Wireless Communication Wibree (Bluetooth Low Energy Technology)
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Abstract— The amount of computing and telecommunications devices is increasing and consequently the main focus on the way to connect them to every different. the same old resolution is to attach the devices with a cable or generally victimization infrared to form file transfer and synchronization potential. The infrared resolution eliminates the cable however needs line of sight. to resolve these issues a brand new technology, Wibree radio technology enhances different native property technologies, intense solely a fraction of the ability compared to different such radio technologies, sanctioning smaller and fewer pricey implementations and being straightforward to integrate with Bluetooth solutions to attach a good vary of computing and telecommunications devices simply and easily while not the necessity for connecting cables. moreover it can even be accustomed change communication between many units, like tiny radio LANs. This leads to a large number of potential future user situations. this text focuses on why this technology has an oversized attention though it's in development, pro’s and con’s with relation to different technologies and lot’s a lot of.

Keywords – Wibree, Bluetooth, low power consumptions.

I. INTRODUCTION
Now that wireless connections square measure established solutions in varied sectors of shopper natural philosophy, the question arises whether or not devices that draw long life from atiny low battery might realize profit yet in an exceedingly world customary for wireless low energy technology. manufacturers of sensors for sports, health and fitness devices have covered in wireless however not along, whereas makers of product like watches haven't even thought of adding wireless practicality as a result of no choices were accessible. many wireless technologies have tried to handle the wants of the button cell battery market, however most were proprietary and garnered very little business support. However, none of those technologies let smaller makers infix to a world customary that has a viable link with devices like mobile phones and laptops. However, corporations that desires to create their tiny devices wireless have to be compelled to build associated sell either an ardent show unit or an adapter that connects to a computing platform like a transportable, PC or iPod. There are few prosperous product that followed this route to a mass market, a replacement flavor of Bluetooth technology could also be simply the solution, and a additional economical different for yet one more wireless customary.

II. WIBREE
Wibree is Associate in Nursing innovative digital radio technology which will shortly become a benchmark for the open wireless communication. operating nearly resembling the Bluetooth technology, this contemporary technology functions inside Associate in Nursing doctrine band of two.4 gigahertz and amid a physical layer bit rate of one Mbps. wide utilized in could appliances just like the carpus watches, wireless keyboards, toys and sports sensors attributable to its key feature of terribly low consumption of power inside the prescribed ranges of ten meters or thirty feet victimization the low price transceiver microchips, it will generate Associate in Nursing output power of m–6 dBm. formed by the Nokia Company in 10–03–2006, it's these days licenced and additional researched by a number of the foremost corporates that features Nordic Semiconductor, Broadcom Corporation, CSR, Epson, Suunto and Taiyo Yuden. in step with Bob Iannucci, the pinnacle of Nokia s analysis centre, this groundbreaking technology that's ten times a lot more capable than the Bluetooth technology can shortly replace it. Already the company big Nordic Semiconductor is functioning on the technology therefore on bring out the model chips by the middle of 2007.

III. HISTORY OF WIBREE
Around 2001, the Nokia Research Center was looking at options for future personal wireless networking. The
company realized that there was room for developing an ultra-low power, wireless technology that could interface cost-effectively with a large variety of existing and future devices, which, until now had not been effectively served by available existing technologies. Towards this end, Nokia decided to create a new open wireless protocol, and now, along with its partners Broadcom Corporation, CSR, Epson, and Nordic Semiconductor, is working to bring it to market. While the Wibree protocol is currently under development and should be ready by mid 2007, the availability of the Wibree chip depends upon the semiconductor manufacturers’ schedules. Wibree is similar in many respects to the now prevalent Bluetooth standard. Both use the 2.45 GHz band to transfer data and have a 1 Mbps transfer rate (although the newer Bluetooth 2.0 standard already incorporates a 3.0 Mbps transfer rate) and a range of about 10 meters (m). The two complementary technologies differ in size, price, and most of all power consumption. Wibree would use only a fraction of the power consumed by today’s Bluetooth chips, resulting in a much longer battery life and more compact devices. While Bluetooth can be used to transmit audio and media files, Wibree is designed to extend this network by serving applications that transmit only small amounts of data and where size and cost are priorities. Many applications that were not cost-effective using existing Bluetooth technology, such as wirelessly controlled toys, watches, medical and sports sensors, and a range of other applications that have not been conceived yet, might be developed using Wibree technology.

IV. IMPLEMENTATION
There will be two types of Wibree implementations: – one based on the Wibree stand-alone chip, and another based on the Wibree-Bluetooth dual-mode chip - which will serve different purposes and be installed on different devices.

A. Stand-alone wibree chips:-
Stand-alone Wibree chips would be implemented in small, low cost devices such as wireless mouse and keyboards, sensors, and toys. The Wibree stand-alone chip is designed for use with applications which require extremely low power consumption, small size, low cost and where only small quantities of data are transferred. It’s an ideal solution for small devices (like heart-rate monitors) that use only short data message and must have long battery life. Examples of devices that would benefit from the Wibree stand-alone chip are: watches, sports and wellness devices and human interface devices (HID) such as wireless keyboards.

