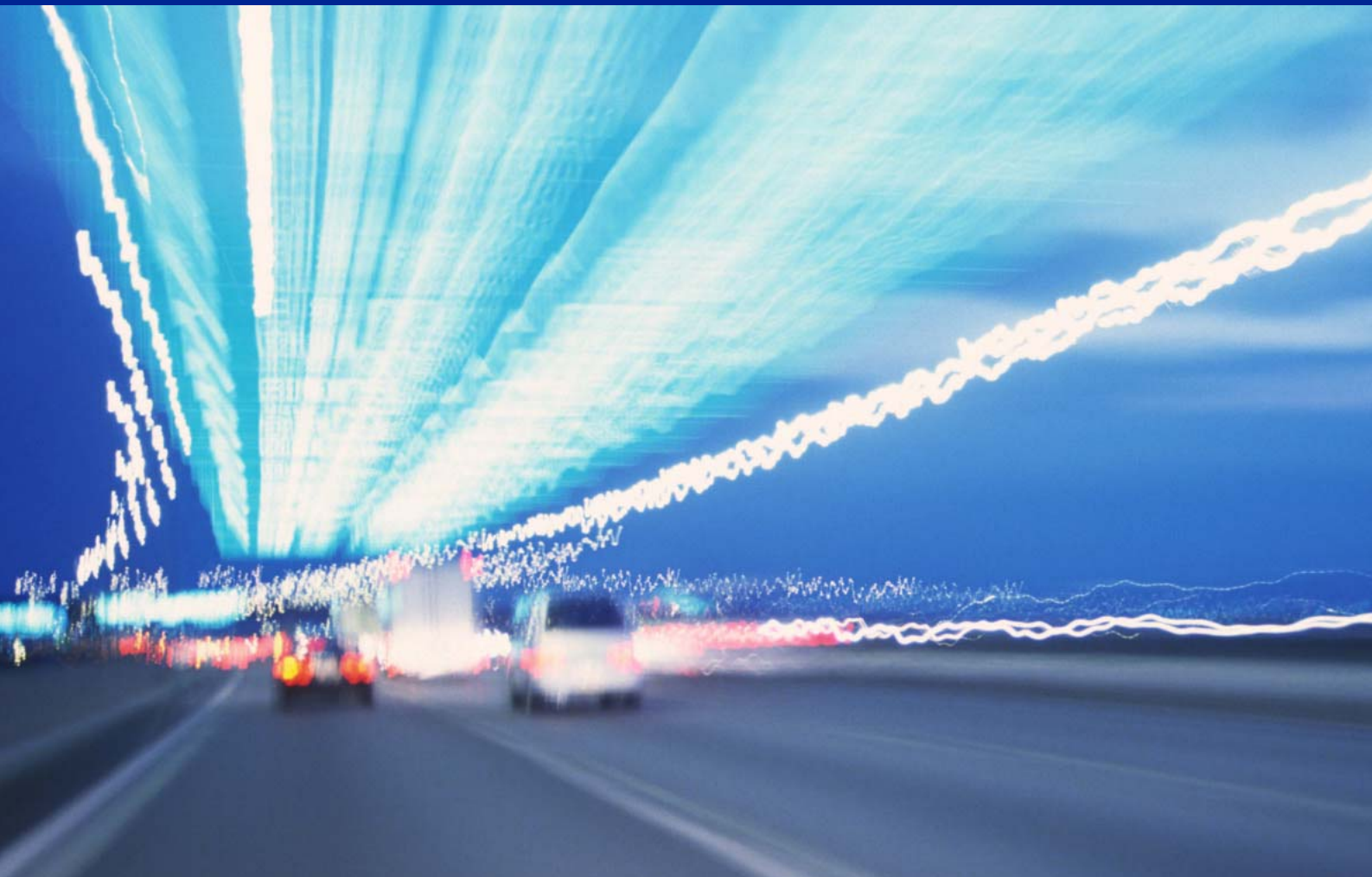


INCISOR™

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environment

Video enabled  Issue 128

November 2008



HANDSET COMPANIES SPLIT OVER HIGH SPEED

THIS ISSUE

UNLOCKING THE POTENTIAL OF HIGH SPEED BLUETOOTH
CTIA BLUETOOTH TESTING
WHAT LED UP TO THE LAUNCH OF BLUETOOTH?

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uwb, or not to uwb?

I recently attended the 2008 Bluetooth Evolution Conference, staged in London by the Bluetooth Special Interest Group and IMS Conferences. This was an extraordinary event, in that it opened my and many other people's eyes to the current lack of interest in UWB that is being shown by the many of the handset companies. The WiMedia Alliance rejects the idea that this is a major problem for the technology. Read my event report to get the full picture.

Bluetooth testing is another flavour this month. On both sides of the Atlantic, network operators/cellular carriers are adding layers of interoperability testing to make life easier for consumers trying to use Bluetooth equipment. Is this necessary? Doesn't the Bluetooth SIG's own testing handle this? Test industry guru Siegfried Lehmann of Cetecom provides an insight.

Things are happening here at Incisor too. Our website is getting a major make-over. It already looked pretty, but our aim is now to make it a much more valuable portal for anyone – industry or consumer – looking to learn about WPAN and general short range wireless developments. There is now a constantly updated news feed, and heck – I've learned how to blog! All of this should be live by the time you are reading this.

What's more, we going live now with a major new project, which is to broadcast a daily Incisor TV show from CES this year. If you want to be part of this, [see the dedicated page in this issue](#).

And just to remind you, if you are interested in working with Incisor at CES, or at any other time, please talk to Mike Knivett. Mike is Incisor's Commercial Director. Email him at mike@incisor.tv

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

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Industry feedback:

‘No other vertical market title addresses the short range RF market like Incisor’

Alan Woolhouse,
VP Marketing Communications
CSR



CSR Q3 results – growth continues, belts tighten

CSR has announced its unaudited financial results for the third quarter of 2008. Performance for the quarter was in line with guidance - revenues were \$205.5m, up 9% over the second quarter. The company has also achieved gross margins of 44.5%, which was again consistent with previous guidance and the prior quarter. However, CSR commented that the difficult economic environment is having an impact on customer end markets and as such the company expects to reduce combined R&D, sales, general and administration expense in 2009 by around \$20m from 2008 levels. Talking to CSR, Incisor understands that this will involve some headcount reductions.

CSR remains confident and says that it expects to maintain or extend its leadership position in the key markets of handsets, headsets, automotive and consumer electronics. The headset market continues to be strong for CSR, which estimates its market share to be around 80%.

CSR CEO Joep van Beurden commented on the results, "Our exclusive focus on the Connectivity Centre is serving us well, and the growth opportunity it provides is compelling. We are also seeing widening demand for our products in non-cellular applications, such as gaming and audio. We are aligning our business and cost base with the changed economic conditions while reinforcing our ability to develop and deliver innovative new products, grow market share and capitalise on the future growth opportunities available to us. We are accelerating completion of an operational assessment we undertook earlier this year and we have identified significant further efficiencies we can secure alongside an expected reduction in headcount."

At the time of writing, the markets seem to have reacted to CSR's results in a favourable fashion, as the CSR share price, which has been under pressure for some time, was on the way upwards.



Twice as many road warriors have Bluetooth over Wi-Fi

OK, so we are twisting things a little with our use of statistics to make an interesting headline (so shoot us), but that was one fact contained in a recent update from market researchers at In-Stat. It has conducted a survey of its Technology Adoption Panel to determine what devices road warriors travel with, and what interface options they use.

The results from 522 respondents show that 85% travel with a notebook PC, 66% with a mobile phone, 43% with a smart phone, 53% with a headset, 38% with a portable media player, 21% with an external storage drive, and 17% with a PDA.

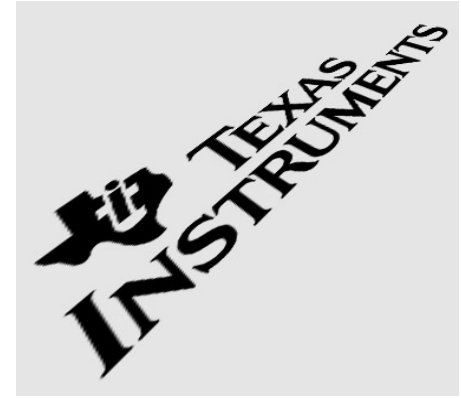
In terms of notebook connectivity, Wi-Fi was used by 93% of road warriors with notebooks, while USB was used by 84% and Ethernet by 72%. Those using Wi-Fi in their notebook employed it to connect to a hotel hotspot/wireless network (88%), or to connect to a public hotspot (60%).

Within mobile phones and smart phones, road warriors reported a variety of interface options, including 75% with Bluetooth, 52% with USB, and 39% with Wi-Fi.

As they say, you can prove anything with statistics.

TI expands support for the Open Handset Alliance

Texas Instruments (TI) tells us that its Bluetooth and WLAN technology software drivers are now available for use in the [Open Handset Alliance's](#) Android platform. Android is, of course, Google's attempt to get in on the handset operating system act.



TI says it is a long-time supporter of the open source software community.

TI previously announced support for the Android platform with its OMAP 3 applications processors, and is now providing the connectivity elements for its BlueLink Bluetooth and WiLink WLAN technologies. Additionally, TI is leveraging the Apache and BSD-style licenses in support of the Android platform. With these licenses, a broader number of companies are predicted to be able to adopt the Android platform.

TI joined the Open Handset Alliance as a founding member in 2007, supporting Android development with its OMAP, Bluetooth and WLAN technologies.

Rapid evolution of the Ultra-Mobile Device Market

The fledgling market for ultra-mobile devices (UMDs) – a catch-all term that includes ultra-mobile PCs (UMPCs), netbooks, and mobile Internet devices (MIDs), all of which require high levels of wireless connectivity, mind you – is already complex, and will become more complicated as it grows. A few salient forecast numbers may serve to guide vendors and investors.

According to ABI Research, total revenues earned by vendors in the UMD market are expected to increase from \$3.5 billion in 2008 to nearly \$27 billion in 2013.

This year, retail sales account for only 14% of shipments, while UMDs provided by mobile operators stand at nearly 30%; the balance are sold directly by manufacturers. Over five years, however, that distribution mix will change significantly. Operators currently subsidize UMDs for the sake of their potential services revenue, but they would prefer not to. By 2013, only 20% will be operator-provided, while retail sales are expected to account for 75%.



OMTP matches CTIA for Bluetooth user experience improvements

Incisor has learned that the US-based CTIA Bluetooth test programme initiative discussed in this month's interview with Cetecom's Siegfried Lehmann (see page 8), has been mirrored in Europe by the Open Mobile Terminal Platform (OMTP), another mobile operator sponsored organisation. Jason Adams, a senior engineer at T-Mobile UK told Incisor that OMTP has released a set of requirements that provide a clear direction on the support of a consistent set of Bluetooth profiles for mobile devices and accessories.

Adams commented, "The hope is this will help IOT testing and improve customer's expectations of what Bluetooth can provide. This project was technically supported by Nokia, Qualcomm, Sony Ericsson, Telefonica, T-Mobile, Hutchison and AT&T." The OMTP initiated a task with the objective of improving the end user experience for Bluetooth. Recommendations have now been published and are available for public download from www.omtp.org/publications.aspx. The recommendations support a number of scenarios, including the use of Bluetooth for connection with a headset, listening to stereo audio, in car use, transferring files between a variety of devices and wireless printing. The recommendations define two classes of Bluetooth which must be implemented on a mobile terminal with Bluetooth Core Specification Version 2 + EDR (Enhanced Data Rate).

