that enables faster, more reliable and greater flexibility for devices to operate from larger distances. It removes the line-of-sight and field-of-vision barriers in today's IR (infrared) remotes.

With its two-way communication, the ZigBee promoters are saying that RF4CE opens the door to a whole new set of capabilities and consumer experiences. Except that there are other technologies trying to put a foot through the same door. Bluetooth, for example.

The CC2533 is in production and available now in a QFN-40 package.

low energy wireless news



Green products for the Digital Home

Aeon Labs is now offering homeowners a series of wireless products for them to create environmentally friendly smart homes of the future. The new products, which are based on Z-Wave technology, include the Home Energy Meter, the Minimote remote control and the Z-Stick. Users can integrate these devices into their Home Control Systems and connect them to an interoperable radio-controlled network with other devices. This means that electrical devices can be used as energy-efficiently as possible.

The Home Energy Meter (HEM) is a low-cost energy meter for the entire home. The wireless system transmits values such as wattage and kilowatt-hours to a central control station (gateway) that can be monitored by users.

The Minimote remote control unit enables users to control all compatible devices in the Home Control Network at the touch of a button. There are also four buttons under a sliding cover panel for four different functions: “inclusion”, “exclusion”, “association” and “learning”. So the Minimote can be a remote control unit for Z-Wave-compatible devices, such as dimmers, switches, blind controls etc.

The Series 2 Z-Stick is a self-powered USB stick and can be used to integrate up to 232 devices into the home network via a simple installation process.

Z-Wave Alliance announces 400th interoperable product

The Z-Wave Alliance, which is the consortium that’s working on the Home Area Network (HAN) based on Z-Wave wireless technology, has announced the certification of its 400th product – the Mi Casa Verde Vera Gateway powered by MiOS.

“We’ve come a long way since 2005 from our beginnings in the installer channel, which we continue to serve, to our current position as the leader in home control product solutions through various channels including: retail, security, service provider, and builder and installer. At the rate we’re going, we anticipate reaching 500 certified interoperable products by early 2011,” Commented Raoul Wijgergangs, chairman of the Z-Wave Alliance.

“Lew Brown, EVP of MiOS added: “Vera guarantees interoperability with all 400 certified Z-Wave products and it can be bridged with multiple Vera’s to create an extended Z-Wave network. Our controller will boost the Z-Wave ecosystem presence in the security and retail channels beyond where it is today.”

The Z-Wave Alliance showcased the 400th certified product as well as the other interoperable home area network products at CEDIA 2010 in Atlanta during September. Products on show included Z-Wave energy management tools, lighting and appliance controls, thermostats, door locks, window and shade controls, sensors and security products.

ZigBee passes 100th certified product milestone

The ZigBee Alliance has surfaced to tell Incisor that it has surpassed the 100th ZigBee Certified product milestone, and cites a recent report by ON World that says that ZigBee has been adopted by more than 350 global manufacturers with annual revenues exceeding $1 trillion dollars.

“ZigBee has entered a new adoption phase made possible by years of groundwork and investment by our members,” said Bob Heile, chairman of the ZigBee Alliance. “With our leading smart home standards and continued strong growth in ZigBee Certified products, ZigBee is truly enabling a new era of smart control for consumers and businesses.”

Heile explained that this year, the Alliance has expanded into new industries with the release of ZigBee Remote Control, ZigBee Telecom Services and ZigBee Health Care specifications. The Alliance also began development of a new standard, ZigBee Retail Services. With each standard completed, Heile is confident that more manufacturers will seek the official ZigBee Certified designation, expanding the ZigBee ecosystem of control products for consumers and businesses.

New RFID, low power, ZigBee wireless dev kits from TI

Texas Instruments has launched three new wireless kits. The kits serve as modular extensions to TI’s Stellaris DK-LM3S9B96 development kit to give engineers software and reference design solutions for adding RFID, low-power RF and ZigBee capabilities to designs. TI is building on its portfolio of 16-bit, ultra-low-power MSP430-based wireless connectivity solutions, now providing 32-bit Stellaris MCU performance for execution of additional advanced connectivity and control functions.

