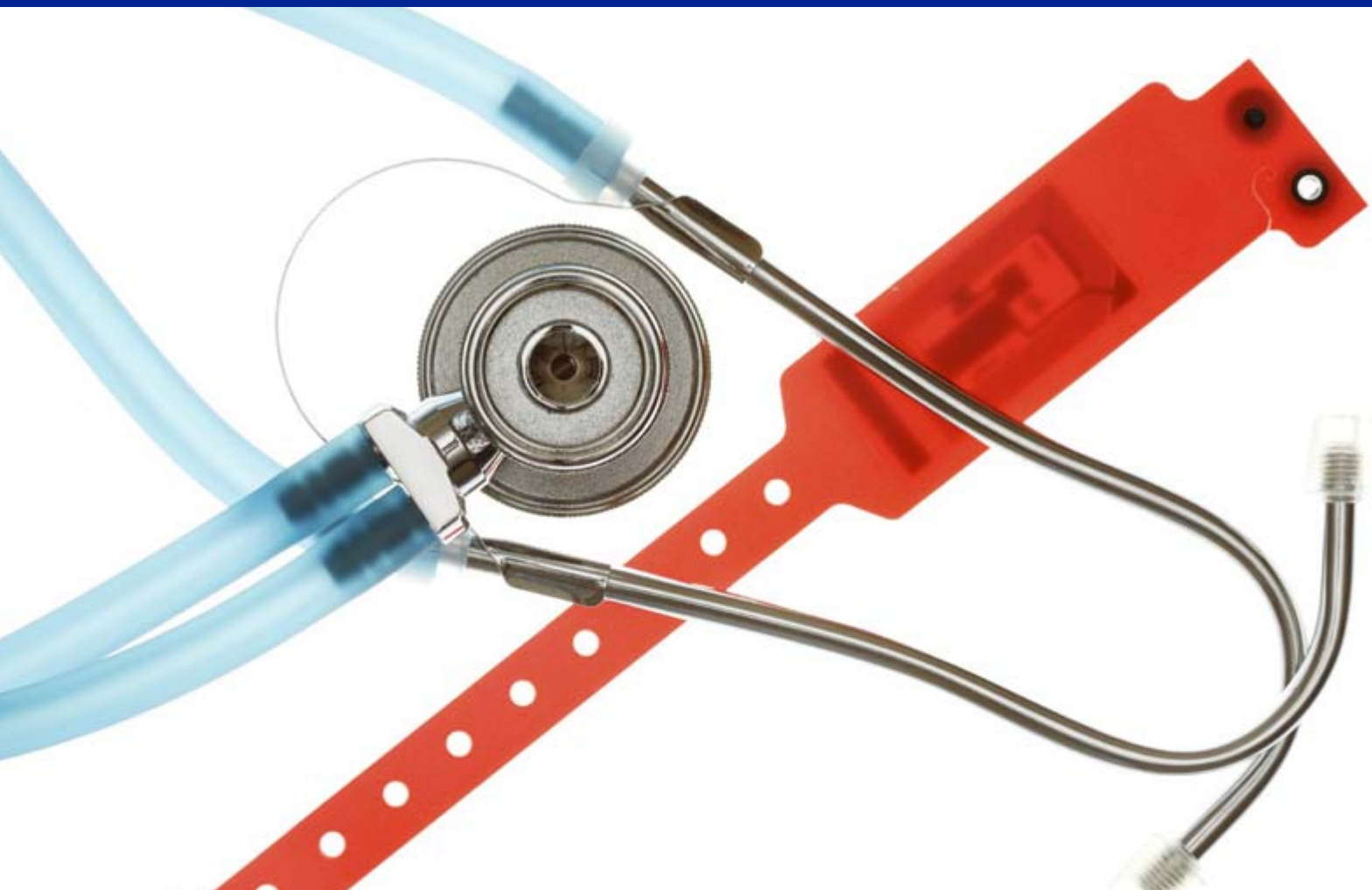


INCISOR™

for the short
range connectivity
environment

Video enabled  Issue 160

August 2011



WIRELESS IN MEDICAL AND HEALTH

THIS ISSUE

TRENDS IN WIRELESS MEDICAL FOR HOSPITALS
TRANSFORMING THE HEALTHCARE INDUSTRY WIRELESSLY
CAR + NXP + NFC = NO LOST KEY

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then I saw her face

Now I'm a believer. Thank you to Messrs. Dolenz, Nesmith, Tork and Jones for the loan of the lyrics from The Monkees' classic 1967 hit record, but sometimes you do have epiphany moments that make you really see something properly for the first time.

What the hell am I talking about? Well, it's the revelation that social media does work. You may already have been a believer. After all, how else would you have found that incredible movie of a bulldog on a skateboard? Or those endless idiots emasculating themselves by trying to ride their bikes down the handrail of a set of steps?

No, I'm talking about the fact that social media really can work in the business environment. Check out our feature on page 7 and you will see how Incisor is now successfully merging social media networks with our triangular media product (Incisor already consists of an e-magazine, a web TV business and a host web site). Now, our triangle has four sides.

You can be part of this. Don't be shy, talk to me.

This month we also look at the use of wireless technology in the medical and healthcare sector, which has been touted as a market that offers huge potential. You might be surprised at some of the suggestions – would you believe that Ultra Wideband has a role to play? Read Tim Phipps piece 'Trends in wireless medical for hospitals' and see how this technology, which many have been keen to promote to the dumpster, can become part of this ecosystem.

And finally, some nice things have been said about Incisor in the past, but see Simon Ellis's comment at the bottom of this page to see why I shed a little tear this month.

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

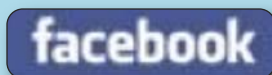
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CAR + NXP + NFC = NO LOST KEYS

NXP increases the functionality of car keys by supporting Near Field Communications (NFC) technology.

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“The Bluetooth program got started about fifteen years ago. It is now possible to look back and see that Incisor/Vince was one of the key things that made it happen. Incisor magazine and Vince's presence were felt soon after the public launch. This was not planned - we weren't sure what to make of it? The magazine was good, it was accurate, was not afraid to ask the hard questions, and also promoted what we believed to be the value of the technology. We had planned an industry targeted journal. Incisor was better, it came from the community. I believe that the community got to trust the good journalism and appreciate the bias towards the end user and developer community. For the Bluetooth program, it provided a vehicle to communicate without corporate spin and it kept us honest in our actions.”

Simon Ellis
 Former Chair of Bluetooth SIG marketing / Bluetooth SIG Hall of Fame
 Principal Engineer, Intel Corporation





Qualcomm beats Broadcom and CSR

Qualcomm, Inc. has been ranked at the top of the latest Vendor Matrix released by ABI Research. Broadcom Corp. and Cambridge Silicon Radio (CSR) claimed the second and third spots in the company's most recent evaluation of worldwide GPS IC vendors.

The Vendor Matrix is an analytical tool developed by ABI Research to provide a clear 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.

Senior analyst Patrick Connolly told Incisor, "The sheer scale of Qualcomm's embedded GPS shipments powered it to number one in the matrix. However it would be wrong to underestimate its efforts on Glonass and alternative/hybrid location.