"Bluetooth is a key capability in mobile devices but at present, it is not always clear which devices can connect to other devices or accessories for different wireless features," said Tim Raby, Managing Director - OMTP.

Following publication, OMTP says that it will strengthen its working relationship with the Bluetooth Special Interest Group and other

interested groups to ensure a wider adoption. In parallel, work will continue in OMTP to provide recommendations for future Bluetooth core specifications and associated profiles. With the US and European carriers each setting out to smooth the path for Bluetooth users, things have got to improve, haven't they?

CSR and Bluegiga provide Bluetooth for the Polar Team2

CSR's BlueCore Bluetooth silicon is providing wireless connectivity for the Team2 heart-rate monitoring system from Polar. The system comprises of up to 28 Bluetooth heart-rate monitors that link up to a PDA, PC or laptop to log and process the data via a Bluetooth Access Server platform from Bluegiga. The system is aimed at sports teams, research centres and universities to monitor and improve the performance of athletes.

The Bluetooth connectivity in the Polar Team2 system is provided by Bluegiga's WT11-A Class 1 module which uses CSR's BlueCore4 silicon and Bluegiga iWRAP Bluetooth connectivity firmware. Bluegiga's Access Server which is based on multiple CSR BlueCore4 chipsets, allows the system to wirelessly collect and analyse data from up to 28 players simultaneously. This enables the heart rate monitors to achieve a battery life of up to 30 hours when using Bluetooth and a range of up to 100 metres – so it is suitable for monitoring the players in field sports. The Team2 heart-rate monitors are water resistant down to 30 metres, shock resistant and each system comes complete with PDAs and PC software for uploading the data and providing analysis.

"The heart rate monitors need to work under the stress and conditions experienced by the athletes that use our Team2 system, and by working with CSR and Bluegiga we have ensured that the Bluetooth wireless connection is of the highest quality to give the best user experience," said Mika Laine of Polar.

Polar's Team2 system will be available at the end of November.

New Bluetooth + FM Solution from Broadcom

Broadcom has announced a new combination chip that integrates a Bluetooth 2.1 + enhanced data rate (EDR) baseband, radio and software, along with an FM stereo radio transceiver, on a single piece of silicon. This adds FM transmit capabilities, enhanced voice and stereo audio processing, and embedded software functionality. These are delivered on a 65 nanometer (65 nm) chip.

"Handset makers are looking for solutions that deliver audio and multimedia experiences on cellular handsets comparable to advanced MP3 player-type devices without impacting battery life," said Craig Ochikubo, Vice President & General Manager of Broadcom's Wireless Personal Area Networking line of business. "Our new combo chip enables these applications with added processing capacity, enhanced radio transceiver performance, and unique, embedded software functionality."

The BCM2049 features SmartAudio voice processing and Bluetooth radio enhancements that are said to improve voice quality and the range of mono-headset connections. The integration of the FM transmit function in the BCM2049 eliminates the need for external adapters and allows audio streaming to automobile and home stereo FM receivers. The embedded audio processing Bluetooth stack software enables the BCM2049 to support capabilities on lower tier handsets that, says Broadcom, otherwise would not have the required processing power to execute them effectively.

The BCM2049 also supports stereo Bluetooth audio streaming (either FM radio or digital music files), and the ability to simultaneously distribute streams to multiple stereo headphones, creating a wireless networked music environment.

INCISOR TV GOES TO CES 2009



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On Thursday the 8th and Friday the 9th of January – the first two days of CES 2009 – Incisor TV will compile a news and feature show of approximately 25 minutes duration that will be broadcast via the Incisor TV web site. The show will include news bulletins, interviews with senior executives of companies that are attending the show, company profiles, product overviews and a general flavour of trends and developments at this, the most important consumer electronics show of the year.

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Option 3

Dedicated interview at IncisorTV suite to create a 2 minute focus piece as part of the daily news show. Product demos can be included provided they are contained in the 2 minute piece.

Option 4

Dedicated interview at client's booth to create 3 minute focus piece to be included in the daily show. Product demos can be included provided they are contained in the 3 minute piece.

All Incisor TV and Incisor magazine content can be viewed at www.incisor.tv

new products



Motorola ships HD stereo headset

Motorola has announced the U.S. availability of its Motorokr S9-HD wireless stereo headphones, the enhanced version of the Motorokr S9 ([winner of Incisor's last stereo headset review](#)), upgraded with high-definition surround sound. The headphones also feature noise-isolating ear buds to reduce background noise for music and calls.

The ear buds work to isolate outside noise and have a ported design to help channel music to the ear canal while what Motorola calls the SRS WOW HD software improves 3-D sound and high-definition acoustics.

"Every aspect of S9-HD - audio quality, style, fit, comfort and functionality - was designed with active users in mind so they are in control of their music and calls while exercising or on the go," said Sean Ramsey, general manager, North America, for Motorola.

The Motorokr S9-HD comes with noise-isolating ear buds and D650 adapter for iPods, and is available in the US now for \$139.99.

Footnote: It should be said that with two samples of the original S9, Incisor experienced a mechanical problem with the volume switches that only manifested itself after a period of use. It is to be hoped that time has resolved this issue. We will let you know once we have reviewed the S9-HD.

Omni Labs Medallion removes ear clutter

All those people who still find it just too geeky to be seen walking around wearing a Bluetooth headset now have an option.



Omni Laboratories has launched Medallion, which it describes as a personal, wearable Bluetooth speakerphone with full duplex capability so that both parties can have a real conversation, and which 'eliminates the need for ear-obstructing hardware'. That will be your conventional headset then.

The Medallion can be worn on the included lanyard, or clipped onto a shirt pocket or lapel. When a call comes in you push a button and talk. Omni Labs believes that the speakerphone is so light weight (1.25oz) that users will probably forget it's there, and claims a talk time of 4 hours and stand-by of 'over 150 hours'.

Omni Labs is also claiming to have made the job of pairing a cell phone to a Medallion take just seconds. We hope to get a review sample to look at soon, and will find out whether that is the case, or not.

And we will see whether people feel less stupid walking around and talking to their lapel than they do wearing a conventional Bluetooth headset. Any comments, anyone?

The Medallion has an US RRP of \$80.00.

Two mics, less noise

GN Netcom can always be relied upon to be at the front of the pack with new headset developments, and, true to form, the new Jabra BT530 features Noise Blackout, a noise cancellation technology that GN claims eradicates all ambient sound, without compromising on voice quality.

Developed by GN Netcom, Noise Blackout uses dual microphones to capture sound whilst filtering background noise to offer premium audio quality.



Used together with DSP technology and Audio Shock Protection (monitors incoming audio volume), sound is balanced to block out background sound, leaving both sides of the call with a natural sounding voice quality that's second to none.

The Jabra BT530 uses auto-pair technology and its multiuse capability means the headset can connect to a mobile phone and PC at the same time. It also supports the A2DP profile, offers up to 5½ hours talk time and a massive 250 hours standby time, while weighing in at 10 grams in weight.

Incisor has a review sample and will let you know how it works in the next issue. Meanwhile, the BT530 is available now and has a UK price of approximately £49.99.

new products



CSR inside Aliph's new Jawbone headset

When it started shipping last year, Aliph's Jawbone headset was perceived to be a standard setter. It used CSR's BlueCore3-Multimedia silicon, and was certainly Incisor's default headset for a while. We now learn that the new version of the Jawbone Bluetooth headset uses CSR's BlueCore5-Multimedia with its integrated Digital Signal Processor (DSP) to enable Aliph's patented NoiseAssassin noise elimination technology.

The new Jawbone is 50% smaller than the original – its size was the only criticism that you could really level at the original Jawbone – and features enhanced noise elimination technology. The two companies claim even better voice quality in a smaller and more ergonomic package.

CSR's BlueCore5-Multimedia's DSP architecture allowed the designers at Aliph to add features that help boost the performance and functionality of the Jawbone headset. NoiseAssassin technology literally feels the user's speech with its patented Voice Activity Sensor (VAS). The VAS allows the Jawbone headset to distinguish the user's voice from ambient noise with unprecedented accuracy. The proprietary NoiseAssassin algorithm uses the CSR DSP to cancel out noise while accurately preserving the user's voice.

Richard Drysdale, Vice President, Product Management & Strategy, Aliph said, "The new Jawbone needed to improve on the high standard set by its predecessor and, by moving to CSR's fifth generation multimedia Bluetooth technology, we are able to offer our customers industry leading wireless audio performance."



According to Anthony Murray, Senior Vice President of CSR's Wireless Audio Strategic Business Unit, CSR's multimedia BlueCore products are the only Bluetooth ICs on the market to integrate a high performance DSP and CODEC. "CSR has designed BlueCore5-Multimedia to provide exceptional audio and radio performance at low power consumption".

Nokia goes small

Nokia has revealed its smallest Bluetooth headset to date, the Nokia Bluetooth Headset BH-804. This has a genuine aluminum case and Nokia is claiming superior audio quality and the latest audio features, including digital signal processing (DSP) for background noise cancellation.

The BH-804 has two buttons for managing basic call functions and volume level. It comes with a desk-top charger and neck strap for charging, storage and carrying.

It is small - 42 x 13.6 x 6 mm, and weighs just 7.2g. Nokia claims a talk time of 4 hours and a standby time of 150 hours, while a full charge takes 1 hour. The BH-804 supports the Bluetooth 2.0 specification with EDR and the Hands-Free (HFP) Profile 1.5 and Headset (HSP) Profile 1.1

The Nokia Bluetooth Headset BH-804 is expected to launch in selected markets in the fourth quarter of 2008. No price was quoted in Nokia's release.

Our worry is that we already lose Bluetooth headsets quite easily – and we know we are not on our own. If this down-sizing trend continues, what hope



is there that we will ever be able to hang on to these things!

SouthWing takes Euro Bluetooth to the USA

With more and more US States adopting restrictions on the use of cellphones in cars, SouthWing is exporting what have rapidly become accepted European solutions. In addition to its conventional Bluetooth headsets, SouthWing has launched the SF350 speakerphone, which, with its magnetic clip, can easily be attached and detached from the sun visor. A built-in DSP provides echo cancellation and noise reduction ensures clear conversations, full duplex communication and natural speech.

"These car kits have been around for quite some time and are extremely popular in Europe and we want to offer the same high quality Bluetooth products to our American customers. Because of hands-free laws recently enacted in various states these car kits are becoming more and more popular for drivers who do not want to fumble around with a small Bluetooth headset while driving, the SF350 just clips onto the sun visor," stated Bart Huisken, founder of SouthWing.

The Bluetooth 1.2 compliant SF350 has a 2 Watt speaker, uses PSP: Digital Signature Processor Technology and offers 10 hours talk time. It retails in the USA for \$59.



Interview: Siegfried Lehmann, CETECOM Inc.

CTIA Bluetooth testing



It is widely accepted that the Bluetooth specification is sound, well thought-out, stable and includes exhaustive interoperability and conformance testing to make sure that people using Bluetooth have the right experiences – that things work the way they should. In other words, the process of pairing headsets and handsets, setting up features such as voice control, pairing with multiple devices, managing audio streaming – voice and music – during calls, etc, should all work the way the spec mandates.