When coupled with the DK-LM3S9B96 development board, each kit includes all of the hardware and software needed to design, and the quickstart application included in each kit allows developers to evaluate working networks in 10 minutes or less. TI says that the integration of Stellaris MCUs paired with it’s wireless solutions will help developers address the demand for extensible functionality in wireless networking applications, such as pre-pay options in smart metering, remote monitoring for home automation and backup systems for security, alarm and plant engineering.

The Stellaris Wireless Kits are available now.

ZigBee RF4CE: Radio Frequency 4 Consumer Electronics

By Joe Lomako, TRaC

RF4CE IS A RECENT ADDITION IN THE ZIGBEE RANGE OF GOODIES BUT HAS A DIFFERENT ROLE TO PLAY WITHIN THE TRADITIONAL ZIGBEE OFFERINGS. IT IS SET TO REVOLUTIONISE THE WAY WE CONTROL OUR CONSUMER ELECTRONICS PRODUCTS. HOWEVER, THE CONSUMER IS GENERALLY UNAWARE OF THE EXISTENCE OF RF4CE AND HOW IT WILL PROVIDE ADDED VALUE, CONVENIENCE AND EFFICIENCY IN THE HOME. TRAC PROVIDES ANSWERS TO COMMON QUESTIONS THAT CROP UP REGULARLY ABOUT ZIGBEE, THE COMMON QUESTIONS ARE ANSWERED BELOW.

What is RF4CE? Otherwise known as ZigBee RF4CE, it is a joint initiative which was established in early 2009 with the merging of the RF4CE consortium and the ZigBee Alliance. The ZigBee RF4CE group has developed a standard specification for the production of multi-vendor RF target and controller device communication. It consists of an RF4CE platform (chip) which supports a platform / profile approach, as we have previously seen with other ZigBee devices.

There are three profiles either published or in development. The first one, which is the one most consumers will recognise, is the ZigBee Remote Control Application (ZRC) profile. This profile was approved in the Summer of 2009. The other profiles in development are the Human Interactive Device (HID) profile, which would be used in applications such as gaming, and the 3D Goggle profile, which could also be used in gaming but also for audio/visual applications.

The ZRC profile is the one which most people will relate to and where we will see the first products, so we will concentrate on ZRC as a means of illustrating the RF4CE capability. ZRC provides a means for manufacturers of many different types of consumer electronics products to produce a single RF remote control system which can be used in many different applications, for example, the usual audio visual products such as televisions and music systems or home automation systems.

What does ZRC offer that the traditional IR systems cannot?

Well, it's quite simple: ***advanced functionality!*** This is something that I am particularly interested in; and my story is (probably!) very similar to everybody else's. At home I have five remote controls: TV, DVD, Set-top Box, Sound system and one for the embarrassingly ostentatious dimmer switch. So, you have this mountain of remote controls to choose from and you could be constantly juggling these just to get your setting correct before you sit down to watch a movie. However, with the ZRC, the functionality of all my remote controls could be encased into one single unit (remote control). Imagine, the next time you sit down to watch your movie – you select your set-top box to a particular movie channel, the sound is automatically routed to your sound system, the lights in the room are set to "movie mode". The DVD player isn't needed so the ZRC system turns it off (hence power saving). All of this by the press of one button! So clearly this is a remarkable technology. What's more this is only one scenario. Of course there are many other advantages: the remote control doesn't need to be pointed at the device like the traditional IR systems; they have a longer range; there is a "remote locate" functionality – so no more lost remote controls and there are many more uses such as in game consoles, monitors, PC's and the list goes on. The opportunities which are available for application into other consumer electronics products is constantly growing, and no doubt the "bright sparks" developing these products will come up with innovative and interesting new ideas.

How does RF4CE work?