"There is very little to separate Broadcom and CSR: Broadcom offers a wide range of IC implementations, design innovations and major contract wins across a number of different vertical markets. CSR continues to drive innovation in terms of optimizing GPS IC performance to meet growing demand in emerging markets, while continuing to generate significant revenue from established markets. This is reflected in CSR's recent Samsung Galaxy S II design win."

For this particular matrix, under "innovation," ABI Research examined the vendors' support for multiple design approaches and technologies including multiple RF integration (combo-chips), Embedded GPS IC solutions and support for other GNSS constellations, such as Glonass.

Analysts also evaluated vendors' wireless assistance data support (A-GPS), alternative positioning technology support, sensor



support and satellite-based augmentation system support (SBAS). The matrix also considers innovation in size, power consumption and recent product introductions.

TRaC debuts Early Stage Qualification division

In what it describes as a major expansion to its business, TRaC has announced the launch of its Early Stage Qualification ("ESQ") Division. ESQ offers a new model of engagement for TRaC's clients, both existing and new. Operating as an engineering consultancy, ESQ will work with design teams at an early stage in product development cycles, to build-in the attributes that will be needed to ensure first-time-success when projects reach the testing, approvals and certification phase.

TRaC CEO Mark Heaven told Incisor: "It has always been the case that you cannot test compliance into a product: it has to be designed-in from the start. But in many companies, established practices or budgetary structures mean that thinking about how approvals will be secured, and standards-compliance achieved, starts too late in the design process. TRaC ESQ will give its clients the tools to remedy this situation."

TRaC is the largest provider in the UK of Test and Approval services, and ESQ will focus on assisting clients with specific aspects of their product design and route to market; those affecting Safety, Reliability, and Radio/Telecoms Standards Interoperability

TRaC told Incisor that it has delegates and representatives who sit on many key standards bodies and industry committees, and who participate in the processes that shape current and emerging standards and



regulations. Consultancy with ESQ will give engineering teams access to this resource.

TI introduces OpenLink Bluetooth and Wi-Fi connectivity inside WiLink 6.0

Texas Instruments (TI) has premiered its first module platform housing the WiLink 6.0 (WL1271) single-chip, wireless combo solution with its open source, Linux-based OpenLink drivers. The OpenLink drivers are built on the mac80211 Wi-Fi driver and BlueZ Bluetooth protocol stack. The WiLink 6.0 OpenLink platform is pre-integrated with TI's AM18x Sitara ARM microprocessors (MPUs). This enables customers developing industrial or point-of-service applications on ARM MPUs to introduce low-power Wi-Fi and Bluetooth wireless technologies.

TI told Incisor that the release also signifies the first time TI's customers can repurpose Sitara ARM MPU-based designs as Wi-Fi access points via the new WiLink 6.0 OpenLink platform. OpenLink technology apparently offers mobile-grade, battery-optimized Wi-Fi connectivity supporting native Linux designs, giving customers tested wireless technologies that can be easily re-integrated into designs as they migrate from one kernel version to the next. Additionally, TI's mac80211 Wi-Fi driver is optimized to maximize system level throughput.

As a result, battery-friendly customer products built on Sitara ARM MPUs can serve as a mobile Wi-Fi gateway or support peer-to-peer file transfers with other Wi-Fi enabled devices. TI's thinking is that these capabilities eliminate the need for external access points and create new opportunities for unique use cases depending on mobile, self-networking devices.

news



Whitespace pioneer raises funding

Neul, the company offering products and services for the emerging TV white space spectrum, has raised \$12.8million (£8.0m) from a syndicate of investors led by European venture capital firm DFJ Esprit and including IQ Capital and Cambridge Angels. The founders and employees have also made a significant contribution.

Neul seems to have come up with an informal mission statement, saying that it 'will unify the fragmented world of Machine-to-Machine (M2M) communications with the world's first white space radio system and a new, open M2M communications standard, re-defining wireless data communications'. Neul will shortly launch the new standard, which will be called "Weightless". Incisor understands that there will be an associated SIG or forum.

Commenting on the funding announcement, Neul Chief Executive James Collier told Incisor, "This investment will allow Neul to further expand its leadership position in fully compliant white space wireless systems. It is a real pleasure to be working with one of the leading investors in wireless technology in Europe, DFJ Esprit."

Simon Cook, CEO DFJ Esprit, added, "Having worked with the founders in their last venture (*Ed. - he's talking about CSR, which, although it seems to be a little unsure of itself these days, was a somewhat successful business during the early years of Collier's involvement*), I am excited to be working again with the team that have pioneered game changing wireless technology in Europe. They have an exciting vision, and with endless applications of the Neul network it will truly set a new standard for wireless communications."

Another ex-CSR-er, Phil O'Donovan - now of the Cambridge Angels and lead angel for the angel group added, "We also are delighted to invest in this significant new global wireless opportunity being enabled by the very well positioned Neul team."

Neul announced its first product, NeulNET, during June (see Incisor.TV's [video coverage of Neul's launch event](#)). Neul describes NeulNET as the first

radio system specifically designed for TV white space that meets all FCC/Ofcom regulations, and which allows networks to operate safely and legally within TV white space.

Signalling the end of lost keys

Nordic Semiconductor is celebrating the fact that the Bluetooth SIG's recent finalization of its Bluetooth low energy Find Me and Proximity profiles - part of the latest Bluetooth Version 4.0 (v4.0) specification - will make mass-market wireless proximity and security sensing viable for the first time.

This will include the ability to find missing keys and smartphones, or alarm and securely lock almost any portable device that is separated from its owner via the use of, for example, a simple Bluetooth low energy key fob device.

The latest Bluetooth v4.0 spec includes two profiles applicable to proximity sensing and security:

- The Bluetooth low energy Find Me profile targets smartphone applications, and will allow users to pair small - but commonly misplaced - everyday objects with their smartphone in order to locate them. One early product example will be Bluetooth low energy key fobs that users will be able to use to find a misplaced phone (by pushing a button on the fob to make the phone sound an audible alert), or a misplaced key fob (by pushing a button within a smartphone app to make the key fob sound an alert);
- The Bluetooth low energy Proximity profile targets smartphones and other portable devices such as computer laptops and tablets, and further extends the functionality of the Find Me profile to include more advanced in- and out-of-range functions. This could include, for instance, the ability to trigger an automatic security lock-down if a smartphone or laptop/tablet is separated from its owner by more than a certain threshold distance, or wake a sleeping desktop computer as soon as the user sits down in front of it.

Frank Berntsen, Chief Scientist at Nordic Semiconductor and chair of the PUID working group

told Incisor: "The profiles have been developed within the Bluetooth SIG PUID [Personal User Interface Device] working group by technical teams from a number of different Bluetooth SIG member companies all eager to enable this new, standards-based wireless functionality."

Mobile payments market to triple in value by 2015

A new study from Juniper Research has determined that the total value of mobile payments for digital and physical goods, money transfers and NFC (Near Field Communications) transactions will reach \$670bn by 2015, up from \$240bn this year. These forecasts represent the gross merchandise value of all purchases or the value of money being transferred.

The report revealed that all segments will exhibit 2x to 3x growth over the next five years. This growth will be driven by the rapid adoption of mobile ticketing, NFC contactless payments, physical goods purchases and money transfers as people in both developed and developing countries use their devices for everyday transactions.

