

EUWB — Coexisting Short Range Radio by Advanced Ultra-Wideband Radio Technology

An industry-led initiative of highly regarded industrial, consulting and academic organisations from Europe and Israel will leverage and significantly enhance the scientific knowledge base in the field of advanced Ultra-Wideband Radio Technology (UWB-RT). EUWB will allow several key applications that are in high demand by the European industry such as home entertainment CE, automotive, public transport and cellular network.

At a glance: EUWB

**Coexisting Short Range Radio by
Advanced Ultra-Wideband Radio
Technology**



Project co-ordinator

Hrjehor MARK

GWT-TUD GmbH, Dresden, Germany

Phone: +49 351 25933-166

Fax: +49 351 25933-111

Email: euwb@gwtonline.de

URL: www.euwb.eu

Partners

TES Electronic Solutions (DE), Philips (NL), Bosch (DE), CEA-Léti (FR), Leibniz Universität Hannover (DE), CREATE-NET (IT), VTT Electronics (FI), EADS (DE), University of Oulu (FI), Telefónica (ES), THALES Communications (FR), Wisair (IL), TU Ilmenau (DE), Universidad de Zaragoza (ES), ACORDE TECHNOLOGIES (ES), TES Electronic Solutions (UK), HTW Dresden (DE), Università degli Studi di Bologna (IT), FBConsulting (LU), Universität Duisburg-Essen (DE), Veebeam (UK), University of Bucharest (RO), Bitgear (RS), EIT+ Wrocław (PL), Czech Technical University in Prague.

Duration: 04/2008–07/2011

Total costs: €21.0m

EC contribution: €13.7m

Contract number: FP7-ICT-215669

Main objectives

EUWB is an industry-led initiative of 26 major industrial, excellent consulting and highly regarded academic organisations from all over Europe and Israel. Its key objective is to explore the enormous economic potential of the innovative and disruptive Ultra-Wideband (UWB) radio technology for key industrial sectors in Europe.

The project aims to consolidate technical advances in scientific areas related to UWB, such as cognitive signalling, intelligent multiple antenna and multiband/multimode concepts. These advances are envisaged to lead to the definition of system concepts for four key application areas in major European industry sectors. Based on a strong demand from these industry sectors the four prominent examples in which applications will be implemented

are the Automotive environment (*driven by Bosch*), the Public transport environment (*driven by EADS*), the Intelligent home environment (*driven by Philips*) and the next generation (NG) of heterogeneous public access network environment (*driven by Telefónica*). Results will be provided by four integrated application areas delivered on the EUWB open UWB technology platforms.

Besides targeting real integration of UWB technology in, for example, a Daimler car, an Airbus aeroplane, the Philips future home entertainment system and the Telefónica NG access network, the scientific studies conducted by EUWB will guide industry and drive competitiveness within their UWB system approaches and future developments.

The technology driven workload will be accompanied by a continuation of partners' activities in both the European and world-wide regulation and standardisation bodies. Following the breakthrough reached in European UWB frequency regulations (*thanks to the FP6 PULSERS Phase II project*), the overall goal is to continue facilitating a globally compatible regulatory framework for UWB applications. Major efforts will be invested on further collaboration with regulatory bodies in Europe within the CEPT, the ETSI and the Radio Spectrum Committee.

EUWB

**Strengthening key
European industrial
sectors by ICT
innovation of
cutting-edge short
range radio
solutions based
upon advanced
UWB-RT**

Technical approach

Although the R&D work in EUWB is more system and application than basic technology research oriented, the EUWB project will effectively leverage a scientific knowledge base that has emerged from past UWB-RT related projects, such as ULTRAWAVES, UCAN, PULSERS/PULSERS Phase II, just as new scientific contributions will become available at an applied technological level.