Basically, the principle is similar to that of other ZigBee products. As shown in ***figure 1.*** The ZigBee RF4CE stack sits on top of an IEEE 802.15.4 radio. The "stack" consists of a ZigBee RF4CE Network Layer and then each of the profiles for the various applications sits on top of this. This abstract is of course an over simplification but gives a good basic interpretation of what is going on.

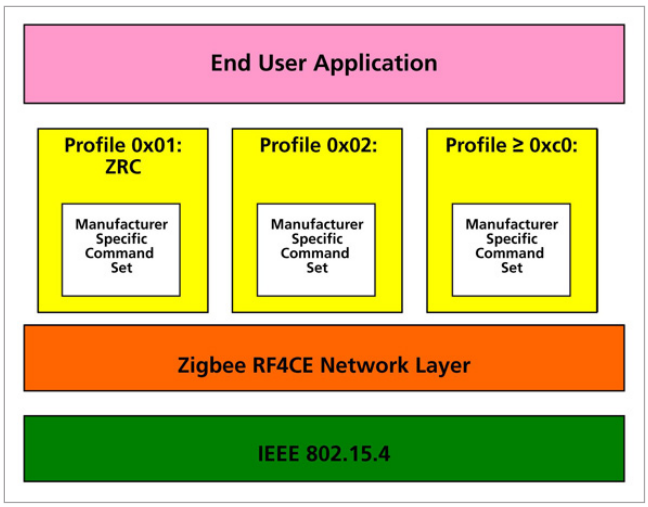


Figure 1

RF4CE technology fits well within the family of other ZigBee technologies: it operates in the 2.4GHz band and possesses the channel agility facility to maintain the best channel conditions. The power consumption and power saving ability is more favourable than IR and security is standard to protect data confidentiality and authenticity.

What regulation and certification is required?:

From a regulatory perspective, the test standards which may be applied are the same as those for other wideband short range ZigBee devices. This applies for both the European and North American markets. If a manufacturer is seeking to market their products further afield then they can quite often use test reports from EU and North American markets as part of their application to market their product in that country; otherwise "in-country" testing is required, for example in the Russian Federation.

Additionally, if a manufacturer wishes to use the ZigBee logo and/or employ the ZigBee intellectual property they must first attain ZigBee certifications. There are two types of certification; RF4CE platform certification and profile testing (eg. ZRC). For an end device to be granted certification it must consist of a compliant profile built on top of a compliant platform. Essentially, if a manufacturer wishes to place a product on the market it must comply with the regulations of the appropriate geography and the ZigBee Alliance certification requirements

Moving Forward:

With the benefits of this technology clearly evident, it is not surprising then that interest is growing inside and outside of the ZigBee Alliance. We at TRaC have been advising many companies (who are looking into employing RF4CE technology) on the correct and efficient compliance and certification routes, and the diversity of applications is very exciting.

The Consumer Electronics Show (CES) in Las Vegas in January 2011 will no doubt provide a greater insight into products and scenarios where ZRC would offer the advanced functionality of RF4CE. We may even see some of the final products. All of the big names in consumer electronics will be attending and TRaC will certainly be there, so if you are attending (and I strongly suggest that you do) don't forget to look us up!

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The eerie shenanigans of Ultra Wideband

by Dean Anthony Gratton

With Halloween approaching it only seems fair to share with you a ghost story. There have been some eerie shenanigans with Ultra Wideband. Some have speculated that Ultra Wideband had reached an early grave. Many even assumed that the technology had sadly passed away during the commotion of the Bluetooth Special Interest Group (SIG) attempting to acquire the WiMedia Alliance members' IP. However, recent rumours have seemingly dispelled the premise of a premature death. In fact, some have seen ghostly visions of Ultra Wideband, exclaiming in shock and horror "nah, can't be, the technology is dead!" Yes, the Ultra Wideband story has become one of those anecdotes, mostly commonly witnessed in YouTube video pranks.