Juniper forecasts that 20 countries will launch NFC services in the next 18 months, resulting in transactions approaching \$50 billion worldwide by 2014. Meanwhile the need for financial access in developing countries is such that active mobile money users will double by 2013 and drive transaction values accordingly.

Senior analyst David Snow told Incisor, "Our analysis shows that emerging segments such as physical goods payments, NFC and money transfers will fuel market growth by a factor of 2.7 times by 2015. Digital goods is the largest segment and, although forecast to more than double, it is not growing as quickly as some of the newer segments."

Other key messages from the report include the fact that the top 3 regions for mobile payments (Far East & China, W. Europe and N. America) will represent 75% of the global mobile payment gross transaction value by 2015, and that digital goods payments will account for nearly 40% of the market in 2015.

new products – stuff we like

Jambox from Jawbone

- little box, big sound

This is the feature where we single out Bluetooth products that we've tested that stand out from the crowd, and which we think deserve an extra mention. These 'Stuff we like' pages aren't formal reviews, we'll confess, and we don't include three pages of tech specs and test results. We just use the products, and if they a) do what they are supposed to do and the way they are supposed to do it and b) go a bit beyond in terms of quality, ease of use or just damned pleasure of ownership, they get to be featured.

This month's example is the Jambox, a portable wireless speaker from Jawbone (Jawbone is actually a brand and a range of products produced by Aliph). This is the company that made those Bluetooth headsets that looked like something from a sci-fi movie, and wrapped them in packaging that Incisor commented in the early days must cost as much to make as the headset itself. Nothing has changed on that score, by the way – the Jambox comes in another of Jawbone's super-deluxe packaging systems.

Our look at the Jambox was even less like a normal review. Incisor editor Vince Holton took the stylish little box on holiday with him, and, everyday, the lucky, lucky residents and tourists in the town of Fiskardo, on the Greek Island of Kefalonia, shared Vince's Spotify play lists. Listen - if we were going to do our bit to help the Greek economy, and as the Greeks seem unwilling to pay back any debt, or any tax, or accept any cutbacks, we think is only right that they have to suffer one way or another.

In very simple terms, Jambox delivers high quality audio in a compact portable wireless speaker. The dimensions are below, but basically, the Jambox fits in the palm of your hand, and has a chunky, well-made feel to it. And it's loud. With an output capacity of 85 decibels, Jambox can fill large rooms, or, more to the point in this case, the outdoor terraces around Holton's villa. Jambox is powered by a pair of proprietary, acoustic drivers that produce high (tweeter) and low (woofer) frequencies from a single, ultra-small dome speaker. They work in concert with a moving-wall passive bass radiator and airtight enclosure and really do deliver a level of



sound quality that you would never get from a smartphone or most portable wireless speaker systems. Jawbone claims ten hours of continuous play, and our sample was only re-charged once in two weeks during which it was used at some point every day. Even then, it was recharged because we thought it probably needed it, and not because the device was bleating for more go-juice.

Jawbone also describes the Jambox as the only speaker in the world that gets smarter every time you plug it in. You can sync it with MyTALK, Jawbone's online platform to download apps, software upgrades, and the latest features.

When the odd, annoying telephone call interrupted Holton's sybaritism, the Jambox stepped up to the plate. It has a built-in microphone, which means that it can be used as a speakerphone and for conference calls anywhere you might happen to be - in the office, car, at home or sweltering in the sun while lying on an airbed that is floating around on the infinity pool.

Our Jambox came to us in what is called Black Diamond finish. The speaker also

comes in Blue Wave, Grey Hex and Red Dot options. If you're going on holiday, and you're worried about baggage/weight allowances, the Jambox' dimensions are: length - 151mm, width - 57mm and height - 40mm. The weight is 347 grams (12oz).

This is a wireless magazine, so we should mention some Bluetooth stuff. Jambox is Bluetoothv2.1 compliant, supports Enhanced Data Rate (EDR) and the Advanced Audio Distribution Profile (A2DP) 1.2, the Hands-Free Profile (HFP) 1.5 and the Headset Profile (HSP) 1.1. It also supports Simultaneous Multipoint (enabled via MyTALK) so that you can connect to two devices at the same time.

So, this is definitely one of those products that you like having around you. It looks good, it sounds good, it has the feelgood factor, oh, and did we mention that it makes amusing little noises when you do things to it - e.g. switch it off?

Jambox gets the Incisor seal of approval. It you want one, Amazon will charge you £148.99 in the UK and \$179.99 in the USA.

Proximity

update

Incisor proves that Social Media does work!

We asked: What would YOU like your connected watch to do?

That's exactly what we did in last month's issue, following up on two previous issues in which we had examined the emerging market for developers of wireless enabled, connected watches.

We invited you to comment over at our [WPAN World group at LinkedIn](#), where we had started a discussion 'What would we like our connected watches to do?'. We were inviting ideas as to what applications should be developed and promoted in order to persuade people on the street that they just have to have a connected watch, and to persuade young people that instead of using their cellphones as their time-telling device, they ought to re-embrace the idea of wearing a watch.

Now, we would have been happy with a couple of posts, but this topic obviously struck a chord, because a lively dialogue ensued, involving:

- a Strategic Marketing and Systems Engineer at Texas Instruments Norway
- a wireless FAE at Rutronik in Germany,
- the president of Fisticits in the USA,
- the CTO of Rococo in Ireland,
- Fossil's VP of watch technology,
- the CTO of Talon Communications in the USA
- the Senior Product Manager at Dynastream (owned by Garmin), which runs ANT, the ultra-low-power wireless sensor network business and also the ANT SIG

With 56 posts in response to our original question, there is much, much too much dialogue for us to repeat it here, so let's continue to promote the social media concept and invite anyone who hasn't read the thread to do so now. The links above still work perfectly well.

As you will see, the contributors know their stuff, and it's fair to say that each is prepared to fight his own corner.



STRENGTH IN NUMBERS

This is the way that digital media works. Incisor is, essentially, a triangular product. That's because we have the magazine, our Incisor.TV content, and our web site. However, once we extend beyond the original triumvirate, using social media networks such as LinkedIn (and Twitter and Facebook too, they have much less relevance to B2B activity), we really start to broadcast to the world. The WPAN World group at LinkedIn is managed by Vince Holton. Vince has (to date – it grows continually) 565 connections on LinkedIn. These connections link Incisor to 11,500,000 professionals.

This is powerful stuff. We would encourage all of our readers to communicate their views and opinions – either directly by email to Incisor's staff, or via the Social media networks.

Heck, we're part of the 21s Century!

What people are saying

Here is a small selection of the comments at the WPAN World Group connected watch discussion:

"Mobile health offerings seem to be the most compelling reason for watches to offer some type of connectivity."

"A Bluetooth watch or a Bluetooth Low Energy watch? Bluetooth 2.1 is charging too much power. Please note that there are a lot of watches based on ANT+."

"ANT is a protocol. The company that owns ANT is Garmin. Garmin manufactures phones, watches, fitness sensors, etc. In other words, Garmin competes against all the companies it would like to see license ANT."

"I buy a new connected watch because a) it looks cool, and b) apparently I can make it "do stuff" if I want, by "hooking it up" to my phone. Nice. That's how I'd expect a connected watch experience, of say "Apple like" (it just works) quality to play out."