But it doesn't always work, and while the Bluetooth SIG continues to refine and develop its interoperability and conformance test programmes, another body, the Cellular Telecommunications and Internet Association (CTIA), has now become involved in the process, adding its own layer of testing.

Incisor spoke to one person deeply involved in the process, Siegfried Lehmann, Director of Wireless Technologies at CETECOM Inc. in Milpitas, California. Lehmann has been involved with Bluetooth technology since its early beginnings in 1998. His work included the development of the initial Bluetooth Test Specification and TTCN, to Chairman of the BTI working group from 2005-2007. He is currently a Bluetooth Qualification Expert (BQE) at CETECOM and his contribution to the industry was recognised earlier this year when he was inducted into the Bluetooth SIG Hall of Fame. This recognises individuals who have dedicated a lot of their time to the development and promotion of the Bluetooth technology.

Lehmann's company, CETECOM Inc., is a leading provider in consulting, testing, certification, and approval services for the wireless industry with testing laboratories in Europe, the U.S. and Asia. So what exactly is the problem? Well, even the task of getting levels of

Bluetooth interoperability to where they are today has been enormous. In fairness, the Bluetooth SIG has done the job better and more thoughtfully than other wireless associations. But ... We have all either experienced ourselves, or heard stories from friends, colleagues, family that the Bluetooth device they have been trying to use doesn't work the way it should. Because we are all human, and concede as a matter of principal that we are therefore fallible, we assume that it is our fault – we aren't doing something correctly - and give up. How many Bluetooth devices are there gathering dust on shelves or in drawers for this reason? Well, the self-blaming consumers should draw some comfort from the fact that for people involved in a business such as Incisor's, where we get to use a lot of different Bluetooth devices, these failures are not rare occurrences. And in a lot of cases, it is not user-error that has caused the breakdown, it is simply the case that the product isn't working the way it is supposed to work.

This is a problem and an irritation for the user. But imagine for one moment the position of a major U.S. carrier (or network operator as we call them in Europe), which has a portfolio of Bluetooth accessories that is sold alongside its handsets. As Lehmann explained, "If one customer makes a tech support call as a result of his Bluetooth headset not functioning properly, the carrier's profit margin on that account is wiped out for several months. If the problem can't be resolved quickly, and the accessory has to be returned or replaced, the carrier might never make a profit from that account." Understandably, the operators take this situation very seriously. And they are doing something about it, with the help of the people like Lehmann and his company CETECOM.

But before we find out how, we should backtrack for a moment and ask how, with the Bluetooth SIG's test

programmes, do these problems come about? Lehmann explained, "It is possible to gain Bluetooth certification for a product simply by proving that it conforms to the Bluetooth specification. However, this doesn't mean that a product has been tested for conformance to every aspect of the spec, and with a wide range of other products, whether they are headsets, handsets or other accessories. It is here that the discrepancies can creep in."

And the carriers know all about this. Each has a range of handsets and accessories that its customers can purchase, and has been testing products as part of their own acceptance programme that is funded by the phone and accessory companies. Put simply, if you want the carrier to sell your product, you have to submit it to the carrier and pay for it to be tested. For commercial and logistical reasons, this programme has not been comprehensive enough to weed out problem products. Now, the CTIA, driven by the four principal US carriers and with the support of the Bluetooth SIG, has stepped in with its own Bluetooth Compatibility test programme. AT&T, Sprint, T-Mobile and Verizon Wireless are all supporting the agreement and working with the CTIA and the SIG on the new guidelines.

The joint programme will require companies wishing to certify products to the CTIA standards to:

- Qualify the Bluetooth design using standard SIG testing tools and guidelines.
- Use the SIG's profile tuning suite (PTS) and PTS-extended interoperability testing suites to verify device interoperability on the end product.
- List the Bluetooth product on the end-user product list (EPL) at Bluetooth.com.



- Use CTIA certified labs to test the device according to the CTIA testplan
- CTIA certified labs will be Bluetooth SIG associate members and required to provide feedback on any issues identified in the specifications or test cases to the Bluetooth SIG and CTIA.

The big change with the CTIA programme is that each product will be tested for all functions across a set of benchmark products. There should be nowhere to hide. "It is no secret that there are aspects of the Bluetooth specification that leave room for interpretation, and this is where many of the discrepancies creep in. In the past it was possible for a product to pass PTS testing and for there to still be no guarantee that it would work with another product that has independently passed PTS testing," said Lehmann. "The PTS has to become more complex, but the Bluetooth SIG is on board, and they understand that this is good for Bluetooth overall and want to do everything they can to help." According to Lehmann, the PTS will include additional – though for now optional rather than mandatory – test elements. "We have to hope that people will carry out these tests, though this will add costs, and in those circumstances companies will often opt not to do so." This is, then, where the CTIA test programme can provide a valuable extra catch net.

A pool of benchmark products, called 'B-devices', has been created for the CTIA test programme. Lehman explained that at the moment the list includes 11 cell phones, 6 mono Bluetooth headsets and 7 stereo Bluetooth headsets. Can this group grow, we asked Lehmann? "This is the initial set, but as more devices are certified they become candidates for the list themselves. We do plan to review the B-device list regularly, probably every six months, and will continue to look at other types of devices." As an example, Lehmann mentioned Bluetooth car kits. "Testing after-market, no-install car kits is relatively easy, but we are looking at how to handle pre-installed car kits."

What type of functions would the CTIA programme test, we asked? "For example, we look at what happens in multiple pairing situations, such as when a cell phone is paired with multiple headsets," explained Lehmann. "One of the common areas that we find problems is when hands-free and audio streaming are in use at the same time. Two profiles are running simultaneously, and we need to check what happens to the audio stream after a call has been completed."

These are issues that Incisor has certainly experienced when reviewing Bluetooth devices, so the work of CETECOM and

the CTIA can only benefit Bluetooth technology. Lehmann agreed, "Everybody involved, including the Bluetooth SIG, knows that this is valuable work."

The CTIA test programme is currently at the proving stage. "We have a draft test plan – version 1.3," said Lehmann. "The pilot phase started in May 2008. We are testing products now to establish whether the tests are mature, and we are working to get a series of products through the programme. Once we have done that, it is our goal to launch the full programme at the beginning of 2009."

Lehmann concluded by telling Incisor that CETECOM, which is one of three official test houses to be appointed by the CTIA, was ready to start work. "We are completely committed to this programme, and to working alongside the CTIA and the Bluetooth SIG to improve the overall user experience for consumers. We will work with the device vendors all through the process, including helping to troubleshoot any issues that are found. Consumers don't need to know anything about this CTIA-led initiative, they just need to know that when they buy a Bluetooth device it will work as it should, with whatever other Bluetooth devices it is connected."

Testing is unlikely to ever be a responsibility that consumer electronics manufacturers take on with any degree of enthusiasm, but the primary goal of this programme is to make sure that the lifeblood of the industry – the people that buy the products – are happy. If they are, they will keep buying products, and in this instance, will come to apply more value to the Bluetooth brand.

And nobody can argue with that.

Snippets

Freescale losses continue

Freescale Semiconductor has announced financial results for the third quarter ended September 26, 2008. Claimed highlights for included net sales of \$1.41 billion, adjusted EBITDA of \$387 million and cash, cash equivalents and short-term investments of \$1.30 billion at September 26, 2008.

Look under the hood, though, and we see that net sales for the third quarter of 2008 were \$1.41 billion, compared to \$1.47 billion in the second quarter of 2008 and \$1.45 billion in the third quarter of 2007. The reported loss from operations for the three months ended Sept. 26, 2008 was \$3.37 billion, compared to a loss of \$202 million in the third quarter of 2007. Freescale claimed that the operating loss for the third quarter of 2008 included non-cash charges related to an impairment to goodwill and intangible assets totaling \$3.37 billion. Adjusted operating earnings for the three months ended Sept. 26, 2008 was \$191 million compared to \$195 million last year.

New Exec Director for the Symbian Foundation

The ten initial board members of the Symbian Foundation (AT&T, LG Electronics, Motorola, Nokia, NTT DOCOMO, Samsung Electronics, Sony Ericsson, ST-NXP Wireless, Texas Instruments and Vodafone) have announced the nomination of Lee Williams as the Executive Director for the planned foundation. Lee is currently head of the S60 organization in Nokia's Devices business.

52 companies have now announced their support for the planned Symbian Foundation, including 8 device manufacturers, 7 semiconductor companies, 9 mobile network operators, 27 services and software companies and 1 financial services provider

New SiGe PA for WLANs and ISM apps

SiGe Semiconductor's SE2597L power amplifier (PA) is designed specifically for 2.4GHz ISM Band applications. This highly integrated silicon device integrates a reference voltage generator and a load-insensitive power detector in a 3mm x 3mm x 0.9mm 16-pin QFN package.

Designed for use in the 2.4GHz ISM band including 802.11 b/g/n WLAN applications, the SE2597L is a general purpose fully input matched PA for applications including industrial, medical, consumer, embedded PC and enterprise networking access points. Optimized for high performance, it delivers +20dBm output power at 3% error vector magnitude (EVM). Operating from 3.3 VDC supply, the SE2597L consumes only 170mA at +20dBm.



Event report: Bluetooth Evolution Conference

London, England – 21 – 22 October 2008

When high is down, and low is up

By Vince Holton

If the title to this piece seems odd, then perhaps I should explain myself at the outset. This event, staged by IMS Conferences in partnership with the Bluetooth Special Interest Group, took place in London at the end of October. The agenda was divided over two days (ok, there was a third day, but it was training sessions, and not part of the main conference). The first day was dedicated to the subject of High Speed Bluetooth, and the second day looked at Bluetooth low energy.

And my title? Well, that acknowledges the fact that from an innocent bystanders perspective, you would have come away from this conference believing that the High Speed Bluetooth sector was somewhat in disarray and that WiMedia's UWB solution was very definitely not flavour of the month. So, High Speed is looking down.

Whereas, on the second – Bluetooth low energy – day, our innocent bystander would have bounced out of the conference room at the end of the day full of enthusiasm at the prospects for the technology. Therefore, low is up.

Now that that is clear (maybe), it is worth looking at the event a little more closely. It was staged for the second year in succession at the Hilton Paddington Hotel in London. The venue has its advantages, such as being relatively easy to get to from London's main airports, but it always seems to have a trick up its sleeve that leaves attendees wanting. Last year there were problems with the PA system. This year, on the first day at least, the air conditioning was so fierce that coats

were the order of the day, and when they were supposed to be asking technology-related questions of the panel members, some of the audience were instead putting their hands up and asking if the a/c could be turned off as they were approaching the thresholds of hypothermia. In fairness, that did get fixed.

Travel budget? What travel budget?

IMS and the Bluetooth SIG must have been reaching for the stress pills in the run-up to the event. Conferences have been having a tough time lately, and nobody could have predicted that the three months in the run-up to this event would see the world-wide financial melt-down that has happened. Things weren't as bad as they could have been. According to IMS spokespersons, attendee numbers were down a little on last year, and that is about how it looked. However, last year's event had felt like a solid launch platform for future Evolution Conferences, and so I understand that a slight reduction in attendees was not what either the SIG or IMS had been hoping for. I don't know whether fingers of blame are being pointed, but remember, guys, it is an incredibly tough financial climate out there and attending events such as this is generally seen as questionable at the best of times by the corporate bean-counters. Frankly, I'm surprised that as many people turned up as did.