Let me explain… I'm sure we've all seen the video clips where a rookie police officer is sent to a morgue; his colleagues having clearly set him up. The attending mortician duly pulls the corpse from the refrigerated drawer whereupon the presumably dead person unexpectedly sits up and bellows. The rookie officer proceeds to perform his breakdance of hysterical terror, as he reels from the apparition. Meanwhile the officer's colleagues are helpless with laughter. Now Ultra Wideband seems to be pulling a similar stunt and is scaring the bejesus out of us! Crikey, we have all said our goodbyes along with our mournful prayers, but the technology keeps rebounding. In fact, I can confidently liken Ultra Wideband to Michael Myers in Halloween. No matter how creative you are with your slaying, he just keeps on coming. So, has Ultra Wideband risen from the grave? Knock once for yes and twice for no. I dare say, it never died – it was merely reanimating! Eeeesh, it does all sound a little Halloween-ish and I'm eager to find out more.

It's very early in the morning, as I write this column and I'm listening to the new album from Brandon Flowers, Flamingo, quietly in the background. I love this time of the morning; just sitting here with my coffee and trying desperately to ignore my TweetDeck, as it incessantly chirps away.

You don't ask, you don't get

I'm hoping you recall from last month's Members' Club Only: Low Power Wi-Fi feature and the month before, that I openly requested more information surrounding Cambridge Silicon Radio's (CSR) alleged Ultra Wideband offering, which was publicly available on the Bluetooth Special Interest Group's (SIGs) website. If you didn't see it, then you can find out more by clicking here. Well, it seems, I have pushed and prodded successfully, as a few stories have bubbled up to the surface, although not necessarily all of them surrounding CSR's gossip. Nonetheless, CSR was kind enough to respond. In a statement they said "this was qualified on 16th July, and is part of CSR's research into the potential for the same ultra-high speed technology which CSR had previously demonstrated." I know that CSR has successfully placed its dock through the Bluetooth qualification programme, but I'm not entirely sure about the clarity of their statement, as it sounds a little vague to me. Come on guys, give

us specifics! Perhaps, the guys at CSR are still bamboozled, following the recent departure of a key founder, namely James Collier!

I have discussed both the WiMedia Alliance and the Ultra Wideband technology on many occasions over the past few years and I'm aware of its turbulent journey over that time. I even recall a particular company I worked for, as far back as 2004, who at the time were being recruited to the, 'which is better' saga: Multi-band Orthogonal Frequency Division Multiplexing (MB-OFDM) or Direct Sequence Ultra Wideband (DS-UWB)? Let's just say that the company in question made the right decision. Ultra Wideband has had its fair share of highs and lows and I wanted to be sure that this time all the new press and rumours were founded and genuine, so I started my investigation.

Silence is golden

As I started to learn more about the alleged cause of death, just like a determined forensic pathologist, I was pleased to discover the revelation that the WiMedia Alliance is still very active. I caught up with Mike Krell, Senior Director for Alereon (alereon.com) who confirmed, "[The] WiMedia Alliance is alive and doing what it needs to do and the members are responsible (primarily) for what is happening in the press." The WiMedia Alliance has opted for the 'silence is golden' stance, as Krell admits that, to a greater extent, the press and presumably everyone else assumed Ultra Wideband had gracefully passed away. Evidently, the WiMedia Alliance continued to mull over their future in the knowledge that the ghostly vision some people had been witnessing was indeed real!

So, how would the Alliance convince the press, industry and everyone else that the technology was still alive? The Alliance decided to adopt a strategy where they would simply concentrate on shaping the specifications and letting the products do the talking. As Krell confirms "we would focus specifically on moving our spec forward and let products in the market be the proof of existence and success." Incidentally, Alereon has introduced new Ultra Wideband products for Imation, Toshiba and Hanshin.

Ultra Wideband – in the flesh...