"It is very easy for engineers to develop a watch with lots of functionality that only geeks are going to use because it becomes too complicated. The ideal device "just works", you don't need to think about it."

"Meta Watch by itself won't jump start the connected watch category, but we think it's a good first step in the right direction."

"There is appears to be little consistency when it comes to Bluetooth SPP implementations on mobile handsets, even for a single platform such as Android. My hunch is there is little testing being done for persistently attached devices over Bluetooth SPP."

"A wrist watch was a nice retirement gift 30 years ago. It is about 13 years since my first cell phone and it was then that I started to use the cell phone and later PDA to tell time. Since I have a PDA in my pocket there needs to be a good reason to get a watch. This watch should provide something that my PDA cannot."

Click on the logos to connect with us





Tim Phipps,
Cambridge
Consultants.

Trends in wireless medical for hospitals

Tim Phipps, Business Development Manager,
Cambridge Consultants

For a long time we've been anticipating the arrival of wireless medical applications in modern hospital treatments. The trend started with wireless technology being used to monitor heart patient ECG records, using the protected Wireless Medical Telemetry Service (WMTS) band at 1.4GHz. After that, we saw a move to the shared 2.4GHz band, where health and wellness products chose short-range communications technologies, like Bluetooth, and harmonized their interoperability using the Continua Alliance standards. And recently we've seen an explosion of Wi-Fi (802.11n) systems being deployed in hospitals to allow tablet computing devices to be used for viewing patient Electronic Health Records (EHRs). The great benefit of these applications has been the convenience and ease of use, which remove the administrative burden and allow medical staff to get on with the job of caring for patients.

With one of the largest independent wireless development teams in the world, Cambridge Consultants has been a key developer of wireless technology for use in the medical industry. In this edition of Incisor, we aim to answer the question: What's coming next?

With the current applications, like EHR viewing, driving up the demand for wireless data, we can expect that the available radio spectrum will soon become saturated. Even with careful management, there is a limited amount of spectrum available for wireless data applications. Mark Twain famously quipped that you should "buy land because they're not making it any more". He might well have said the same of radio spectrum. It's a finite resource, which is getting more valuable all the time due to the fundamental limits on its availability.

In my opinion, the answer to this spectrum squeeze will be a trend towards

deployments of wireless technologies that communicate over short range to give a network of small-cells. It's like living in a large house, you find yourself shouting to make sure that the kids hear the call for "dinner-time", but if your house fills with people then this kind of behaviour becomes self defeating. It's not much fun being in a crowded room where everyone is shouting at the top of their voices. So as the noise levels increase, we find ourselves falling into small conversational groups. And it's the same with wireless, we can't get more communications capacity if we're already being deafened by the existing conversations.

Traditionally, wireless deployment has always aimed to optimize the availability of the network by maximizing the level of the wireless signals launched into the air. Increasingly hospitals will need to control the levels of wireless interference. The wireless environment may look like a particularly noisy house party, but there will be small groups of wireless-enabled equipment huddled together to exchange lots of critical data.

As I've explained, the next wave of wireless medical applications may not be driven by "more of the same" wireless kit (like Wi-Fi), but will need to reach out to use techniques that inherently minimize interference.

One technology that would thrive in an interference limited environment is Ultra-Wide Band. As the name suggests, UWB transmits data over a much larger bandwidth than other wireless technologies (500MHz compared to 40MHz for 802.11n), but with a much lower power. The result of this low transmit power is that radio communications do not propagate through walls, and so the network is typically confined to a single room. High data rates and local control of interference make it a suitable match to the requirements of the Digital Operating Room (Digital OR). As an example



application, UWB has been used in wireless Digital Radiography products which transfer large, still images. We expect to see a move up to moving images, with wireless video applications enabling greater ease of use in the Digital OR of the future.

Another piece of enabling spectrum is around 60GHz, where 7GHz of spectrum is available for general use. Again, propagation is inherently limited in range, which will lead to a small-cell network architecture for high performance applications. Standards are still in the process of being written and approved, but expect to see more from this technology as it matures.

In summary, wireless medical applications have arrived in hospitals and look set for growth. With greater usage expect to see the management of radio spectrum becoming more important to hospital IT managers. And I predict a trend towards small-cell usage of wireless technology to enable new applications like wireless video.

www.cambridgeconsultants.com



Keeping Mum: Transforming the Healthcare Industry *Wirelessly*

by Dean Anthony Gratton

Let's face it, wireless technology is pretty much everywhere and I can certainly be confident in claiming that the majority of us have come into contact with it in some shape or form. I have to admit that this blanket statement may seem a little lame, but we can't escape wireless technology's aim to simplify connectivity between products, albeit a work-in-progress. The healthcare industry hasn't escaped the simplification message either and according to the Continua Health Alliance (continuaalliance.org) wireless technology is set to transform the healthcare industry – wirelessly!

A failing health service

Telecare and Telehealth are two relatively new terms that symbolise the characterisation of remote management of health, predominately for the elderly and infirm. And, it's not new! I was working with similar technology and prototype products back in early 2000. I was even offered a Smart Cymru Award (it's a Welsh thing) to advance the concept further. I was specifically looking at technology that could support an ecosystem within the home and which offered the elderly and infirm a supportive home infrastructure whilst sustaining their independence. I looked at ideas such as a bi-directional communication emergency necklace, monitoring devices, two-way communication within the home; location and other similar devices. I think it's become increasingly relevant today, particularly in light of the decline of the (British) National Health Service (NHS)

In a statement I received from the Continua Health Alliance they confirmed "An increasingly aging population, a need for more affordable healthcare, and a shortage of healthcare providers is creating the demand for a home-based, mobile care model made possible by the development of personal connected healthcare solutions including PCs, netbooks, cell phones, smart phones

and the like." I'm guessing that, due to ever evolving medical advances, people are in fact living longer. But more importantly, wireless technology within the healthcare system potentially offers one primary gift, if you like, and that's affording independence to a generation of individuals who may otherwise feel robbed of it by their frailty and age.

My personal experience

On a personal note, I can certainly relate to this and unequivocally empathise. My wife's (Sarah) mother, Mona, sadly passed away several years ago. A few years prior to her death, she slowly deteriorated in physical well-being, although her mind remained incredibly sharp and focused. But as each day passed, she became increasingly frustrated at her lack of mobility and frailty. Mona wanted to remain within her own home to continue to enjoy her creature comforts and other associated memorabilia around her but, most importantly, she enjoyed the regular visitors who frequented her cosy cottage in Cambridge. In short, she wanted to retain her independence. With this in mind, Sarah and I endeavoured to find a solution where we could keep mum at home. Our search was compounded by a lack of associated telecare and telehealth products that could not only provide her with much needed treatment (for cancer), but most of all offer her the peace-of-mind of knowing that someone could attend the house in the event of an emergency.

Despite our search, Sarah and I were sadly unable to find a solution and she eventually conceded to full-time nursing care at a private home in Cambridge.

