

ZIGBEE STARTS TO BUZZ



ZIGBEE – the low-power, low-cost, low-complexity wireless standard – is starting to take off in the market. Likely applications for the technology are based around monitoring and control in ‘smart homes’ and in building and industrial automation.

The dominant supplier of ZigBee wireless modules is Ember Corporation, which, it is claimed by chairman and inventor of the Ethernet standard Bob Metcalfe, will ship some 500,000 ZigBee nodes in 2004. Analysts’ estimates for likely shipments in 2005 range from 5 million to 50 million.

Complex protocol development and the sheer difficulty of meeting ultra-aggressive cost targets have stymied ZigBee’s progress to date. ZigBee supports an innovative ‘granny-proof’ self-configuring mesh network technology, allowing home users to create their own networks without the need to satisfy ‘line-of-sight’ requirements between communicating nodes. Getting this kind of sophistication into a protocol stack of just 32,000 words has, understandably, been a major challenge. Final ratification of the ZigBee standard is now expected by the end of this year.

The secret of low-cost ZigBee modules is to get the wireless part and the processor part onto the same chip, but, here again, technical challenges have hampered progress. “Low-power radio is just very difficult,” concedes Jeff Grammer, Ember’s CEO.

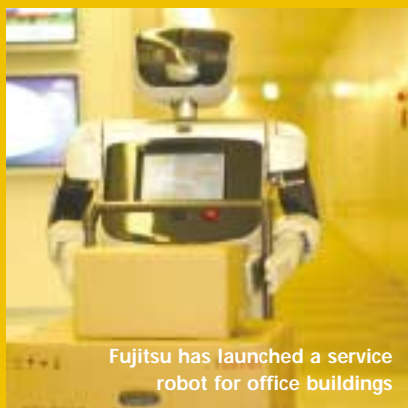
Earlier this year, Ember stole a march on its competitors by acquiring the exclusive rights to the 802.15.4 (ZigBee) single-chip architecture developed by Cambridge Consultants Ltd (CCL), while at the same time hiring CCL’s ZigBee engineering team.

Mid-2005 should see the commercial launch of an integrated ZigBee module, developed by this Cambridge-based team. The bill of materials for this device will be “well under \$5,” according to Grammer.

Alongside standards finalisation and component development, ZigBee applications are starting to appear in earnest. “We have close to 100 customers in various stages of development,” says Grammer. Many early applications will be in the building control sphere. Tyco Thermal Controls has been operating a prototype system at a customer site for over two years; Andover Controls is expected to launch a heating and ventilation control system for hotels early in 2005 (allowing room temperatures to be set, in advance, to match the preferences of individual customers), and Philips Lighting will be entering the market around the middle of 2005.

More novel applications include using a ZigBee wireless link to monitor balloon air pressure during angioplasty – a medical procedure in which a balloon is used to open narrowed or blocked blood vessels of the heart – and in fish-finding radar systems on boats. “People ask: Where’s 15.4; where’s ZigBee?” says Grammer. “It’s going to be in your boat.”

WATCH OUT FOR ROBOTS ON TOUR



Fujitsu has launched a service robot for office buildings

Robots are set to become even more prevalent in the modern world. A toy called Robosapien is said to be this year’s ‘must-have’ Christmas present, and Fujitsu has launched a humanoid service robot that can accompany office visitors to the lift, move parcels using a cart and even answer questions. Robotic machinery is well established in manufacturing too, as well as performing many other tasks that would be difficult, dirty or dangerous for humans.

The 2005 IEE Faraday Lecture, ‘Control Freaks – how robots affect our world’, will show how robots can, among other things, perform delicate surgery, clear minefields and explore planets. The presenters will explain the elements that make up a robot and the science that underpins them.

The lecture will be presented around Britain in the first quarter of 2005. It is particularly aimed at 14-16 year olds but is open to all. For dates and venues, go to www.faraday.org.uk