There have been a number of companies confidently touting their brand new Ultra Wideband chipsets. Samsung (samsung.com), for example, expects its S3C2680/S5M8311 WUSB chipset to enter mass production this quarter (Q4 2010). The new chipset supports high-speed, low power data transmission for a host of mobile devices and, of course, Samsung has targeted its two-chipset wireless USB solution for wirelessly delivering high-definition content. In particular, the Korean giant has grand expectations for its new chipset to be integrated into TVs and PCs whilst eying other opportunities with tablets, printers, blu-ray players and Smartphones. Samsung clearly has the clout and capability to push the technology, as its product portfolio is immense. In a press statement, Yiwan Wong, Vice President, System LSI marketing, Samsung Electronics confirmed the company's motivation "Samsung's new WUSB chipset delivers up to 480Mbps (Megabit per second) data transmission rate, at an average power consumption of less than 300mW. This level of power efficiency greatly increases the attractiveness of WUSB connectivity in consumer electronic and mobile applications."

Samsung isn't the only company shouting about Ultra Wideband. Zebra Enterprise Solutions (zes.zebra.com) has also launched a real-time locating system based on Ultra Wideband. I'm sure you already know that Ultra Wideband emerged from military applications and it seems Zebra has targeted its solution for some extreme environments. The company has extended passive RFID technology by utilising new software and hardware solutions for tracking and locating high-value equipment and people. Zebra's Dart UWB offers "precise location accuracy and real-time visibility of highly mobile, high-value asset movement." The Dart UWB technology is targeted towards IT, aerospace, government and so on, and also encompasses hostile locations, such as hazardous and potentially explosive environments. Diana Hage, CEO of RFID Global Solution, Inc. said of Ultra Wideband "UWB appears to be an ideally suited active tag technology for enterprise asset tracking. ZES' proven track record with this technology makes offering the Dart hardware coupled with our Visi-Trac application software an easy choice."

Back from the dead

As I mentioned in my opening gambit, Ultra Wideband hasn't been killed off, it was clearly reanimating. And, it's not just the technology that has been rising from the apparent grave. It seems a lot of companies that have been involved in developing the technology from the ground-up are also making a revival from the dead. With Halloween approaching it seems strangely appropriate that companies such as Artimi/Staccato are making a comeback onto the Ultra Wideband platform.

I suppose it was difficult for the technology to rebound initially after taking such a beating, but with its gathered thoughts and composure I'm hoping the Ultra Wideband technology will start to be taken seriously. Scary maybe, but I marvel at its sheer determination to survive. And with companies such as Samsung, along with many others, supporting its resurrection, I'm sure Ultra Wideband will continue to live on in many future mobile products. I just hope that I won't be writing another obituary in another six months; I suppose time will tell…

Until next month ...

I hear the wife calling me up for an early breakfast and it smells like a full English to me. But, before I finally sign off, there's a nagging question (no, I don't mean the wife). What is the best fully qualified 802.11n access point out there? I have been looking at D-Link, but their products only seem to be 'draft' certified! Anyhow, with that question to ponder on, this is where Dr G signs off for this month. I may follow-up on the low power Wi-Fi article that was featured in last month's column next time, unless, of course, something else appears on my radar!

And finally, I have resigned myself from the possibility of a DASH7 feature, as I personally don't understand what it's all about. Despite my pushing and prodding (proof that it doesn't work all the time), I haven't received a satisfactory response (not even from the Chair himself), so that's it, I won't mention it again; I promise.

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.

high speed wireless news

Zebra launches Dart Ultra-Wideband real-time locating system

Looking for signs that there is life in the Ultra-Wideband (UWB) market? Well, Zebra Enterprise Solutions (ZES) has announced the launch of Dart Ultra-Wideband (UWB) Real-Time Locating System (RTLS) in the United States, Canada and the European Union.

The next generation of the Sapphire UWB product line, Dart UWB provides precise location accuracy and real-time visibility of highly mobile, high-value asset movement. Dart believes that UWB is especially effective in industries characteristic with highly-metallic environments, such as IT, aerospace, financial, federal government and aerospace and defense. Dart UWB also includes a full set of location products certified for use in potentially hazardous and explosive environments as defined by the ATEX Directive in Europe. These intrinsically safe location products have been designed for use in extreme, regulated environments such as petrochemical and other process-focused manufacturing industries.