To absent friends

So, what was the content like? Well, IMS had assembled a speaker line-up that covered the Bluetooth and WPAN

sector well, with one exception. Representatives of the WiMedia Alliance and UWB companies generally were few and far between. As part of the High Speed Bluetooth presentations on day one, CSR's CEO Joep van Beurden spoke on behalf of the WiMedia Alliance, and Artimi was represented by Martin Jackson and a couple of colleagues, but that was about it. Most Incisor readers will know that WiMedia's position in the High Speed Bluetooth picture has been threatened by Wi-Fi, and at this event in London, WiMedia needed some of its Top Gun heroes to fight the good fight. They weren't there, and as a result, WiMedia took something of a kicking.

This was cemented by the astonishing level of apathy demonstrated towards WiMedia/UWB by the major handset manufacturers that were represented. I chaired a panel that included Motorola, Nokia and Sony Ericsson, and although I know that expediency is driving the cellphone companies to lean in Wi-Fi's direction, even I was taken aback by the singular lack of interest shown in UWB by the handset companies. If we look once again from the perspective of our innocent bystander, he would have left the conference at the end of the first day confident that he shouldn't be troubled by the need to educate himself as to the part UWB would play in future WPAN developments.

WiMedia needed the Staccatos, WiQuests, Wisairs, Alereons to be at this London event to fight UWB's corner, but they weren't there. I know that the IMS event clashed with the WiMedia All Hands meeting and Open House in Asia, but these companies are



big enough to have sufficient staff to be able to represent their interests at an event such as this. Not only will a significant number of carefully targeted conference attendees have gone away with substantially reduced levels of interest in UWB, but it is hard to imagine that the Bluetooth SIG's mental furniture won't have been re-arranged, either. I spoke to a couple of SIG people after day one, and it was apparent that the way that events had played out had taken them somewhat by surprise too (see panel 'Seeking SIG sentiment' overleaf).

I also spoke to Stephen Wood, president of the WiMedia Alliance while he was still in Beijing. He commented, "As to the question of support by handheld manufacturers, there are two points that you may wish to consider. First, Samsung, the host of the WiMedia meeting was demonstrating UWB capability as part of their handset and a variety of other CE gear. Second, handset manufacturers are likely to feel the push for this type of capability at a point when the service providers wish to

connect the platforms into a quad-play, offer consumption profiling, etc. I'm not surprised that the handset players are a bit behind on this point. It really is a pacing question."

Will a lack of interest from cellphone companies such as Nokia, Sony Ericsson and Motorola - each of whom seems to be taking the 'we will go with Wi-Fi and if the market tells us that UWB is important at some point in the future we will look at it' attitude - kill UWB? Well, no, I don't think it possibly can. UWB has advantages that Wi-Fi will never be able to match. And yet, if the WiMedia Alliance is to push it's technology forwards in a way that will see substantial take up (in a reasonable amount of time), it will hugely benefit from the support of an association with the Bluetooth SIG, and the ability to vicariously benefit from the credibility and awareness levels that it has today. Without this, the WiMedia Alliance will be left to promote UWB alone, and will face the uphill struggle of promoting its benefits. Rather than moving forward on a broad stroke basis, it will be

pursuing niche opportunities. For a technology with so much potential, that would be a great shame.

So is it as simple as the High Speed Bluetooth debate having been resolved, and it is Wi-Fi all the way? No, this will rumble on for a while, although it is likely that for now, the focus from the handset companies at least will be on optimising Wi-Fi integration for handsets. However, those that say that Wi-Fi is at an 'end of life' stage of development have some justification.

Wi-Fi in its current and near-future guises is not the technology for streaming HD video content, and that is an application what will assume more and more importance, and in less time than is popularly thought. Whether UWB will provide the solution or not rather depends at this point on the resources, commitment and determination of the WiMedia Alliance and its member companies. They probably need to grasp the nettle of getting out there and facing up to the (always pushy) Wi-Fi proponents on a



rather more aggressive level than they have done so far. UWB investors have to be prepared to dig deep into their pockets.

All calm on the low energy front

No such divide affects the Bluetooth low energy campaign. Here, the merging into the SIG of Nokia's Wibree wunderkind has been elegant and uncomplicated. Well, that 's the way it looks from the outside, anyway. The SIG was able to present an united front on the second day of the Evolution Conference – its technology roadmap is set, it isn't managing a squabble over which low energy technology it should be using, and it has unanimous and enthusiastic support from its prospective customer base. Yes, in this instance, the handset companies are all in favour, it seems, of the Bluetooth SIG's proposed way forwards.

Everyone, including IMS' own analysts, seem to be in agreement that low energy Bluetooth has great potential with multitudinous and diverse applications across many sectors – sports and fitness, what the industry feels the need to call 'wellness', the healthcare sector as well as industry, e-commerce etc. NFC and RFID look to be dragged along as part of the proposition, and the cellphone company representatives in particular seem very keen to embrace the concept of Bluetooth low energy + NFC as their way of getting into the electronic payments business.

I can't make day two any more action- or drama-packed than that. There does

seem to be a unity of thinking that is simply going to take Bluetooth low energy forwards. That doesn't mean that there won't still be scuffles along the way, as ZigBee, ZWave, Wavenis and other low energy wireless technologies engage in the battle, but they don't have, and never will have, Bluetooth's crucial advantage. That is, they won't be integrated into cellphones, which will surely assume an ever-increasing smart device stranglehold, and they won't be interoperable with billions of other Bluetooth-enabled devices that are already in use by consumers and business users alike.

The Bluetooth SIG and IMS would have liked this event to have had more attendees. My view is that they were lucky to get as many as they did get (the event did take place at the point the world realised that it really was deep in a global financial crisis, guys), and that for the WiMedia Alliance it is rather fortunate that there weren't more people there. A low number of attendees means that the damage was limited.

The future for the Bluetooth Evolution Conference? That remains to be seen. IMS Research VP Ian Weightman told me that his company is in this for the long term. Doubtless there will be discussions between the Bluetooth SIG and IMS. I hope that the two parties agree a way forwards, as this type of event can provide a useful fulcrum for industry players.

Short range wireless technology – it has its ups and downs.

Seeking SIG sentiment

You will have gathered by now that I was rather surprised at the way WiMedia/UWB was seemingly being pushed back. The technology has been planned to play an important role in Bluetooth's future, and so I asked Anders Edlund, Bluetooth SIG marketing director, and who had been present at the event himself, to comment. Anders saw it like this:

"I personally think that WiMedia Ultra-wideband technology is a very good match for future versions of the Bluetooth high speed specification, and is in some respects even better than 802.11 since it is a short range Personal Area Networking (PAN) technology with a very high data rate, delivered with a minimal power consumption. 802.11, on the other hand, is really a Local Area Networking (LAN) technology with higher power consumption. So, WiMedia could really deliver high speed in the sweet spot of where most Bluetooth applications are. However the requirements for the typical current mobile phone are such that it cannot really leverage the bandwidth that WiMedia can deliver. Then there is the fact that the phones are increasingly being shipped with integrated 802.11 chipsets that could be converted into a Bluetooth/802.11 high speed solution. Because of these reasons, it is not entirely surprising that some phone manufacturers seem to prefer the route of Bluetooth/802.11 as a short term high speed technology solution."

"In the longer term, as I initially pointed out, there are both technical and "positioning" advantages with Bluetooth/WiMedia so I would definitely not rule out that you would see the Bluetooth/WiMedia high speed solution becoming the preferred alternative in a mobile phone, although I suspect it will take a few more years to get there. During which time we could expect the UWB technology to both mature and lower in cost. There will also be higher consumer demand for wireless high speed solutions to transfer larger amounts of data in a shorter time, while being dependant on the relatively small battery capacity used in the mobile phone."

Snippets

Bluetooth

SouthWing sets its sights on Russia

SouthWing, a developer of Bluetooth hands-free devices, recently celebrated the opening of a new Russian office with a media event "Russia is a very dynamic market place experiencing extreme growth in demand for Bluetooth. The Russian customer expects more for their money making SouthWing a perfect fit," said Sergey Gutsalyuk, Country Manager to Russia.

Bluetooth SIG adopts new prototyping specs

Incisor hears from the Bluetooth SIG that at its Adoption Meeting held during September, the SIG formally adopted the Message Access Profile (MAP) Prototyping Specification and the Alternate MAC/PHY (AMP) Manager Protocol Prototyping Specification.

Bluetooth Prototyping Specifications are used for the purpose of verifying the specs and members can't distribute or sell products based on these specifications, nor do Adopted Prototyping Specifications become part of the Bluetooth SIG's Qualification Program for distribution.



Bluetooth – Unlocking the potential of high-speed data transfer in portable devices

Bluetooth is everywhere these days; in every product from phones to computer mice, and PNDs to health equipment. By the end of the year it is reckoned that up to 60% of mobile phones will feature Bluetooth. Now Bluetooth is carrying that success across to the world of high-speed radios.

Bluetooth's phenomenal success is down to its attractive combination of simplicity and power-efficiency. Since its birth in the 1990s Bluetooth has gone from a relatively low speed medium (1Mbps) to one that can provide speeds of up to 3Mbps.

One of Bluetooth's main strengths is in maintaining a reliable and robust connection. Bluetooth hops from one frequency to another to ensure that users rarely get disconnected. This, and its low-power operation and easy pairing, has made Bluetooth the technology of choice for portable devices.

But today's media-hungry world is increasingly requiring the transference of file sizes inconceivable when Bluetooth was invented. We are seeing 8 megapixel camera phones with large memory cards. Some portable devices such as camcorders can have files of several GB in size. Yet sending a 5GB file across Bluetooth v2.1+EDR at 3Mbps would take 15 hours, draining the battery of most phones and testing the patience of most users. It is therefore becoming increasingly clear that we need a more practical way of embedding higher-speed radios into portable devices without losing the benefits of Bluetooth's interoperability and easy-pairing.

In terms of being able to transfer large files, Bluetooth is presenting us with two routes: using an existing higher-speed technology such as Wi-Fi, or integrating a newer technology such as UWB.



By using an existing standard such as Wi-Fi we can take advantage of its established technical ecosphere and user base. This simplifies any design considerations, brings down costs and brings a higher speed alternative to market in the shortest time. However 802.11g only has an over-the-air speed of 54Mbps and a realistic throughput of about 20Mbps – this isn't delivering the longer term true high speed that mobile devices need.

UWB on the other hand enjoys over-the-air speeds of up to 480Mbps, and real application speeds that are 10 times that of Wi-Fi. UWB enables functionality that cannot be achieved with Wi-Fi such as hi-def video streaming to televisions. However, UWB is less established than Wi-Fi.

Which technology you prefer depends on whether your primary concern is cost and compatibility, or speed. Both Wi-Fi and UWB are more efficient than Bluetooth at transferring large files. Although second-for-second they use more power than Bluetooth, they transfer files much more quickly, making them much more efficient 'by the gigabyte'.

Both Wi-Fi and UWB are due to be supported in a forthcoming Bluetooth AMP (Alternative MAC / PHYs) specification supporting Bluetooth over Wi-Fi or Bluetooth over UWB.

However, where Bluetooth was designed from the outset for power-conscious mobile devices, both Wi-Fi and UWB were designed for desktop applications. Both are therefore very power-intensive →

when sniffing for traffic. This makes both technologies impractical for 'always on' use in portable devices.

CSR's Connectivity Centre vision brings together technologies that deliver end user benefits by being integrated into one system. As part of this CSR is developing products to support both of the high speed Bluetooth options. This solution uses the strengths of both technologies to create a very power-efficient system.

