

Riding the ultra wideband communications wave

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Ultra wideband usually refers to a radio communications technique based on transmitting very-short-duration pulses, down to nanoseconds (billionths of a second) or picoseconds (trillionths). The occupied bandwidth can take up very large frequency ranges.

This allows UWB to deliver data rates up to 1 gigabit over short distances. With further development UWB may even exceed that speed. It uses little power and can operate in the same bands as existing communications without producing significant interference. The implications and potential applications are enormous, and the market could become a multi-billion business by 2010.

The PULSERS project is massive. In the first phase, the project had 30 partners and phase II, starting in January 2006, will have 36 partners. The total budget is ?37 million for the first two phases in total. A third phase is envisaged. For the first phase, the project aimed at defining the systems, developing new components and taking part in defining rules and standards for the radio technology. The second phase includes the development of further components and the demonstration of very high transfer rates. In the last phase the team will integrate UWB with other

networks and trial specific system applications. The project's already considerable positive role in the regulation and standardisation of UWB will be even intensified in the PULSERS Phase II, says Zeisberg.

There is a huge number of potential applications for the technology. Obvious markets are Personal Area Networks (PAN) to link one person's devices together, or local area networks (LAN), to link devices in a room. This will mean that devices like DVD players, TVs, stereos and speakers can be linked together without wires.

"Besides wireless short range communications ...UWB technology enables precise real-time location tracking inherently due to its unique feature of ultra-wide radio frequency band allocation," says Dr Sven Zeisberg, PULSERS project manager at German firm GWT.

"Widespread application of this new wireless technology will facilitate growth of a number of new market segments -all different, but all enabled by the unique features of UWB radio being highly scalable with regard to complexity, range, costs and data rate as well as location precision accuracy," he says.

Data rates range from a kilobit per second with a robust, low cost, low complexity, and low power devices, up to a gigabit per second with a high performance and low power devices. Thus, PULSERS currently is working on two systems, a High or Very High Data Rate (HDR, VHDR) system, and a Low Data Rate/Location Tracking (LDR/LT) system.

The regulator estimated that the profits associated with UWB PAN applications would outweigh the costs by 2010, a year after PULSERS completes its final phase. These figures are conservatively estimated for PAN applications alone, they don't account for any other UWB application or the

potential market in other EU states. UWB will probably be huge. "There is a huge potential of creating a new set of applications based on wireless technology," says Zeisberg. "This could boost European economies."

Source: [IST Results](#)

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