RFID Global Solution (RFIDGS), a long-time ZES partner and an early adopter of the first generation Sapphire solution, provided input to aid in the development of the next generation Dart UWB product. In a pilot implementation of the Dart solution, RFIDGS experienced benefits including improved ease of system and tag configuration, more ruggedized tags for harsh environments, extended battery life options, increased mobility options and improved integration with RFIDGS' Visi-Trac product line, and global interoperability.

"UWB appears to be an ideally suited active tag technology for enterprise asset tracking. ZES' proven track record with this technology makes offering the Dart hardware coupled with our Visi-Trac application software an easy choice," said Diana Hage, CEO of RFID Global Solution, Inc.

With the first-generation Sapphire product, RFIDGS delivered a hardware and software solution that gained significant traction. Now, with upgraded technology in Dart UWB such as the new configuration tool, RFIDGS told Incisor it is able to automatically configure a customer's system. This improvement reduces field install times and allows RFIDGS to get customers up and running more quickly. RFIDGS sees an opportunity for Dart UWB in industries like aerospace and defence, for example, where mobile training in urban combat centres calls for real-time movement of personnel in simulators.

Dart UWB offers one common UWB active RFID/RTLS platform that enables location of personnel and equipment. By reading thousands of small, active RFID tags per second, Dart UWB allows for an expanded array of both indoor and outdoor asset management applications in the harshest environments.

"With long-range, multi-read abilities, the capabilities and benefits of Dart UWB allow us to provide the location accuracy and environmental durability our customers' desire," said Bill Walsh, General Manager of ZES.

Wi-Fi chips shipped to pass 1B units/year by 2012

Ubiquity, a term often used but seldom realized in technology market-speak, is exactly what Wi-Fi has achieved, say researchers at In-Stat. The number of applications and devices where Wi-Fi is appearing keeps expanding. Not only is Wi-Fi now in nearly every smartphone sold, but in almost every handheld game, tablet, notebook computer, or laptop computer sold. Throw in a host of new applications including automotive, digital cameras, E-readers, Blu-ray and personal video recorders (not to mention new medical and industrial applications) and with every device, there is a Wi-Fi chipset. As a result, there is no mystery, says In-Stat, to its forecast that Wi-Fi chipsets will pass one billion units shipped annually by 2012.

"Overall the Wi-Fi chip business has never looked stronger," says Allen Nogee, principal analyst. "While traditional products like routers, access points, and business gateways are not growing at past rates, many new markets for Wi-Fi chipsets have emerged that more than off-set these slowdowns. Cellular handsets alone will account for almost $2 billion worth of Wi-Fi chip revenue."

Recent In-Stat research found that while the notebook PCs once "was" the market for most Wi-Fi chipsets, handsets have now passed notebook PCs. Most Wi-Fi chipsets currently support the 802.11n standard, however,In-Stat predicts that the 802.11ac and 802.11ad standards will eventually become the predominant technology, and that devices with the largest revenue growth rate over the next five years will include mobile Internet devices, automotive applications, E-readers, and DVD/Blu-Ray players.

Wi-Fi chipsets for notebook computers and mobile handsets are each expected to have revenue of over $1B in 2015.

4G / LTE / WiMAX news

4G LTE netbooks and tablets to represent 20% of LTE subscribers by 2015

According to a new report from Juniper Research, LTE 4G enabled netbooks and tablets will be used by as many as 20%, or 1 in 5, LTE subscribers by 2015.

Juniper found that the many advantages of LTE mobile broadband such as high data rates and reduced latency will result in an ideal environment for the proliferation of new and upgraded end user devices such as netbooks, tablets, digital cameras and games consoles to add to laptops and smartphones.

4G LTE Report author Howard Wilcox gave more details: "Juniper's view is that mobile operators will be keen to embed a wide variety of devices with broadband wireless connectivity, because they see this as a route to stave off ARPU declines: our forecasts show that there will be roughly as many LTE netbooks and tablets combined as laptops by 2015."