Bluetooth is by far the most efficient means of maintaining a radio link. CSR's solution uses Bluetooth to scan, negotiate and establish the link. When a large file needs to be transferred CSR's Bluetooth activates the high-speed radio, and deactivates it upon completion.

A Bluetooth EDR radio uses about 33mAh in transferring 1GB of data; Wi-Fi uses a slightly more economical 28mAh/GB but UWB consumes a tiny 3mAh/GB. Therefore both combinations allow high-speed radios to enter a raft of portable devices where previously they were impractical. Unlike many of its competitors, CSR is listening to customer needs for supporting both options: Bluetooth over Wi-Fi where the focus is on supporting existing Wi-Fi infrastructure and UWB when real power efficient and much higher speed transfer is required.

By including Bluetooth as the 'controller' radio in a UWB or Wi-Fi-enabled device, we also see the added bonus of compatibility with all those billions of devices that are Bluetooth-enabled. You get the functionality of two wireless radio technologies; both future-proofing your gadget and affording backwards-compatibility.

The high attach rate and popularity of Bluetooth will also drive UWB's attach

rate, helping it to gain further traction quickly – and once users witness the power saving and speed potential of UWB versus Wi-Fi, CSR is confident that consumers will be crying out for this superior experience.

High-speed Bluetooth is one of the cornerstones of CSR's Connectivity Centre strategy. CSR believes that increased convergence and cooperation of different connectivity technologies is the key to delivering maximum value to OEMs and end users.

Individuals shouldn't have to worry about exactly how a device is using connectivity resources; just that it works. Behind the scenes, operation should be fast and seamless, with the devices' resources cooperating to achieve maximum efficiency with connection to whatever technology is available – whether it be Wi-Fi or UWB.

As the most widespread wireless connectivity standard in the world, Bluetooth is ideally placed to be the foundation of a wide-scale deployment of practical high speed radios in mobile devices. And as CSR's innovative approach and Connectivity Centre vision demonstrates, due to the versatility of the technology, Bluetooth has many years left in it yet.

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Snippets

Wi-Fi / WLAN

Keithley Creates RF Communications Toolkit

Keithley Instruments has expanded its SignalMeister software platform to now include RF signal analysis along with RF signal generation. SignalMeister can generate and analyze both single-input single-output (SISO) and multiple-input multiple-output (MIMO) signals in the same environment. The SignalMeister RF Communications Toolkit now supports the latest wireless, MIMO protocol standards, WiMAX Wave 2 and 802.11n WLAN.



The Tortoise and the Hare

by Dean Anthony Gratton

A tale depicting a story of a hare who exudes confidence and who seems to be a dead certainty in winning a race when challenged by a tortoise. As the story unravels however, the over confident hare, who has raced ahead, decides to take a nap, beaming in the knowledge that the tortoise will never catch up. All those witnessing the event would surely concede to the notion that the tortoise is sure to lose. However, the underdog is always the bookies favourite in these tales and alas, the hare oversleeps and awakes to find that the tortoise has already won. Undoubtedly, we are all familiar with this classic story, but in this article, we can modify Aesop's classic fable and tweak it slightly to encompass two of our much-loved wireless technologies; offering an altruistic perspective to the story. By adding a modern day twist, we can witness the confident hare instead, offering support to the tortoise; essentially, the slow-moving creature is offered a ride from the super fast hare.

So, let's bend, superimpose, morph or arguably kill this story by offering an analogy that sees the hare, as Wi-Fi and the tortoise as Bluetooth wireless technology. At first, both seem an odd couple with extraordinary abilities and who can forget the days of old, which very much saw them at logger heads, reaching for a superior level of technical ingenuity and pace. But, with an incredulous display of camaraderie, Bluetooth wireless technology has opened the door to Wi-Fi becoming part of the high-speed Bluetooth solution.

Hold on a minute ...

Actually, what happened to Ultra-wideband (UWB)? It seems that some members of the Bluetooth Special Interest Group (SIG) have become a little

restless in waiting for the mammoth beast to strut its stuff in the new Bluetooth wireless bible that is Bluetooth v3.0. In response, the Bluetooth SIG has opted for an intermediate solution that sees Bluetooth utilising Wi-Fi in instances that permit more bulkier information to be passed over the radio medium. The proposal is seemingly void of historical classic pitfalls and it's evident that someone has diligently reviewed this – in short, they've done their homework! Not to mislead the industry, the Bluetooth SIG has made it clear that the faster and more robust Ultra-wideband is firmly still in its sights and that the collaboration is indeed ongoing.

Moreover, Bluetooth having access to the mighty (or perhaps modest when compared to UWB) Wi-Fi's super fast capability is wonderfully supported through a firmware/software upgrade rather than the "let's wait six month's" for a new radio-spin to see if this is going to work! Instead, Bluetooth can more or less have immediate access to Wi-Fi's capabilities through a software download, although it's still unclear if legacy devices can be supported. Likewise, the timing of this new upgrade is still unclear. At the time of writing, there wasn't much information available especially in terms of specific architectures, timeframes and so on from both the Bluetooth SIG's (bluetooth.com) and Wi-Fi Alliance's (wi-fi.org) websites. However, Incisor made contact with Alan Woolhouse, Vice President of Marketing & Communications at CSR, who offered us some additional insight "Bluetooth over 802.11 is not done through a merger of technologies. Bluetooth is just using 802.11 as a fast radio to transmit Bluetooth data."

Woolhouse added, "Testing for the new specifications is already ongoing - when this will be completed is unknown at this point, as three interoperable prototypes

have to be shown to work and pass a comprehensive test specification to be "ratified" by the Bluetooth SIG." Initial feedback seems to suggest that this would be completed around the second quarter of 2009.

A-rguments M-ostly P-acified

In what has been described as the Alternative MAC/PHY (or AMP) upgrade, Bluetooth will be able to utilise Wi-Fi's radio on an ad-hoc basis, for example when it needs to transfer more bulky data items. In fact, we can liken Bluetooth to a Girls Aloud track ditty "I can't speak French; I'll let funky music do the talking" could in fact translate itself to a more poignant wireless-focused modern-day rendition of Bluetooth singing "I can't speak Wi-Fi; I'll let the PHY layer do the talking." Therefore, most significantly, there are no modifications to both the MAC/PHY layers for Bluetooth and Wi-Fi. Instead, the new software merely employs a "four address" packet format from 802.11 MAC to send Bluetooth data, in turn, ensuring that a Wi-Fi access point and the Bluetooth device can both send data over 802.11 simultaneously.

The basic operation and co-habiting nature of these two technologies is straightforward. Of course, many mobile phones and other products already successfully combine Bluetooth and Wi-Fi, which offer consumers very different features and capabilities. On one hand, Bluetooth v2.1 +Enhanced Data Rate (EDR) offers data rates of up to a modest 3Mb/s and, of course, on the other hand, Wi-Fi with its 802.11g can offer data rates of up to a healthier 54Mb/s. Both Bluetooth and Wi-Fi (that is, 802.11b and 802.11g) use the Industrial Scientific and Medical (ISM) unlicensed 2.4GHz band – not that there are any issues with co-existence, as the two technologies over the years have received many beatings



from the technology press and the industry to resolve any shortcomings. The fundamental allure for Bluetooth wireless is increasingly becoming crystal clear. Consumers have already engaged with these two technologies for over ten years now – therefore, we can be confident in knowing that an awful lot won't change from at least a user experience perspective, anyhow!

Bluetooth wireless technology already utilises a fairly secure radio mechanism to transfer information between other Bluetooth-enabled devices, along with a host of known protocols and profiles that consumers have become privy to over the years. Likewise, Wi-Fi with its Wi-Fi Protected Access (WPA2 or 802.11i) for security and Wi-Fi Protected Set-up (WPS) for simpler access has allowed consumers to access the Internet or office with ease and flexibility. In fact, what would we do without it?

The Bluetooth SIG has simply extended the ability of a tried and trusted technology by allowing it to access the MAC and PHY layers of the adjacent Wi-Fi chipset. So, we can assume that the transfer of audio/video-specific traffic over the Bluetooth radio will also enjoy the secure mechanism already offered by Wi-Fi. There is simply no escaping that this is indeed a simple but ingenious notion that notches up another super strategic move by the Bluetooth SIG, as it comes to terms with the delay in Ultra-

wideband (see Incisor's Ultra-wideband: A Personal Area Networking Phenomenon, December 2007 issue).

All options open

Incorporating Ultra-wideband may leave some outstanding issues for the SIG while the WiMedia Alliance ensures its prodigy is delivered as 'working'. Nonetheless, the SIG still wholeheartedly aspires to incorporate the faster short-range technology within its core specification. Alan Woolhouse, from CSR finally mentioned that "UWB is another option for Bluetooth, providing a solution for different applications. [The Bluetooth SIG] is just setting reasonable requirements of maturity before integrating the technology – this is being done with 802.11 as well, hence the interoperability testing requirements." At Incisor, we are in no doubt that the SIG foresees Ultra-wideband, as being very much on its roadmap. Needless to say, utilising Wi-Fi is an interim solution, which portrays Bluetooth as a capable technology, delivering the more sought after data rates that consumers nowadays expect. Who knows, the Wi-Fi solution might permanently sit alongside Ultra-wideband? As for the consumers, re-assuringly for them, they are offered the same look-and-feel of Bluetooth wireless technology, but the under-the-hood transport mechanism means there lies a savvy tortoise hitching a ride on the super fast hare.



A Series of Fortunate Events

What led up to the launch of Bluetooth™?



It was May 20th 1998. A room in a hotel in San Jose, California was full of journalists, analysts, Bluetooth Special Interest Group (SIG) members, SIG founders, etc. The keynote speaker was Steve Nachtsheim, a VP at Intel who was General Manager of the Mobile and Handheld Group. Everyone was there to formally announce Bluetooth, a short range, low power, secure radio system. A screen filled with the face of Intel CEO Andy Grove who, in his gravelly voice, talked about how Bluetooth would further the cause of Anywhere, Anytime computing. The event was well attended, the displays were great, the press was very interested and the demos worked. At the end of the formal session the attendees wandered around, looked at the products, gave press interviews, etc. At about the same time, simultaneous launches were following the sun as Bluetooth was also being launched in London and Tokyo. All agreed that it was a great day. But how did we get there? Incisor invited Stephen Nachtsheim to cast his mind back and give us his recollections of that highly momentous occasion.

As we passed through the 10 year anniversary of the Bluetooth launch this year, I thought it might be interesting to shed a little light on how we got to that day. In preparation for the 10 year anniversary events I reflected on what happened to get us there, and I came to the conclusion that it happened through a series of Extremely Fortunate Events and, of course, a mountain of hard work world-wide. The planets aligned - or whatever - to makes this happen very fast. That type of speed was somewhat outside the realm of the normal way that things got done in the late 90s, but we went from first conversations to launch in just about one year. I can think of lots of ways the whole thing could have failed -- but it didn't.