B. Wibree - bluetooth dual-mode chips:-
The Wibree-Bluetooth dual-mode chips would probably be implemented in future mobile phones, allowing users to benefit from both worlds – Bluetooth 2.0 high speed and Wibree’s low power and extended ability to communicate with a new generation of smaller wireless devices. The Bluetooth-Wibree dual-mode chip is designed for use in Bluetooth devices. In this type of implementation, Wibree functionality can be integrated with Bluetooth for a minor incremental cost by utilizing key Bluetooth components and the existing Bluetooth RF. This type of implementation allows Bluetooth devices to connect to a new range of tiny battery-powered devices. Examples of devices that would benefit from the Bluetooth-Wibree dual-mode chip are mobile phones and personal computers.

V. APPLICATIONS
Imagine a wireless keyboard and mouse with battery lifetimes exceeding one year communicating with a PC without using a fragile dongle. Imagine a watch equipped with a wireless link communicating with both a tiny sports sensor embedded within the user’s shoe and mobile phone.

A. Sports
Many of us enjoy an active lifestyle. Wibree enabled products can provide a multitude of appealing applications, ranging from the measurement and consequent optimization of a professional athlete’s performance during a work out session to the automatic selection of suitable music from your mp3 player to match your heart rate while bicycling to work.

B. Healthcare
A healthy living is important to all of us. Whether monitoring your heart rate and blood pressure at home to improve your personal diet or being connected over-the-air to your physician while rehabilitating out of hospital, Wibree makes being healthy easier.

C. Entertainment
Kids love toys, and so do many of their parents. Steer your little racing car clear of obstacles with your mobile phone, watch your little robot interact with that of your friend when they come close and tune up the volume to your favorite beat with your tiny mp3 player remote control. Wibree enabled toys and gadgets take play to the next level.

D. Office
A growing number of us use a personal computer in our daily work or at home, and expect the best performance and ergonomics from the devices we use to interact with the computer. Moreover, work often travels with us and so it is important that we can set up a convenient working environment while on the move. Wibree ensures that your
controlling something. Bluetooth technology and a small quantity of data very vital for these costs, by relaxing a lifestyle, monitoring and nss market for wireless devices, www.eecjournal.com

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VI. ADVANTAGES

A. Low Power

Bluetooth technology has always strived to utilize as low power as possible. The power consumption of Bluetooth technology has improved in every specification version, from interlaced page scanning in v1.2, faster data rates in v2.0, and sniff sub-rating in v2.1 to be the most power efficient standard for its applications. Bluetooth low energy technology will dramatically improve the energy efficiency when devices are connectable and discoverable, and also enables devices to send a small quantity of data very quickly from a disconnected state. These new low power features enable new market segments where there is a need to transmit only small amounts of data.

B. Low Cost

Bluetooth technology has always been the lowest cost standard shortrange wireless technology. Not only are there no royalties or specification a patent to worry about, but also the specification is designed around mass production using bulk CMOS technology. Bluetooth low energy technology will further reduce these costs, by relaxing important specification parameters, and by reducing the implementation size significantly (approximately half the die size).

C. Short Range

Bluetooth technology has never attempted to be a long-range technology. By concentrating on short range applications, it has successfully created the first truly adhoc technology. Any device can connect with any other device, create a temporary or permanent relationship, and transfer data quickly and easily. Bluetooth low energy technology enables similar ranges as Bluetooth technology; they are still fairly modest compared with cellular radio links.

D. Worldwide

Bluetooth technology can be used and sold in almost every country on the planet. Bluetooth technology therefore enables a single seamless market for wireless devices, enabling huge mass market, rather than country or regional specifications or devices.

E. Robust

Bluetooth devices just work. Having a robust radio is essential when you are trying to gather a measurement from a sensor, or controlling something. Bluetooth technology has learnt that being robust is what the consumers demand, and it is therefore something that people now take for granted. Bluetooth low energy technology has not compromised anything for robustness. Bluetooth low energy technology is a new specification; it is not a small additional feature within Bluetooth technology. This new specification has been designed by a team of experienced wireless experts, who have extensive experience of both Bluetooth solutions as well as proprietary radio systems. This combination enables a completely new generation of wireless standard that can build interoperable products.

F. Number of devices

The number of devices that can be active within a Bluetooth low energy network has been significantly increased to many thousands. The network topology has been kept as simple as possible to reduce the cost of each individual part, while allowing more complex star-bus networks to route information around multiple piconets (ad hoc network of one master and seven slaves).

G. Web Service Integration

The ability for small Bluetooth low energy wireless devices to send a small quantity of data to a web service is vital for a large number of use cases. This enables weighing scales to automatically send data to your weight loss website (via the mobile phone), allowing you to check on your progress over time, using the best possible user interface.

VII. CONCLUSION

Taking all of these factors together, Wibree has the potential to transform consumer devices. It will solve the technology and monitoring issues that are currently hindering the adoption of wireless healthcare services and enable a whole new generation of lifestyle, monitoring and safety products. By making the mobile handset the gateway, it brings the network operators into the equation. And they
have the resources to aggregate and enable service provision. Today Wibree is a Nokia solution. However, it is being supported by the major Bluetooth chip vendors including Cambridge Silicon Radio and Broadcom. That means it will reside within the chips in almost every brand of handset. It is unlikely that other phone vendors will not take advantage of its presence, not least because it offers the network operators an additional revenue stream. Its presence will make it very difficult for any other short range, low power wireless technology to gain traction in the handset, ensuring that Wibree is placed to own the wireless healthcare market.

REFERENCES