However, Juniper believes that there are many hurdles for the mobile ecosystem to overcome before this step change in the connectivity of consumers across the world becomes reality. Not least of these are issues around the availability and customer support for connected devices, and most importantly the business model.

Juniper's primary interviewing programme, which covered the entire LTE industry, found that video streaming and gaming were viewed as the potential top services on LTE – benefiting from the higher speeds and reduced latency made possible by LTE – and that LTE netbooks and tablets are poised to outstrip LTE laptop shipments, especially in the consumer market.

Picochip develops public access femtocell solution

Picochip has unveiled the PC333, a chip specifically designed to extend the femtocell into the realm of public access infrastructure such as metro femto, rural femto and strand-mounted systems. The PC333 System-on-Chip (SoC) device supports 32 channels (scalable to 64) for simultaneous voice and HSPA+ data, and supports MIMO and the Local Area Basestation (LABS) standard. The PC333 enables small basestations for urban hot-spots, city-centres or public access.

The PC333 is, says Picochip, a step towards bringing a complete 3GPP Release 8 Local Area 42Mbps HSPA+ basestation onto a single-chip. LABS is the 3GPP definition for systems with higher performance than home-basestations, allowing higher capacity, 120km/h mobility and +24dBm output power for greater than 2km range. The PC333 supports 32 channels, each with both voice and HSPA+ data and, with Picochip smartSignaling technology, in excess of 400 simultaneous smartphone users. Two of the devices can also be cascaded to support 64 active channels.

"With the PC333 we have extended the parameters of femtocell performance to levels that would traditionally have been considered as 'picocell' or even 'microcell'. This high performance coupled with zero-touch provisioning means carriers can routinely deploy femtocells as part of their wide-area network rollouts. We are already seeing the emergence of femtocells into rural and metropolitan-area basestations; the PC333 redefines the way femtocells are used and networks themselves are architected, leading to the dramatic growth of the basestation market," commented Doug Pulley, CTO of Picochip.

The PC333 samples to lead customers in 4Q2010.

Lime Microsystems announces femtocell RF Quick Start Kit

Lime Microsystems has introduced a Quick Start Kit and an optimised reference design for its multi-band multi-standard RF transceiver IC for femtocells, the LMS6002D.

The Quick Start Kit allows designers to evaluate Lime Microsystems' RF transceiver, the LMS6002D, by measuring output IF/RF parameters. Software included in the kit allows the transceiver to be configured to operate any standard, frequency or bandwidth within the LMS6002D's capabilities; the device can operate WiMAX, WCDMA, CDMA2000 and LTE at any frequency between 375MHz and 4GHz (continuous) in 16 user-selectable bandwidths up to 28MHz. The evaluation board is connected to a PC running the software included in the kit via a USB cable. Alternatively, the evaluation board is compatible with, and can be configured by, any of the baseband evaluation kits currently available for the femtocell market, including boards from all major baseband suppliers.

Lime Microsystems has also introduced an RF reference design for femtocell product designers and manufacturers. The reference design features the LMS6002D in a cost and footprint optimised circuit and is intended to be dropped directly into designs. The footprint of this optimised RF block is 30 by 30 mm and it can operate WCDMA band 1/2 and band 5.

Both the Quick Start Kit and the reference design are available now.