But how did Intel get involved – it was not particularly known for low power radios – or low power anything! Let's set the scene – I have to give you a little background. In the early 90s, I was the General Manager of Intel Europe, Middle East and Africa living in England and Germany. I got my first cell phone then. Well, actually I got my first few cell phones then because Intel had offices all over the place and you will remember that you needed a different phone for each country. So those of you ancient enough to remember mobile communication in 1990 will remember carrying a kit bag of screw drivers, adapters, etc around so you could rewire the hotel's phone system using alligator clips in order to connect your laptop. I remember crawling through dust under beds in Paris or other hotels looking for a phone connection to which I could attach my laptop computer. GSM was a glimmer on the horizon everywhere except the USA which was then and continues to be a back-water of wireless communications. So it was fortunate that I got a lesson in wireless communications by living in Europe.

Remember the '386?

Anyway, in 1994 I ended up back in the US as General Manager of the Mobile and Handheld group - that was the part of Intel that made silicon and other things for laptops and handhelds. The handheld space was a little sparse for Intel at that time. However, the laptop part was starting to take off. We had brought the 386 to the laptop with a special version of the chip and chipset. Then we brought the 486 in a special package and introduced a number of other innovations that helped the laptop vendors start making some great machines. However, communications were still a problem. People with laptops wanted to be able to dialup their home network and get work done. If you

lived in Europe you carried a kit bag with all of the different phone plugs needed for each country and you still didn't have a very good chance of being able to dial out of a hotel. We needed better communications to promote laptops and sell more chips. What was interesting was that GSM was finally starting to be being rolled out in Europe. The GSM spec had two parts: voice and data. As the rollout happened, the carriers were all pushing voice and essentially none of them were paying attention to data. A fair portion of the data spec existed on paper but was not being implemented. For example there was no capability for cross billing of data nor roaming of data capabilities. Yet the possibility of having a single phone that did voice and data anywhere in the world (except the US) was intriguing. If we could cause the data side to be implemented, it would be a boon to notebook sales and therefore notebook chip sales.

So the Intel Mobile group started something called the Mobile Data Initiative – MDI – to get the phone manufacturers (Nokia, Ericsson et al), the carriers (British Telecom, Deutsch Bundespost et al) and the laptop manufacturers together to promote the use of the GSM data network for laptops. Remember, we are talking ancient times – 1994-95 - when there were no wireless LANs, hot spots or any other way to get your laptop to communicate on the road except modems. It was a win-win if it could be made to work: The carriers got more revenue, the phone manufacturers could sell more phones and data cards for laptops, the laptop was a more appealing computer and Intel Mobile could sell more chips. All of this actually worked pretty well and, from a Bluetooth perspective, it was a Fortunate Event! The Mobile group at Intel got to understand cellular communications and Intel got to know the people at the phone manufactures and carriers.



Because of what we were doing at Intel, I got invited to give a keynote at the GSM Congress in February of 1997. This addressed the Mobile Data Initiative pushing the concept of cellular connected laptops. Of course there were a lot of other meetings at the Congress, and we made the acquaintance of a number of people who went on to be very significant in the birth of Bluetooth.

So why was this an important or a Fortunate Event? At that time, Intel, though large and powerful, was probably one of the last places anyone would go for help with telecommunications, low power and phones. At the time we were figuring out how to get 8 watt processors into laptop computers and call it low power. Intel just didn't have any business in those areas. But we were pushing the MDI.

Intel and Ericsson engage

So then we move forward to May of 1997. WINHEC was being held. I was sitting in my cubicle in Santa Clara, CA on what I think was a Friday afternoon. My colleague Johann Weber walked in and asked me if I had time to meet with a couple of people from Ericsson. Since I was probably not doing anything more than tracking my stock options I said "Sure" and we walked down to a conference room. Sven Mathesson and Per Svensson had dropped by to talk about the low power, short range radio work they were doing. This was a really Fortunate Event! They were looking for some collaboration with Intel – or someone. After about 30 minutes it became really obvious that this technology could be extremely useful for mobile PCs. We could get rid of the wires and plugs that everyone carried around, have a secure link to a phone for networking and do so without expending much power. I agreed to work with them on the spot!

The initial vehicle that we chose inside Intel was to see if we could fit this into Intel Labs (Per hadn't told me that they had already talked to them, and been shown the door!). Intel was working on a radio program known as Home RF. It turns out that this was NOT a Fortunate Event! However a Fortunate Event did happen when Jim Kardach and Simon Ellis, who were in the Mobile Group and had experience with the Advanced Configuration and Power Interface (ACPI) SIG, got involved around this time. Kardach and the Mobile Strategic manager went to Lund in the following month to close on a term sheet for what would become Bluetooth. This meeting agreed on the capabilities of the radio

and goals of the program. The strategy was to see if we could use an Existing SIG. If not we would set up our own. Work continued over the summer.

In around September of 1997, Jim Kardach and Sven Mathesson gave a pitch to the Home-RF SIG (pretty much run out of Intel Labs) to adopt the cable replacement technology that became known as Bluetooth. They were turned down. I know it is hard to believe, but parts of Intel had a Not Invented Here syndrome. Not only did the Communication Group in the Labs want no part of Bluetooth, they actively tried to get it killed. But getting turned down was, in its own way, a Fortunate Event. We decided we had to go with our own SIG. Kardach refers to the framework we put together as the Nachtsheim Formula. For SIG promoters, we wanted the two most prominent cellular phone manufactures (Nokia and Ericsson), the two largest mobile computer manufactures (IBM and Toshiba), Intel and Microsoft. This was not seen as a slam dunk since we had to convince people in competitive spaces to join together to define the process and then follow the dictates of the SIG. In many cases it meant giving up on some project being run inside a company and joining with the rest of the promoters for a common goal. So we went about seeing if we could put such a group together. I remember meeting with Mizoguchi-san of Toshiba in Japan. He ran the Toshiba world-wide computer group. I explained what we were going to try and do and asked him to sign up. He understood what we were trying to do and committed with a hand shake.

The same happened at my meeting with Adelio Sanchez who ran the laptop group at IBM. So we had the computer people – we had to get Nokia and Ericsson together. There was a meeting with Nokia the day before the first meeting of the promoters in Lund in late December, 1997. The object was to get Nokia to commit to the program. In doing so they would give up the low-power RF radio architecture they had been working on. They agreed (I think Reijo Paajanen was one of the instrumental folk here.) So the first meeting of the promoters took place just before Christmas Eve, 1997. Microsoft was absent – they had some of their own programs going and didn't want to be part of any SIG. Incidentally, that meeting was the first time the term Bluetooth was used. See Jim Kardach's history on the Bluetooth name previously published in Incisor for further information (*Ed: This was a highly entertaining three-part series. Click these links to view [part 1](#), [part 2](#), [part 3](#)*).

This rolling stone gathered no moss

So now we were about seven months into that first year. Things were moving fast. Negotiations continued with the promoter companies and were concluded with the signing of the promoter agreements in Research Triangle Park in February of 1998. So we had five promoters. Let's think about what we were all trying to achieve:

- A royalty free IP model allowed the SIG to concentrate on the best way of doing things versus getting technology into a spec where member companies might receive royalties. While common in the PC industry it was totally new in the wireless area.
- The regulatory program and testing had to be something in between what the computer industry did (Plugfests) and what the wireless industry did (large expensive certifications). The method was modeled by most SIGs after Bluetooth showed it could be done
- There was a lot of innovation that had to take place - which might have given us pause had we realized the size of the task:
 - We had to harmonize the 2.4 GHz spectrum globally. I recall the chart of countries and some of the really hard ones – Spain, Japan, and France come to mind.
 - We had to ease US security export laws globally in order to use 64 bit encryption
 - We had to create a certification process to ensure that all radios worked the same but which would keep the burden low. Early on we set the goal at a \$5 radio and actively promoted it.
 - We had to get the airline rules modified and introduce new concepts to a traditionally very conservative area. There was a real possibility that the airlines would ban notebooks with radios in them.
 - We needed bulk CMOS radios operating at 2.4 GHz – a concept that was thought is as, well, crazy in 1997.
- And the list goes on

The next Fortunate Event was changing standard boilerplate SIG contracts to come up with the early adopter category. →

We were starting to get momentum. We had our five promoters. The notion of Bluetooth had become so popular that other companies wanted to sign up. I personally remember having to fly to San Diego to explain to Qualcomm in the person of Irwin and Paul Jacobs why they couldn't be one of the SIG Founders. But they came in as Early Adopters, as did Motorola, Lucent and 3Com. The most interesting Early Adopter was LEGO. LEGO is a Danish company and indicated that they thought it was their patriotic duty to join a SIG which honored the 2nd King of Denmark. Their headquarters is quite near to the famous runic stone.



We had satisfied most of the criteria that we had put in place for the launch, and it was set for May. The time between February and May was devoted to putting some real Intel resources on getting the software architecture and drivers done as other members of the SIG worked on hardware and product prototypes. We reached an accommodation with Microsoft whereby we were eventually able to get the Bluetooth drivers included in the Windows distribution.

So we were cleared for the launch.

By the way, getting Andy Grove to do the launch video was another Fortunate Event. He obviously knew what Bluetooth was, if for no other reason

than the sheer number of people in and outside Intel who had contacted him to complain about something we were doing. I sauntered over to his office one day and told him I wanted him to do the opening video. He refused. I persisted and he finally said he would do it just to get rid of me and he would only do one take. Anyway it worked out.

Think of a number, double it, add a zero.....

The rest of 1998 was devoted to software, hardware, promotion, radio design, getting more people in the SIG. All of our previous experience with SIGs resulted in about 20 members per SIG. We were now set to recruit regular SIG members. Simon Ellis and Jim Kardach came into my cubicle and showed me their goal for the SIG membership. I think they were aiming at 20 or something like that. I told them we needed at least 100 members by the end of 1998 in order to be viable. They thought I was nuts. They got 400 and stopped counting by years end.

About that time I was moved out of the Mobile Group to co-direct Intel Capital. But in a different way I managed to stay in touch with the Bluetooth effort as we funded 4 or 5 Bluetooth startups, including CSR – Cambridge Silicon Radio – who brought some of the first low power Bluetooth radios to the market.

So, that's pretty much it from my viewpoint. We were fortunate to have an intersection of Fortunate Events. It was perhaps another Fortunate Event that we didn't realize all the problems we had to solve. I am not sure what the reaction would have been if we started the conversations with "You need to get the French and Israeli military to change their communications protocol. Then after that, run over and get the airlines to allow radios on their airplanes, and oh

yes, we need CMOS to be a good vehicle for cheap radios." The Bluetooth effort really did run like a start-up. If a problem arose it got solved; if an innovation was needed it was created.

We were especially fortunate to have access to people from all of the companies who were bright, had a view of the future, were dedicated to making Bluetooth happen, were able to move some huge obstacles and most important to me, were stimulating to work with and fun to be with.

Well, thanks for inviting me to share some reminiscences. I can't wait to see where Bluetooth is going to go in the next 10 years!

uwb / wireless usb news



WiQuest fails – more to follow?

As Incisor went to press we heard the news that UWB pioneer and fabless semiconductor company WiQuest had closed its doors, apparently unable to fund further activity.

WiQuest's principal product line was its WQST100/101 chipset, which incorporated WiQuest's WiDV Technology for Wireless Digital Video for PC graphics connectivity. WiQuest's most recent announcement told us that its Wireless USB solution has been selected by Imation for the company's new Apollo Pro WX external hard drive – a wireless personal area storage device that offers a no-touch, wireless backup solution for back-up and storage of personal data. Apollo is presumably now looking elsewhere.

Somewhat ironically, WiQuest Communications, which was founded in September 2003 and had its corporate HQ in Allen, Texas, had been named the number 1 UWB complete solutions provider in ABI Research's 2008 UWB Vendor Matrix.