Six of one, half a dozen of the other

I have seen many short-range technologies touting their applications/services and other attributes in, what can only be described as a

competition to dominate the healthcare market – it's a simple case of six of one and half a dozen of the other! The wireless industry typically enters a debate of "Which is better?". Nonetheless, I'm sure (or at least I hope) each technology can singularly play a role in creating an ecosystem where, over a period of time, we can confidently rely on the technology to enable our grandparents and other infirm family members to remain within their home whilst extending a care network that, may in turn, alleviate our diminishing healthcare systems. The Continua Health Alliance confirmed, "Compelling, easy-to-use wireless solutions that work together seamlessly with other personal connected health devices, products and services add to that ecosystem and help empower individuals to manage their own healthcare and live independently longer."

I also dropped an email to IMS Research and made contact with Alex West, Director, Connectivity Group. West offered a report "Wireless in Health and Medical", which enabled me to better understand the potential growth of each technology within the healthcare market. I really wanted to avoid the clichéd 'who's going to win' debacle, but the evidence in the report portrays an eventual leader. I'm sure we can build an ecosystem using the combination of wireless technologies. Inevitably, devices within this sector will grow exponentially, as IMS Research confirms "The market for wireless devices in health and medical is on the verge of significant growth. IMS Research forecasts that by 2015, over 134 million low-power wireless enabled health and medical devices will have been shipped." Nevertheless, despite my keenness to move away from such a debate, the graph in Figure 1 seems to suggest that Bluetooth low energy shipments will dominate by 2015, along with low-power Wi-Fi a very far second and trundling into (joint) third place (my old favourite) ZigBee. I'm sure it looks like a tie for third place with ANT+, by the way.



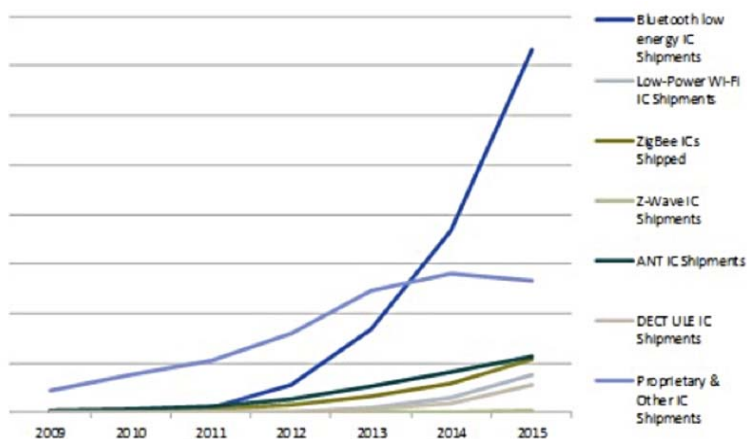


Figure 1: World market for low-power wireless ICs in consumer health monitoring, by technology (source: IMS Research, September 2011).

Wireless technology each has a part to play

The IMS report focuses primarily on Bluetooth low energy, ZigBee, ANT+ and a smattering of proprietary wireless technologies, which surprises me a little, as the graph indicates low-power Wi-Fi in a favourable second place (in terms of silicon shipments, not overall winner, so to speak). Perhaps it's a follow-up discussion, but clearly, with emerging, albeit belated profiles from the Bluetooth Special Interest Group (SIG) and with ZigBee's additional selection by the Continua Health Alliance as its low power LAN standard, it does raise the question "What role will low-power Wi-Fi play?" Guys, if you're listening, please speak up!

ANT+ and Bluetooth low energy are the two technologies that will seem to engage in some sort of battle, as both technologies are targeting the wearable device market, whereas ZigBee will support a new healthcare ecosystem, as I have already mentioned. ANT+ will continue to grow, as the report suggests "ANT is a technology that is also forecast to gain ground in medical devices, with it already a prominent technology in sports and fitness applications. The recent announcement from Sony Ericsson that ANT is now supported in six of its current range of smart phones through Texas Instruments WiLink 6.0 IC brings ANT technology to the large handset ecosystem." For ANT this is a product placement triumph but, of course, Bluetooth has been around the block for a few years, so this is definitely one to watch!

I don't think wireless technology will ever fully replace human contact or treatment – in fact, we would be delusional to think that technology (in any shape or size) could replace first-hand human contact, but the focus of wireless technology is to help ease the health system and provide realistic and highly valuable support within the home whilst lightening the load of the health service.

I'm ultimately sure technology won't replace standard healthcare practices, but should be regarded as a tool to aid and ease the healthcare system whilst offering a level of freedom to those who are unfortunately bound by their disabilities.

Until next month ...

In next month's issue I'll be revisiting Whitespace radio. I have already touched upon this subject back in April this year, "Whitespace radio: the new wireless buzzword". I've seen many articles in the press lately surrounding Microsoft and other excited parties who are keen to explore this potential further. So, it'll be good to catch up with the technology and to understand how far it has advanced in the past few months.

On another completely separate note (and I apologise in advance to our non-UK readers) I have recently seen a British Telecom ad for their new Home Hub. It touts "Smart Wireless Technology" and wireless "N" technology and despite my incessant requests via Twitter, I haven't received a response from the company. I would like to actually understand what they mean by their self-defined terminology – if anyone can offer an insight I would be most grateful (and yes, I have visited their website!).

My literacy conquest hasn't stopped either, despite the wonderful summer. Our (the wife and I) social media book, Zero to 100,000 is due for release in October and I'm turning my attention to The Handbook of Personal Area Networking Technologies and Protocols, as well as completing the new Bluetooth book, The Next Generation of wireless technology! Busy, busy, busy! So, this is where Dr G signs off for this month and I'll see you next month with more detail of the whitespace radio saga.

About the Author

Dr Dean Anthony Gratton is a bestselling author and columnist, and has worked extensively within the wireless telecommunications R&D industry. He was an Editor of the Specification of the Bluetooth System: Profiles, v1.1, participated in defining the initial Bluetooth Personal Area Networking profiles, and was active in the Near Field Communication technology and marketing committees. His wireless research work has been patented.

You can contact Dean at incisor@dean Gratton.com and follow him on Twitter (@grattonboy). Additionally, you can read more about his work at dean Gratton.com.



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Devoted to the topics surrounding short range radar systems in the 0 to 10km range. Examples of systems covered include in-wall, through wall, short range border surveillance and in-fill radar for both ATC and military applications.



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low energy wireless news



RFID remains strong despite apparel rollout slowdown

ABI Research tells Incisor that despite the 2008-2009 economic setbacks, the RFID market rebounded nicely in 2010, growing slightly more than 14% to reach roughly \$5.3 billion. When automobile immobilization hardware is extracted from the total, the market grew close to 18%, capturing nearly \$4.4 billion. ABI forecasts a total market size of nearly \$6 billion in 2011, reflecting slightly more than 11% growth. The 2011 forecast without automobile immobilization is \$5 billion, growing in excess of 14% over 2010.

ABI is suggesting that there will be variation in demand and the pace of adoption between applications, verticals, regions and technologies, with the retail apparel sector in particular displaying something of a slowdown in growth this year. However, ABI's bottom line is that across the market as a whole it continues to see strong potential for future growth.

Research director Michael Liard commented, "The fastest-growing application between now and 2016 will be item-level tracking in supply-chain management, which ABI Research estimates will exceed a 37% growth rate."

This growth is being driven by high-volume demand for passive UHF systems to support...