The major work packages EUWB is working on are: *Cognitive UWB Radio and Coexistence*, *Multiple Antenna Systems*, *UWB Enabled Advanced Localisation and Tracking (LT)*, *UWB Multiband/Multimode Operation*, *UWB in Heterogeneous Access Networks*, *Standardisation and Regulations just as Open UWB Technology Platforms*. The latter will give the application and research work the needed technology basis for the practical integration and demonstration activities.

Special focus within the EUWB project will rest on four dedicated industrial application areas, i.e. *Home environment*, *Automotive*, *Public transport* and *Heterogeneous networks*, which aim to define the application scenarios and provide the requirements for these applications.

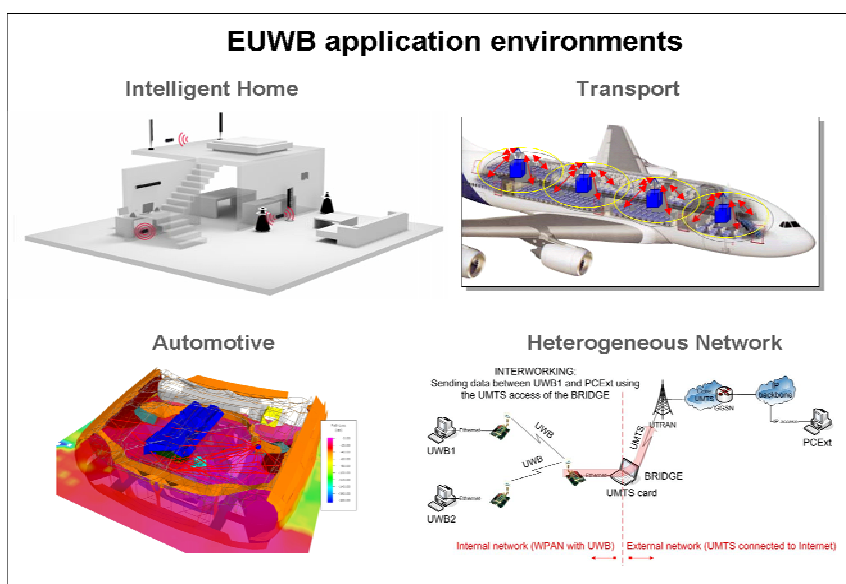
In order to optimise the development flow and task distribution within work packages a new and innovative methodology of managing Integrated Projects by grouping *Logical Clusters* of inter-WP tasks was introduced. These clusters will be used as a co-ordinating structure.

Key issues

Ambitious targets for the project have been set in terms of applying advanced mitigation techniques used in radio coexistence, the maximum data rates, technological advances (e.g. multiple antenna, cognitive signalling, multiband/multimode UWB), interoperability and new combinations of UWB and positioning for LDR-LT as for VHDR-LT (low and very high data rate LT) as well. Key issues in the EUWB project are:

- Mitigation technique development in regulation and standardisation;
- Medium term cognitive radio realisations by UWB standards;
- New class of performance in terms of data rate and robustness;

- Interworking/interoperability with other ultra high rate enabling network technology;
- Standard developments with regard to new applications requirements.



Expected impact

The EUWB project will:

- Drive European (ETSI, ECMA 368/369) and international (IEEE 802.15.4a/3c) standards and contribute to global (WiMedia, WUSB) industrial alliances ensuring coverage of the new application services and the application specific user requirements;
- Implement important EC policies enabling new markets and applications, contributing to European frequency regulation (CEPT) by efficient re-use of the radio spectrum while ensuring coexistence with other existing radio systems (intra/inter), hence introducing a new paradigm in the regulation area;
- Propose detect and avoid (DAA) mitigation techniques to different national and regional regulation authorities in order to harmonise the world-wide UWB regulation;
- Drive enhancement of several European industry sectors' competitiveness (home CE, semiconductors, automotive, public transport, public networks) by enabling new industrial and service opportunities;
- Provide new means for convergence of next generation networks with ultra high speed short range wireless access inclusive local hybrid fixed/wireless systems by defining and validating interoperability in different heterogeneous scenarios.