4G / LTE / WiMAX news

Femtocell worldwide revenues will reach EUR 931 million in 2014

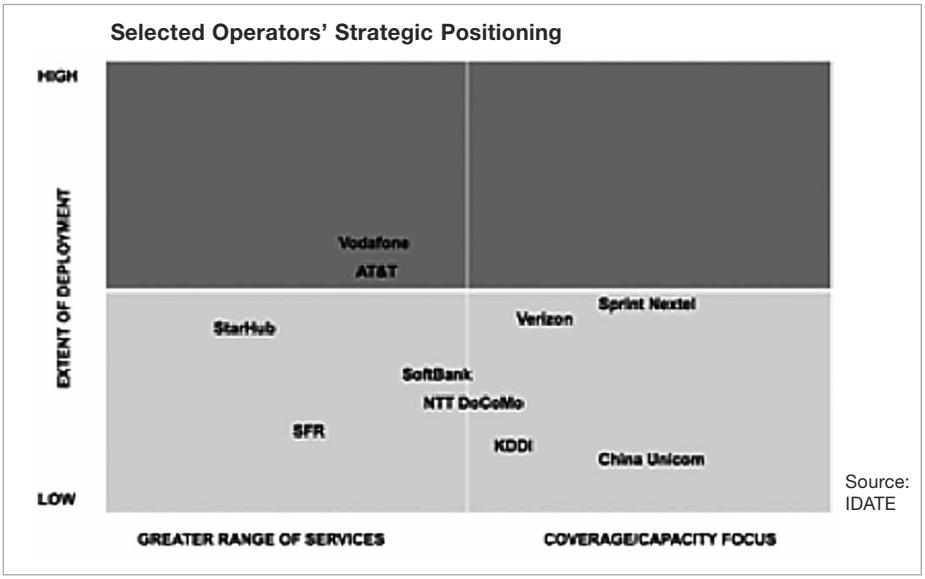
IDATE has published the third edition of its report "Femtocells", which indicates that the market is ready for takeoff. In 2014, femtocell shipments should represent 23 million units worldwide for a total market of EUR 931 million. The compound annual growth rate for the market volume between 2010 and 2014 is forecast to be 159%.

"Following a slow start, the number of operators launching commercial femtocell services is now increasing quite rapidly, particularly in the US, Japan and developed parts of Asia", commented Frederic Pujol, head of the mobile practice at IDATE.

There are multiple drivers to femtocell adoption, both from the operator and the consumer perspective. From the operator's point of view, femtocells offer a cost-effective means of providing additional coverage and capacity while reducing CAPEX/OPEX and improving retention. From the consumer perspective, femtocells offer improved residential cellular coverage, potentially lower in-home call charges and the ability to use one handset both in and out of the home.

At this early stage in the industry's development operators are mainly focussing on coverage and capacity problems, though some are now beginning to formulate a range of femto-based services.

Concepts such as data offload in relation to the femtocell proposition are also steadily gaining ground and it is likely that, once the femtocell market develops further, a range of new femtocell-based business models will emerge. In the US and Japan, in particular, the conditions for a competitive market are increasingly falling into place and with them a greater likelihood of mass market adoption.



Source: IDATE

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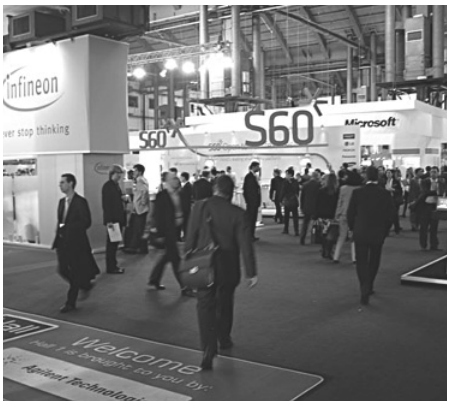

DATE	EVENT	LOCATION	NOTES	LINK
Oct 4 - 8 2010	Bluetooth SIG UnPlugFest 37	Barcelona, Spain	-	www.bluetooth.org
Oct 5 - 6 2010	Connected Home Global Summit 2010	London Heathrow Marriott Hotel, London, England	-	Connected Home Global Summit 2010
Oct 19 - 20 2010	CAT-iq Developers Conference	Eindhoven The Netherlands	-	www.cat-iqconference.com/
Nov 8 - 10 2010	2010 mHealth Summit	The Walter E. Washington Convention Center, Washington, D.C., USA	-	www.mhealthsummit.org
Nov 10 - 12 2010	China Electronics Fair	Shanghai New International Expo Centre, China	-	http://www.icef.com.cn/fall_eng/index.shtm
Jan 6 - 9 2011	International Consumer Electronics Show (CES)	Las Vegas, Nevada, USA	-	www.cesweb.org/

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