- Retail apparel tagging in US, Europe and other select country markets
- Pharmaceutical tagging in Korea due to government compliance
- Wine, tobacco and other anti-counterfeiting tagging efforts, notably in China
- Other items over long term, including cosmetics, consumer electronics and more

"The fastest-growing verticals over our five-year forecast period (in descending order) will be retail CPG, retail in-store, healthcare and life sciences, diverse non-CPG manufacturing, and commercial services," Liard added.

More specifically, primary RFID applications can be broken down into "traditional" and "modernizing" types. In the former group are access control, animal ID, automotive immobilization, AVI and e-ID documents. The modernizing category includes asset management, baggage handling, cargo tracking and security, point-of-sale contactless payment, real-time location, supply chain management, and ticketing. The 2011-2016 CAGR for aggregated modernizing applications is expected to be double that of the traditional applications cluster.

ANT powers low cost wireless ECG cardiac monitor

Nordic Semiconductor is behind what is claimed to be the world's first commercially-available, clinical-grade, wireless cardiac monitor to support low cost continuous ECG heart monitoring, which has been announced by British medical services start-up, Isansys Lifecare Limited. This means cardiac patients can be monitored continuously, and any problems detected can be dealt with early, when they are usually easier to treat. The aim is to avoid life-threatening and costly emergency room-re-admissions.

By making the most costly elements of the Isansys LifeTouch HRV011 ECG wireless monitor recyclable, its application cost can fall (with repeated usage) to just a few tens of cents. In operation, the HRV011 resembles a lightweight bandage strip that adheres to a patient's body and analyses the ECG signal of every heartbeat in 4-5x more detail than that required for a wired ECG monitor. From this data, a proprietary algorithm running within an on-board ARM Cortex-based microcontroller is used to calculate key physiological parameters – including respiration rate and R-to-R peak intervals – to detect problems rapidly. Redundancy is also built-in because collected data is securely transmitted to a web-based HL7-compliant database.

Nordic used ANT wireless protocol to achieve a battery operating life of up to 100 hours (four days) from a regular CR2032 coin cell battery under continuous usage conditions, while offering high interference immunity in the most challenging (active Bluetooth and Wi-Fi) 2.4GHz RF operating environments.

NFC boosts mobile payments market

A new study from Juniper Research has determined that the total value of mobile payments for digital and physical goods, money transfers and NFC (Near Field Communications) transactions will reach \$670bn by 2015, up from \$240bn this year. These forecasts represent the gross merchandise value of all purchases or the value of money being transferred.

The Juniper report revealed that all segments will exhibit 2x to 3x growth over the next five years. This growth will be driven by the rapid adoption of mobile ticketing, NFC contactless payments, physical goods purchases and money transfers as people in both developed and developing countries use their devices for everyday transactions.

Some 20 countries are expected to launch NFC services in the next 18 months, resulting in transactions approaching \$50 billion worldwide by 2014. Meanwhile the need for financial access in developing countries is such that active mobile money users will double by 2013 and drive transaction values accordingly.

Senior analyst David Snow told Incisor: "Our analysis shows that emerging segments such as physical goods payments, NFC and money transfers will fuel market growth by a factor of 2.7 times by 2015. Digital goods is the largest segment and, although forecast to more than double, it is not growing as quickly as some of the newer segments."

low energy wireless news



NFC Forum expands industry partnerships

In a rather quiet, discrete sort of way, NFC seems to be gathering some momentum at the moment, and Incisor learns that the NFC Forum has signed agreements to work with organizations representing three different industries: the Asia Pacific Smart Card Association (APSCA), the Association for Retail Technology Standards (ARTS), which is a division of the National Retail Federation (NRF), and the Open Mobile Alliance.

"It is gratifying to formalize partnerships with organizations representing these important global sectors," NFC Forum Chairman Koichi Tagawa told Incisor. "The interest in collaboration from this range of industries -- retailing, smart cards, and mobile services -- demonstrates how widely the value of NFC technology is recognized, and it points to the far-reaching benefits consumers can expect from broad adoption of NFC. We look forward to working together with our new partners and to the synergies our joint efforts will deliver."

Tagawa explained that each agreement executed by the NFC Forum is tailored to the interests of the participating organizations and their members:

- APSCA is a non-profit, independent association that provides information, consultancy, guidance, and networking to organizations in the smart card industry in the Asia Pacific region. The NFC Forum's Memorandum of Understanding with APSCA will allow the two entities to capitalize on mutual interests by sharing information and coordinating non-technical activities such as training courses, case studies, white papers, research, webcasts, and events.

- ARTS is a retailer-driven international membership organization dedicated to developing best practices, technology standards and educational programs through collaboration and partnerships exclusively for retail. Collaboration under the NFC Forum-ARTS Memorandum of Understanding will focus on information exchange and education, including publishing joint papers that would highlight specific case examples and implementation issues for retailing, sharing statistics and research, and educating and communicating with retailers through the well-respected NRF communication channels.

- The Open Mobile Alliance is the leading industry forum for developing market driven, interoperable standards for mobile service enablers. The Co-Operation Agreement with the NFC Forum asserts the two groups' common objectives to establish and promote global standards in the wireless telecommunications and Internet domain. It further institutes a context for joint work on NFC-enabled devices and related applications, including, but not limited to, diagnosing problems and monitoring device performance over the air.

The partner organisations seem to be up-beat about bringing NFC into the fold. "ARTS is excited to bring its existing knowledge and expertise to this partnership with the NFC Forum," said Richard Mader, Executive Director, ARTS. "Retailers will greatly benefit from this collaboration as we work together to guide the successful implementation of mobile platforms."

Watch this (very narrow) space.

Snippets

Toys for iGrillers

Remember iDevices and it's iGrill - the Bluetooth-enabled grilling/cooking thermometer for iPhone, iPad and iPod touch? Well the company is expanding the boy's toy portfolio and you can now buy an "iGrill Apron" and iGrill App V2.

The iGrill Apron is a one-of-a-kind silicone skin made especially for iGrill to keep it safe from heat, moisture, food and the elements for outdoor BBQ-ing and indoor cooking. Available free through the iTunes Store, the new iGrill App V2's new features include new alarms, graphs, presets, timers, individual probes, and time remaining functions.

Parrot offers SDK for Asteroid head unit

To encourage developers to work with its recently released 'powered by Android' Asteroid in-car head unit, Parrot has made an SDK available. By connecting to <https://devzone.parrot.com/> and accepting the terms of the license, developers can access the wiki, a tutorial and can download .APK files and other content to create new applications or web services adapted to the format and the functions of Asteroid : geo-localization, driving assistance and music. Parrot will also make the source codes of existing applications such as Maps available, allowing developers to create geo-localized applications.

Audio Precision APx adds Bluetooth support

Audio Precision has announced an upgrade for its APx range of audio analyzers: the APx Bluetooth option for measuring audio over Bluetooth wireless technology. At the same time, version 2.8 of the APx500 software is released bringing support for the new interface and new audio measurements and feature improvements.

The APx Bluetooth option combines an integrated Bluetooth radio with setup and operation controls. Audio Precision told Incisor that the APx module's built-in Bluetooth radio and stack allow engineers to measure their Bluetooth devices directly, eliminating the need to use third-party adapters.