Eric Broockman, founder and CEO of erstwhile UWB industry rival Alereon commented on WiQuest's demise, saying, "Some industry pundits will proclaim UWB is dead or that this is some form of setback to the industry. Not so. Those of us in the high tech business have seen this movie many times before. To really answer the question, we need to review history from two perspectives. First, why UWB makes sense, and second, what the history of new technologies teaches us. The closure of WiQuest does not portend the end of UWB. Rather, it is a testament to the fact that they did not have a solution available for OEMs today that provides support for world-wide shipments at high throughput and low power consumption.'

At Incisor we think that WiQuest was a victim of timing. It was one of a number of start-ups in the UWB marketplace that were entirely dependent on ongoing funding. WiQuest had reached the stage in its development when it needed another round of funding, and, let's face it, this is not a great time to be going cap in hand to investors. Other company's funding cycles mean that they are not having to face this challenge (stare into the abyss?) just now, but their time will come.

Incisor spoke to WiMedia Alliance president Stephen Wood, who was singing from the same hymn sheet as Incisor, as he observed, "Obviously, given the challenging economic times, it is going to be difficult for any startup who happens to require additional funding right now. For companies who experience missteps in their technical programs, the situation is even less forgiving. Despite setbacks to the industry such as this, we are seeing a number of manufacturers successfully deploy chipsets operational in the upper bands."

Wood must hope that the rest of his wards can hang on in there, but Incisor is aware that at least two other UWB companies are very, very close to having to flip the sign on the door to 'closed'.

Tough times, but, as Broockman observed, this type of consolidation is normal in any emerging technology sector.

Alereon-powered Toshiba Wireless USB dock station

UWB company Alereon has announced that Toshiba's new Wireless USB dynadock is powered by its AL5000 Worldwide Wireless USB Chipset. When

used in conjunction with a Toshiba PCIe ExpressCard34 or WUSB adapter, the dynadock can operate in WiMedia band groups one, three, and six, which span frequencies of 3.1 to 10.6 GHz respectively, meeting regulatory requirements across the globe via software configuration.

Dynadock, which [Incisor saw in early form at CES in January 2007](#) is a universal wireless docking station with video output to connect to workspace peripherals, including an external monitor. The docking station includes multiple USB connections and support for Ethernet, and, claims Alereon, is the first solution to support full bi-directional isochronous data transfers for audio and video applications such as USB speakers, web cams and video cameras.

Connectivity is described as 'simple', the user just enters the range of the dock to connect, and leaves the range to disconnect. If the user chooses not to use the wireless capabilities, the dynadock allows a wired USB connection to be used instead of a wireless one.

Alereon compared its offering with competitive bandgroup one or bandgroup three solutions, which may offer as little as a single channel in non-US applications, saying that it provides consumers in Canada, Europe, Japan, Korea, China and New Zealand with as many as 19 additional channels. Manufacturers can produce a single product or SKU that can be designed and sold worldwide with a software modification to meet local regulatory requirements.

uwb / wireless usb news

UWB heralds arrival of the Wireless Home Office (finally)

After a long wait, the first stage of what will become the "wireless home office" is arriving, according to ABI Research. Some home office UWB (Ultra-wideband) products are now hitting retailers' shelves, and more are expected by the end of the year. These are mainly in the wireless USB category, the first major market application for UWB, utilizing wireless USB embedded in devices such as laptop computers, wireless docking stations for those computers, and wireless external hard drives.

"The wireless USB docking station seems to be hitting a sweet spot," ABI senior analyst Douglas McEuen told Incisor. "A number of the more capable laptop models now include native wireless USB. This represents an important step towards creation of the true wireless home office."

Dell and Lenovo are leaders in UWB-enabled laptops; wireless USB docking stations are available from Kensington and Toshiba, and Imation is expected to release a wireless USB external hard disk drive range by year's end.

Wireless USB products will be more expensive than their wired predecessors, but McEuen feels that as production efficiencies evolve, the differential will soon shrink to the point that wireless solutions are competitive on both price and capabilities.

"This generation of products comes closer to achieving the data rates that UWB was hyped as offering," said McEuen, "and this is the first true opportunity for consumers to get their hands on UWB products and see them in action."

Cadence helps Staccato launch Ripcord2

Cadence Design Systems sent us a release telling us that Staccato Communications utilized its Low-Power Solution to achieve the power budget requirements for its 65-nanometer CMOS Ripcord2 family of WiMedia Ultra-Wideband (UWB) devices. The mixed-signal, low-power, single-chip Ripcord2 family combines digital baseband and RF technology to enable multiple protocols, including Wireless USB, High-Speed Bluetooth, wireless IP and wireless audio/video.

"We achieved first-pass working silicon while meeting our aggressive power targets by using the Cadence Low-Power Solution on our Ripcord2 family of single-chip UWB solutions, the industry's first and only introduced in 65nm CMOS technology," said Steven Larky, vice president of engineering at Staccato Communications. "The widely adopted Common Power Format (CPF) proved instrumental to ensuring design intent consistency throughout the design cycle." Described by Staccato as one of the most complex RF devices on the market, Ripcord2 is intended to enable short-range high-performance wireless connectivity for high-volume UWB applications such as PC and PC peripherals, consumer electronic devices and – are you listening to this, Motorola, Nokia and Sony Ericsson (see page X) - mobile handsets.

"Using the CPF-enabled Low-Power Solution with the closed-loop verification methodology and Virtuoso technology for the RF component, we were able to help Staccato achieve its power targets while reducing overall risk," said Bill Heiser, group director of marketing at Cadence.

wi-fi / wlan news

Volkswagen tests rolling Internet

Intel, Ford and various other bods are playing with in-car Internet access. Indeed, you can now buy certain BMWs with onboard Internet. Over in Germany, another of the native car giants is also experimenting with the technology. Incisor has learned that Volkswagen Group Research is showing a Tiguan (it's recently introduced SUV-Lite) with a built-in WLAN network created by the research cooperative "Wireless Wolfsburg". The interaction of the pair provides the driver with selected information pertaining to life in the city directly in the display of the navigation system.

"Wireless Wolfsburg", Volkswagen, Wolfsburg AG, the AutoUni and WobCom

together with a group of partner companies have set up a research cooperative to work on the WLAN network for testing mobile Internet access. The Tiguan with the name "auto@web" is in constant contact with the Internet portal, which provides it with current, relevant information. This all happens unnoticed by the driver. The city's events calendar and various search machines serve as additional sources of information.

The spectrum of information is apparently broad: from content of relatively questionable value - the cultural programme - to more interesting stuff such as useful destinations in the city of Wolfsburg, the Tiguan receives a constant overview of the subjects "City Life", "Travel" and "Wellness". This selection of information appears in the display of the navigation system.

Other clever features have been included: you can check, for example, whether the car's doors are locked or if the tank is full from your PC at home or your iPod. This is an extension of what the car industry calls 'surprise and delight' features, that have previously been restricted to the space inside the car. Furthermore, it is possible to load a map for your walking route from your parking space to your final destination on your mobile device or display the place where your car is currently parked. 'Guess that means you may also benefit from having a printer in your car. What next - a photo-copier, coffee maker or water dispenser?

The office is coming to your car. You have been warned.

wi-fi / wlan news



Students prefer Wi-Fi to beer

Wi-Fi is an integral part of today's college experience, changing the way students study, interact with professors, and socialize, according to a survey released by the Wi-Fi Alliance and Wakefield Research. Nine out of 10 college students in the United States say Wi-Fi access is as essential to education as classrooms and computers, and nearly three in five say they wouldn't go to a college that doesn't have free Wi-Fi. What's more, fully 79 percent said that without Wi-Fi access, college would be a lot harder.

Commenting on the research, Edgar Figueroa, executive director of the Wi-Fi Alliance, said, "Young adults expect access to information with unprecedented immediacy. Whether they are chasing a detail that will help them look smart in the middle of a class discussion, or are looking up a new friend on the Internet within minutes of meeting them - Wi-Fi enables the flexibility and freedom to access information from just about anywhere."

Wakefield's findings also suggest that college prospects and their parents take into consideration many factors when choosing the right school - and technology has increasingly become a major deciding factor. Sixty percent of those polled agree that widely available Wi-Fi on campus is an indication that a school cares about its students.

Academic life is changing, though, and for today's students, Wakefield found that getting connected no longer means reserving a station at the computer lab or going to the library. Undergrads are logging in at coffee shops and restaurants (55 percent), in parks (47 percent), and even in their cars (24 percent).

The survey also found that:

- If forced to choose, nearly half of

respondents (48 percent) would give up beer before giving up Wi-Fi.

- More than two in five (44 percent) used Wi-Fi to get a head start on an assignment before a class was finished.
- More than half have checked Facebook or MySpace and sent or received e-mail while using their laptop in class. Just under half sent instant messages to a friend during class.
- Many students reported that the availability of Wi-Fi influences their choice of coffee shop (52 percent), bookstore (42 percent), and restaurant (33 percent).

In conjunction with the Wi-Fi Alliance, Wakefield Research surveyed 501 U.S. college students in September 2008.

Motorola tops "Green Wi-Fi" ranking

Motorola has been ranked at the top of the latest Vendor Matrix released by ABI Research. Cisco Systems and Siemens Enterprise Networks claimed the second and third spots in the company's new evaluation of the "greenness" of worldwide Wi-Fi access points and their vendors.

The Vendor Matrix is an analytical tool developed by ABI Research to provide an understanding of vendors' positions in specific markets. Vendors are assessed on the important parameters of "innovation" and "implementation" across several criteria unique to each vendor matrix.

ABI Research vice president Stan Schatt commented: "Motorola emerged as the winner in the Implementation category - which represents the greenness of a vendor's product portfolio - based on its large offering of value-add green features. Motorola was just a fraction of a point

behind Cisco in terms of a vendor's internal green initiatives but scored high enough on its product features for the overall 'greenest of the green' honors."

For this particular matrix, under "innovation," ABI Research examined vendors' carbon footprints, regulatory compliance, recycling efforts, internal initiatives, achievements in telepresence, video conferencing and telecommuting, and their participation in environmental organizations.

Under "implementation," ABI Research scrutinized two criteria: the controller power efficiency of each vendor's products, and their value-add green features.

Large Wi-Fi contract for Explosion Proof WLAN

In what is considered one of the largest contracts of its kind, Pixavi (previously VisiWear) will supply its range of explosion proof and 'Intrinsically Safe' Wi-Fi Wireless LAN, wireless network and antenna products to StatoilHydro, one of the largest offshore oil and gas companies in the world. The contract involves wireless coverage on all StatoilHydro's Norway installations, both onshore and offshore.

"Wireless networks are increasingly being adopted in mission critical systems. Based on redundant frequency operations and reliable hardware and software technologies, Wi-Fi wireless networks are gradually replacing cabling in applications that previously were unthinkable because of lack of reliability and redundancy. The new 802.11n standard also offers close to the same network speed as cabling and thereby, wireless networking has definitely become a cost effective alternative to cabling within industrial communication applications," commented Managing Director, Christian Rokseth.

