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What is WiBree?

- Wibree is a short range (10 metres/30 feet), wireless technology now under development designed for ultra low power consumption.

- This specifically target connectivity between mobile devices such as smart phones or PCs and small battery-powered devices such as watches, wireless keyboards, toys & sport sensors.
Origin & Development

- Around 2001; the Nokia Research Center was looking at options for future personal wireless networking.
- They thought low power devices such as sensors, but realized that there was no suitable technology connecting those to larger devices such as a mobile phone.
- It made them to develop a technology called Wibree to meet the requirements of low power consumption, small size, and low cost interoperability based on open specification.
- Nokia decided to create a new open wireless protocol along with its partners Broadcom Corporation, CSR, Epson, and Nordic semiconductor, is working to bring it to market.
WiBree Device Architecture

- Nordic semiconductor is a key player in WiBree architecture.

- WiBree specification has been in modes namely:
  - Dual-mode
  - Stand-alone-mode
...Contd

- In the **dual mode** implementation the Wibree functionality is an add-on feature inside Bluetooth circuitry sharing a great deal of existing functionality resulting in a minimal cost increased compared to existing products.

- In the **Stand-alone** Wibree chips would be implemented in small, low cost devices such as wireless mouse and keyboards, sensors, toys, sports, and human interface device (HID) product categories.
WiBree (Stand Alone Mode)

- Only Wibree enabled chip is used.
- Designed for devices with low hardware specifications.
- Used when quantities of data transferred are small
- Commonly implemented in:
  - Watches
  - Sport / wellness devices
  - Wireless Keyboards
  - Wireless mouse
WiBree (Dual Mode)

- Combination chip is used.
- Wibree functionality is integrated with Bluetooth
- A combination chip communicates independently of dongles.
- Commonly implemented in:
  - Mobile phones.
  - Personal computers.
  - Dongles.
Is WiBree the Bluetooth Killer?

- No, absolutely not. It has its own advantages and disadvantages over Bluetooth. Likewise Bluetooth also.
- It’s up to 10 times more energy efficient than Bluetooth.
- This wireless system can transfer data at speeds of up to 1 mbps, about a third of the speed of current Bluetooth technology.
- This system has longer battery life and more compact devices.

When WiBree has become a standard.
...Contd

- Like Bluetooth—used to link cell phones with headsets, computers and printers to transfer calls, calendar items, documents, songs and pictures.

- While Bluetooth is looking for ultra high frequencies above 6 gigahertz for new faster connections, Wibree will operate in the 2.4 gigahertz band.

- Wibree packets will be dynamic in size, unlike the fixed-length Bluetooth packets, so there is some power-saving there if small amounts of data are being sent.
WiBree & Wireless Zoo

- Wibree is complementary to existing technologies; it does not replace them.
- Nokia believes that Bluetooth, as we today understand it, serves some use cases very well, but is not well equipped to serve others.
- The same will apply to Wibree, meaning that there will be room for both technologies.
- Wibree will broaden CSR’s portfolio of wireless technologies including Bluetooth, WiFi and UWB.
<table>
<thead>
<tr>
<th></th>
<th>Bluetooth</th>
<th>Wibree</th>
<th>Zigbee</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Band</strong></td>
<td>2.4 GHz</td>
<td>2.4 GHz</td>
<td>2.4GHz, 868MHz, 915 MHz</td>
</tr>
<tr>
<td><strong>Antenna/hw</strong></td>
<td>Shared</td>
<td>Shared</td>
<td>Independent</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>100mW</td>
<td>~10mW</td>
<td>30mW</td>
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<tr>
<td><strong>Target Battery life</strong></td>
<td>Days-months</td>
<td>1-2 years</td>
<td>6 months-2 years</td>
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<tr>
<td><strong>Range</strong></td>
<td>10-30 m</td>
<td>10m</td>
<td>10-75 m</td>
</tr>
<tr>
<td><strong>Component cost</strong></td>
<td>$3</td>
<td>Bluetooth</td>
<td>$2</td>
</tr>
<tr>
<td><strong>Network topologies</strong></td>
<td>Ad hoc, point to point, star</td>
<td>Ad hoc, point to point, star</td>
<td>Mesh, Ad hoc, star</td>
</tr>
<tr>
<td><strong>Security</strong></td>
<td>128-bit encryption</td>
<td>128-bit encryption</td>
<td>128-bit encryption</td>
</tr>
<tr>
<td><strong>Time to wake</strong></td>
<td>3s</td>
<td>TBA</td>
<td>15ms</td>
</tr>
</tbody>
</table>
Advantages

- WiBree is the first wireless technology to solve the following needs in a single solution.
  - Ultra low peak and average power consumption in both active and idle modes
  - Ultra low cost & small size for accessories & human interface devices (HID)
  - Minimal cost & size addition to mobile phones & PCs.
  - Global, intuitive & secure multi-vendor interoperability
Applications

- Healthcare

  - You can monitor your heart rate and blood at home to improve your personal diet.

  - Wibree makes being healthy easier and more fun.
Applications

- Sports
  - Wibree enabled products can provide the measurement and consequent optimization of a professional athlete’s performance during a work out session.
  - It enables the automatic selection of suitable music from your mp3 player to match your heart rate while bicycling to work.
  - You can feed continuous data to the mobile phone so you can later analyze on your mobile phone while jogging listening to music.
  - The heart rate meter around your chest and the accelerometer and compare your performance. Pressing the answer button on your wrist watch you can manage your pulse rate.
Applications

- Entertainment
  - Steer your little racing car clear of obstacles with your mobile phone.
  - Wibree enabled toys and gadgets take play to the next level.
A new world of wireless connectivity for small devices

Sports & wellness

Healthcare

Entertainment & toys

Office & mobile accessories

Stand-alone host device (W)

Dual-mode host device (BT-W)

Wibree

Wibree

Internet

Weight loss and fitness coaching

Elderly monitoring service

Personal health record

Healthcare provider

Connect your Bluetooth device to ANY tiny, button cell battery device

Enable new functionalities and wireless connection to Internet applications
Conclusion

- Wibree is a Nokia solution. However the major Bluetooth chip vendors including Cambridge Silicon Radio and Broadcom will support the Wibree.

- Wibree will also dramatically extend the battery lifetime of existing wireless devices such as keyboards, mice and remote controls.

- It’s up to 10 times more energy efficient than Bluetooth.

- The firm said it expected dual Bluetooth-Wibree devices such as mobile phones to hit the market by Dec 2011.
Thank you!!!