40% of installed M2M devices will be Smart Meters

Smart metering will account for over 40% of the 400m M2M connected devices by 2016, according to a new Juniper Research report. While revenues per connection lag behind those of other M2M segments, the increasing volume of smart meter deployment means that this area of the broader M2M market will create a significant revenue stream in its own right.

Juniper found that organisations upholding a direct relationship with the end-customer will benefit most from this new market. Services that offer both to enable and to manage connectivity will be the main winners, rather than those that offer only connectivity.

NXP makes your car key app-tastic

NXP Semiconductors has a production-ready single-chip solution for multifunction car keys - the NCF2970 (KEyLink Lite). This increases the functionality of car keys by supporting Near Field Communications (NFC) technology. NXP told Incisor that KEyLink Lite enables car manufacturers to offer a new driving experience with keys that connect to external NFC-compliant devices, such as mobile phones, tablets and laptops.

Drivers will be able to simply wave their car key over an NFC-compliant mobile device to access useful car data. Based on NFC standards, and utilizing the 13.56MHz frequency and cryptography such as Hitag-3 or AES-128, KEyLink Lite provides secure storage and enables communication of sensitive data. KEyLink Lite combines NFC capabilities and NXP's Remote Keyless Entry (RKE) and Passive Keyless Entry (PKE) technologies. This allows NFC-compliant mobile devices to edit and view data stored on a car key and opens many new use cases.

New driver-friendly applications suggested by NXP include:

- Car Finder – The car key records the GPS coordinates of your car's last parking position, which can later be read by an NFC-compliant mobile phone, which then uses a service such as Google Maps to download a vicinity map and help you locate the car.
- Route Planner – You can enter your destination while sitting comfortably in front of a PC at home and transfer the data into the car key via NFC. Once you are inside the car, your destination will be automatically uploaded to the in-car navigation system: No more stressful finger-tapping on the car navigator screen.
- Car Status and Service Data Management – Before stepping out from your home or office, you can find out how much fuel remains in your car for your next journey - by simply waving your car key over your NFC-compliant mobile phone. And, you no longer need to carry your car service history on paper; the important data is saved on your KEyLink Lite-powered 'smart' car key.
- Car Self-Diagnosis – Transfer diagnostic data from your car to a PC via the car key, then upload it to a service website and run a diagnostic analysis in seconds.
- Car Personalization – Car manufacturers can pre-fit cars with upgraded services, which can later be unlocked in the field. Obtain permissions from your car manufacturer –for example, by making

an online request at home - and store the permission for the new features onto the car key. All new features will be automatically activated the next time you enter the car.

Drue Freeman, vice president, global sales and marketing, Automotive business unit, NXP Semiconductors, told Incisor: "The car key experience will never be the same again. Drivers will have a whole new connected car experience with a variety of services for comfort, convenience and maintenance, available at the swipe of the 'smart' key. By bringing together our industry-leading technology for car access and immobilization with our expertise in NFC, NXP's KEyLink Lite will open a lot more doors to the world of connected mobility."



Snippets High speed

Taking it to the Nth Degree:

The year 2010 continued a shift toward consumer electronics (CE) devices with networking capabilities, allowing more devices

to directly connect to the Internet or to a home network. In-Stat sees a continuation of the trend, forecasting growth in CE 802.11n-enabled devices, and forecasts that annual

unit shipments will increase from 53 million in 2010 to almost 300 million in 2015.

New ThyssenKrupp HQ – EnOcean inside

A spega e.control room automation system using EnOcean's energy harvesting technology controls the lighting, sunblinds and air-conditioning in the new ThyssenKrupp corporate headquarters in Essen, Germany

It was probably one of the biggest relocation jobs in Europe – since mid-June last year more than 500 people of ThyssenKrupp's head office have been moved from Düsseldorf to a new site in Essen, which is part of an ensemble of buildings in the so-called Krupp Belt, a project covering 230 hectares. With the guiding principle of creating future-oriented headquarters, integrated room automation from spega was selected for energy efficiency, sustainability and flexibility. The e.control system governs lighting, sunblinds and airconditioning with the help of EnOcean's energy harvesting wireless technology.

Openness and transparency characterize the contemporary appearance of the ThyssenKrupp headquarters. The highlight is probably the cubical centre-piece called Q1. Combining Q1 with the three other parts of the building, the head office is designed to accommodate more than 2000 people. Right from the start it was very important that the offices should be as flexible as possible in their use. An obvious answer was to build innovation and sustainable solutions into all areas of building engineering and services. It's no secret that changes in corporate organization and the relocation of personnel happen all the time, so the goal was to create a building where straightforward adaptation and variable configuration - from a single office through to open space areas - was simple. In line with this, implementation of the e.control room automation system from spega is cableless, has a flexible-axis, is decentralized and modular, and is optimally suited to the possible need to rearrange more than 1000 offices. The system control software enables simple and cost-effective reassignment of room temperature control, anti-glare and lighting.

Room temperatures are measured by 1400 spega dialog RC-T wireless sensors. Wireless RC-Lx and dialog RC-Jx switches enable manual control of



lighting and sunblinds. More than 800 spega dialog RC-E wireless receivers and lumina MS/RC-EB multisensors with an integrated wireless receiver convert EnOcean signals for the LON network of

room automation, and support the temperature measurement, window monitoring, light setting, sunblind setting and setpoint functions. This way, e.control can be harnessed to produce perfect room conditions. As a result the ThyssenKrupp headquarters meets VDI directive 3813, which outlines the principles of flexible-axis buildings by segmentation, plus more than 45 detailed functions including the facilities lighting, anti-glare, heating, air-conditioning and ventilation – and the necessary exchange of information between them.

Certified efficient

As a result of using the e.control system, the ThyssenKrupp head office has achieved class A efficiency in room automation, to the DIN EN 15232 standard. Rated by the minimum requirements of Germany's energy economy directive EnEV, there is potential for a 30 percent saving in heating and cooling energy and 60 percent in lighting energy at the Essen location. As a result of all of this good work, the ThyssenKrupp headquarters has been awarded a gold certificate from Germany's Sustainable Building Council (DGNB).

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US Consumers want more Wi-Fi services

Seventy four percent of smartphone users in the United States are interested in a mobile operator-provided service that uses Wi-Fi to provide lower cost calls, according to a recent MarketTools Zoomerang survey of 420 smartphone owners. The survey, which was commissioned by Kineto Wireless, also showed 72 percent of smartphone users are interested in an application that uses Wi-Fi to improve cellular coverage.

Additional highlights from the online survey conducted May 2011 include:

- Nearly nine out of ten (89%) of respondents have smartphones with Wi-Fi.
- 77 percent have Wi-Fi at home; 54 percent have it at their place of work.
- 62 percent of people who own smartphones with Wi-Fi use the Wi-Fi four or more days each week.
- 30 percent say they use Wi-Fi because it is faster than the cellular network; 19 percent because it is easy to access the internet.
- 30 percent have smartphones with a Google Android operating system (OS); 26 percent use Apple iPhone OS; and 22 percent use a RIM OS.
- 44 percent of iPhone owners would "definitely" be interested in an application that could be used to boost mobile coverage; and 47 percent would "definitely" be interested in a Wi-Fi service offering discounted calling.
- Of T-Mobile subscribers, 55 percent use Wi-Fi on their smartphones four or more days each week or every day, 24 percent because it is easy to access the internet.
- Of AT&T subscribers, 68 percent of AT&T subscribers use Wi-Fi on their smartphones four or more days each week or every day, 32 percent because it is faster than the cellular network.