Wireless Data Coordinator
– VERIZON WIRELESS

Chief Technology Office
– CONCRETE LOGIC

Distinguished Member of the
Technical Staff
– MOTOROLA

RF System Architect
– ARTIMI

Senior Engineer
– SAMSUNG ELECTRO-MECHANICS

Technical Director
– EUREX COMMUNICATIONS

Short Range W/less Lead Eng.
– FRACTUS

Senior Analyst
– STRATEGY ANALYTICS

Chief Application Engineer
– PHILIPS SEMICONDUCTOR

VP of Marketing & Business
Development
– ZIGBEE ALLIANCE

Design Engineer
– CSR

Business Dev. Manager
– TEXAS INSTRUMENTS

R & D Engineer
– HEWLETT PACKARD

Director, Seamless Mobility
– MOTOROLA

Procurement Manager
– BENQ

Systems Engineer
– DAIMLER CHRYSLER

Principal Design Engineer
– PANASONIC

Director, Product Development
– MOTOROLA

Research Engineer
– LG INNOTEK

Software Engineer
– DELPHI DELCO ELECT.

Corporate Strategic Planning
– LSI LOGIC

Fellow, Office of the Chief
Technology Officer
– LSI LOGIC

Equity Analyst
– HANDELSBANKEN

Senior Electrical Engineer
– MOTOROLA

Hardware Engineer
– GN MOBILE, GN NETCOM

Connectivity Manager
– AMD

Principle Analyst
– AUTOMOTIVE – iSUPPLI

Principle Engineer
– MEDTRONIC

Digital Cellular RF Product
Line Manager
– ANALOG DEVICES

Senior Applications Engineer
– MOTOROLA

Project Manager
– SCHNEIDER ELECTRIC

Director, After Market Service
– GN NETCOM

Director, R & D and Business
Development
– WEARNES TECH SOLUTIONS

Senior Product Manager
– NOKIA

Director, Strategy & Business
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– MOTOROLA

Product Manager
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Software Development
Manager
– CISCO SYSTEMS

Gen Mgr, Connectivity Div.
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Strategic Marketing
– STMICROELECTRONICS

Marketing, Low Power W/less
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Director Product Development
– GENNUM

Analyst
– CREDIT SUISSE

Grant Holder
– TELEFONICA

RF Product Manager
– MURATA

Sen. Procurement Mgr.
– PLANTRONICS

CEO
– PLENUM WIRELESS

Confidential Agent
– PHILIPPINE BUR. OF IMMIGRATN.

Software Engineer
– SENNHEISER COMMUNICATIONS

Design Engineer
– TRIMBLE NAVIGATION

Executive Director
– OPEN SPECTRUM FOUNDATION

Software Engineer
– SONY ERICSSON

Development Engineer
– PARROT

Security Engineer
– U.S. DEPARTMENT OF STATE

Director
– WIQUEST

President & CEO
– USA SIGNAL TECH.

Technical Manager,
Bluetooth Qualification Board
– SONY ERICSSON

OSC
– U.S. NAVY

President
– TIBA MEDICAL

Lecturer
– NANYANG POLYTECHNIC

R & D Project Leader
– GN NETCOM

R & D Engineer
– HEWLETT PACKARD

UWB Marketing Manager
– STMICROELECTRONICS

Senior Engineer
– SAMSUNG ELECTRONICS

Technical Strategist
– LENOVO

ASIC Development manager
– MICROSOFT

Senior manager
Audio/infotainment architectures
– VISTEON CORPORATION

Senior product manager
– BELKIN

Principle engineer
– PLANTRONICS

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– TEXAS INSTRUMENTS

Senior systems engineer
– GN NETCOM

Senior system architect
& standardisation manager
– NXP SEMICONDUCTORS

R&D engineer
– FRANCE TELECOM

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RF Engineer
– TAIYO YUDEN

Principle IC Architect
– SILICON & S/WARE SYST.

Patent Engineer
– GN STORE NORD

Researcher
– EC JOINT RESEARCH CENTRE

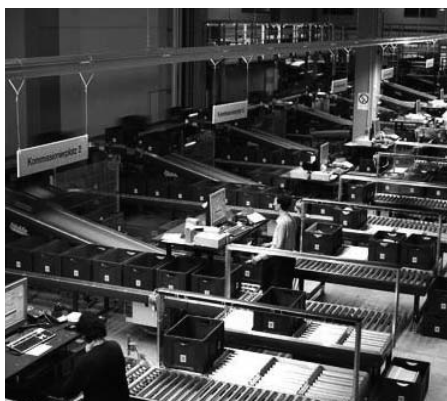
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low energy wireless news



RFID moving into the data centre

IT managers are increasingly finding value in using RFID within their own IT operations, according to new research from ABI. This is spurring adoption of RFID in data centres and across corporate campuses.

IT assets are key infrastructure for any modern business, and IT managers need to be certain that equipment is documented, traceable and secure. Detailed, accurate and regular auditing of IT assets is a necessity. At most companies this still an expensive, largely manual process, but RFID can deliver quicker, more detailed and more accurate day-to-day management of these important operational assets, says ABI.

"RFID IT asset tracking is starting to gain momentum in data centres. Managing and auditing this equipment is a serious pain point for IT departments, and automating those applications with RFID can drive clear ROI," says ABI Research principal analyst Jonathan Collins. "The environment also suits RFID: the density of valuable equipment within a restricted area limits the cost and increases the efficiency of an RFID deployment. Once RFID is deployed in the data centre there is a base for RFID tagging to extend further within IT asset management across an organization's IT infrastructure."

ABI predicts that IT asset tracking, currently just a fraction of a percent of the worldwide RFID asset tracking market, will grow to take more than a 10% stake by the end of 2013. Both passive and active RFID offerings will be used. Some deployments may even employ a mix of both technologies, but improvements in passive UHF system capabilities and the technology's lower equipment costs mean it will lead shipment volumes and revenues.

RFID vendors and systems integrators are offering a range of products from specialized tags and software to systems design and integration. What's more, IT equipment manufacturers – so far including HP and IBM – are offering RFID tagging as part of their product specification, and tagging will increasingly be an option many IT managers will look for when specifying their new equipment.

Mobile Money Transfer and NFC to Account for 50% of the M-Payments market

Mobile money transfer and contactless NFC (Near Field Communications) will together account for 50% of the overall mobile payment market globally by 2013, (based on the gross transaction values), according to Juniper Research's new Mobile Payments Study.

The Juniper report found that the mobile payments market, which is today is dominated by purchases of digital goods such as ringtones, music, and games, will in future be driven by subscribers transferring money and using NFC features on their handsets to make purchases. This will drive the overall mobile payments market to grow by a factor of ten between now and 2013.

Report author Howard Wilcox explained: "We see significant opportunities for new services making it easier for the 'underbanked' population and migrant workers to make remittances, using their mobile phones as mobile wallets: the services already in operation are seeing rapid growth." Wilcox added that mobile wallets will incorporate NFC which will enable people to use their mobile phones to pay for small value items such as refreshments and magazines.

The top 3 regions for this sector will be the Far East & China, Western Europe and North America). Together these will account for over 70% of mobile money payments on a gross transaction basis by 2013. However, there will be hurdles to be addressed for the market to reach its tipping point, including NFC handset availability, workable business models and financial legislation.

Freescale and Nivis join forces on sensor mesh networks

Freescale Semiconductor and Nivis have announced plans to combine their respective technologies to provide a wired-to-wireless platform for commercial and industrial sensor mesh networks based on IEEE 802.15.4, ISA100.11a, WirelessHART and 6LoWPAN standards.

The combined hardware/software platform solution includes sensor interface, radio module, router/gateway, security manager and advanced network manager capabilities for emerging wireless standards in the industrial and commercial sector.

The Freescale and Nivis development platform is designed to provide developers with a way to evaluate ISA100.11a, WirelessHART and 6LoWPAN stacks on Freescale microcontrollers (MCUs) and embedded processors and enables those developers to create wireless sensor mesh network solutions. Nivis contributes the software, and Freescale provides the embedded hardware options. The platform is based on Freescale's ColdFire microcontrollers, Power Architecture processors and processors based on ARM cores.

low energy wireless news



Freescal BeeStack achieves golden unit status

Freescal Semiconductor's ZigBee protocol stack, Beestack, now supports the new ZigBee PRO feature set, which is the professional-grade version of the ZigBee standard designed to support more sophisticated sensor and control networks.

Included with this release is the ZigBee Smart Energy (SE) profile used for HAN and smart metering applications. The ZigBee 2007 and ZigBee PRO solutions are both supported by the ZigBee Smart Energy profile.

The MC13224 - Freescal's third generation, 802.15.4-based chip set - supports both BeeStack for ZigBee and BeeStack for ZigBee PRO feature sets. This chip set is designed for a range of wireless applications, including energy management, commercial building automation, industrial control and monitoring and home entertainment control.

"Freescal is one of a few providers supporting both ZigBee and ZigBee PRO feature sets," said Bob Heile from the ZigBee Alliance. "As the demand for

commercial automation tools continues to rise, the ZigBee Alliance is confident that Freescal's BeeStack portfolio will play a large role in fulfilling the industry's need for robust wireless communication software."

At least, that is what Bob said according to the Freescal press release. Unlike the other wireless industry alliances and management companies, the ZigBee Alliance hides its light under a bushel and the poor old press is left to speculate. Is that the right policy for the organization charged with managing and - presumably - promoting a technology in a competitive environment?

Answer on a post-card, please.

TI introduces RF range extender for 2.4-GHz

Texas Instruments (TI) has introduced what it describes as 'a highly integrated, cost-effective' radio frequency (RF) range extender for 2.4-GHz wireless applications, such as ZigBee networks, wireless sensor networks and industrial, consumer and audio equipment. The CC2590 is claimed to extend range up to eight times the line-of-sight by

integrating a power amplifier for improved typical output power of +12 dBm and a low-noise amplifier for improved receiver sensitivity of +6 dB.

In addition to a power amplifier and low-noise amplifier, the CC2590 integrates switches, RF-matching, inductors and balun, and works with all of TI's existing and future 2.4-GHz RF transceivers, transmitters and system-on-chip products. The CC2590 also complements the recently introduced CC2591, which TI says extends range up to 15 times line-of-sight with up to +22 dBm output power.

The CC2590 is available now from TI and its authorized distributors in a 4 mm x 4 mm QFN-16 package.



events



| DATE | EVENT | LOCATION | NOTES | LINK |
|------------------|---|---|---|---|
| Nov 4 - 6 2008 | Bluetooth Developers Conference | COEX Convention & Exhibition Centre, Seoul, Korea | - | https://www.bluetooth.org/Events/sig_events.htm |
| Nov 18 - 20 2008 | ID WORLD International Congress | Milanofiori Congress Centre, Milan, Italy | RFID, biometrics and smart card technologies | http://www.idworldonline.com/index.php?id=about |
| Dec 9 -10 2008 | Wireless Coexistence Summit | Hilton Santa Clara, California USA | Facing the challenges of combining multiple wireless technologies | http://www.imsconferences.com/wcs08/ |
| 2009 | | | | |
| Jan 8 - 11 2009 | International Consumer Electronics Show | Las Vegas, Nevada, USA | - | www.cesweb.org |
| Feb 16 - 19 2009 | Mobile World Congress | Fira de Barcelona, Spain | - | www.mobileworldcongress.com |
| April 1 - 3 2009 | CTIA Wireless 2009 | Las Vegas Convention Centre, Las Vegas, Nevada, USA | - | www.ctiawireless.com |
| Oct 7 - 9 2009 | CTIA Wireless I.T. & Entertainment 2009 | San Diego Convention Centre, San Diego, California, USA | - | www.ctiawireless.com |

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