Steve Shaw, vice president of marketing for Kineto Wireless told Incisor, "Wi-Fi has

become pervasive in the smartphone market, and subscribers are interested in options that help them take better advantage of Wi-Fi for coverage and cheaper calling."

Kineto judges that T-Mobile is the most aggressive of the US operators with its use of Wi-Fi to reduce churn by addressing in-building coverage and increasing data offload.

Gefen releases two Wi-Fi digital signage media players

Gefen has announced the availability of two new digital signage media players, expanding the range of solutions it provides for what is generally acknowledged to be a growing industry segment.

Both players with Wi-Fi offer a SMIL (synchronized multimedia integration language)-compliant media player that works with any computer LAN system, either by connecting directly to the LAN or by using the Wi-Fi connection. Users can playback 1080p Full HD video. The players also output component and composite video with two channel (L/R) audio and one-line scrolling text. Each player comes pre-loaded with more than ten templates to select from, so users can start their digital signage applications with little to no design experience. Any computer on the LAN can manage calendar-based scheduling.

The Digital Signage Media Player with Wi-Fi offers 4 GB of internal flash memory and the secure flash card slot can host up to 16 GB of memory, if needed. Keyboards, mice, hard drives etc. can be connected through the two USB 2.0 ports.

The Digital Signage Media Player with Wi-Fi Plus offers the same features but with

the added ability to connect live video using a composite video input with audio. Users can also overlay content and separate the video into four quadrants for more complex systems. For control of external displays or other connected devices, RS-232 is also included.

KDDI and Ruckus use Wi-Fi to offload mobile data

Ruckus Wireless (Ruckus) has been selected by KDDI Corporation, Japan's principle telecommunications provider, to supply Wi-Fi products for what the two companies claim is the world's first and largest "instant on" Wi-Fi access and mobile data offload service.

With over 32 million mobile subscribers, KDDI is leveraging carrier Wi-Fi technology developed by Ruckus Wireless to offload mobile data traffic from its cellular network, while providing subscribers with seamless, high-speed wireless access throughout Japan.

Subscribers of KDDI's packet flat rate plans can now use the new KDDI "au Wi-Fi SPOT" service free of charge with their au Android smartphones in over 10,000 locations initially, scaling to 100,000 locations by March 2012. With no manual configuration of the phone, KDDI subscribers can automatically access and be authenticated to KDDI au Wi-Fi hotspots using credentials embedded within each phone over secure and encrypted connections.

Ruckus told Incisor that innovative service providers face a number of issues as they look to support the aggressive smart phone rollouts. Legacy macro-cell architectures cannot provide density of coverage for today's demanded applications such as access to rich media and social media networks.

4g/lte/wimax news



Cognovo software defined baseband chip released

Cognovo, which is a software defined modem developer, has achieved a successful tape-out of a Software Defined Modem (SDM) device in Samsung Foundry's 45nm LP (low power) process. The device – based on Cognovo's Modem Compute Engine (MCE) IP core, MCE160 – will enable licensees to develop soft modems in all cellular and wireless standards including Wi-Fi, 2G, 3G, HSPA+, LTE and LTE-Advanced. Samples will be available to lead customers in the autumn.

Built around Cognovo's Vector Signal Processor (VSP) technology, spun out of ARM in 2009, the synthesisable MCE160 core delivers 250 GOp/s (Giga Operations per second) processing power. Cognovo told Incisor that the performance achieved is sufficient to allow UE (User Equipment) modems to be created in software for many wireless standards, including LTE-Advanced, or for other algorithmically intensive applications such as cellular infrastructure.

A development platform incorporating the baseband device will be available, and will be supported by Cognovo's Soft Modem Integrated Development Environment.

Ian Drew, Executive Vice President of Marketing at ARM told Incisor: "The industry has been waiting for a credible approach to SDM for many years and Cognovo has set itself apart from previous attempts by delivering a low power, wireless-optimized architecture. Harnessing this through a multicore system, including ARM Cortex processors and Physical IP, with an integrated tool chain to address design, modelling and validation will make the silicon from Samsung's advanced process an exciting proof point."

Gordon Aspin, CEO at Cognovo added: "We are already working with companies to exploit our MCE120 product in the 3G LTE market. However, by providing the MCE160 based development platform, together with our SDM Software Development Kit, we will allow companies to

create the first modem prototypes for LTE-A as soon as next year."

LTE gathers momentum but spectrum challenges remain

ABI Research notes that while no TD-LTE network has gone live yet, commercial launches of this technology jointly developed by China and Qualcomm are getting closer, with the Global TD-LTE Initiative (GTI) being formed in February this year to push forward its development and adoption. The five-month old initiative counts prominent WiMAX players such as Clearwire and P1 as its members, as well as major telco operators in Taiwan, India, Japan, and South Korea.

"The biggest concern facing many operators now is the squeeze on available spectrum," ABI research analyst Fei Feng Seet told Incisor. "Regulators in certain countries have not yet announced any plans for LTE spectrum allocation."

Countries such as Taiwan will not be ready for such LTE spectrum auctions any time soon, because the 700MHz and 2.6GHz spectrum bands, the most suitable for LTE, are still occupied.

Spectrum standardization for LTE deployments across the globe has also been a key issue. Verizon Wireless (along with a few other operators in the US) has led the way by facilitating LTE on 700MHz spectrum, while operators such as Mobyland in Poland and M1 in Singapore are using refarmed 1.8GHz spectrum. Several other operators are intending to deploy on higher spectrum bands such as 2.5 or 2.6GHz.

Practice director Aditya Kaul added: "A challenging issue to tackle will be the ability of LTE devices to support roaming across the various spectrum bands, but more industry collaboration is expected in the next few years as LTE achieves widespread adoption."

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- [A guide to Bluetooth Version 2.1 + EDR](#)
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events



Henri Seydoux
CEO, PARROT

	DATE	EVENT	LOCATION	NOTES	LINK
2011	Aug 2 - 3 2011	Wi-Fi Alliance Smart Energy Form	Hyatt Regency o'Hare, Chicago, IL, USA	-	http://www.wi-fi.org/events_overview.php?id=342
	Sept 1 - 2 2011	Wireless China Industry Summit	The Landmark Hotel & Towers, Beijing, China	-	http://www.wirelesschina-summit.com/
	Sept 18 - 21 2011	CTO Telecom Summit	Scottsdale, AZ, USA	-	http://www.ctotelecomsummit.com/
	Nov 9 - 10 2011	Wireless Congress 2011: Systems and applications	Munich, Germany	Partners include Bluetooth SIG, EnOcean Alliance, ZigBee Alliance	http://www.wireless-congress.com/
2012	Jan 9 - 12 2012	Consumer Electronics Show (CES)	Las Vegas, Nevada, USA	-	http://www.cesweb.org
	Feb 21 - March 1 2012	Mobile World Congress 2012	Barcelona, Spain	-	www.mobileworldcongress.com
	April 24 - 26 2012	Bluetooth Special Interest Group All Hands Meeting	Renaissance Vancouver Hotel, Vancouver, Canada	-	www.bluetooth.org

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