
WEIRD NEWSLETTER

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EVENT

WEIRD at the 1st Broadband Wireless Access workshop

13th September 2007, Cardiff, Wales, UK

The 1st Broadband Wireless Access workshop, chaired by **Thomas Michael Bohnert**, co-chair Dmitri Moltchanov, took place in Cardiff (Wales) on Thursday, the 13th of September.

The workshop's aim was to meet the emerging demand of Broadband Wireless Access technologies, developed to support transmissions rates up to several Megabits per second at distances far as tens of kilometres while providing full mobility support.

The WEIRD project provided a great participation to the BWA workshop, with three published papers that has been presented during the workshop:

- **Marco Castrucci** (UoR/CRAT): “*A Framework for Resource Control in WiMAX Networks*”

Abstract: In this paper is presented an architecture for the control of wireless resources in a WiMAX access network, designed within the IST WEIRD project. Starting from WiMAX Forum architecture, new software modules have been introduced in the Control plane in order to manage data flows in WiMAX access networks. The proposed solution allows to guarantee the requested QoS to data flows. Interaction between the Control plane and the Transport plane is realized in a equipment vendor independent way, thanks to the introduction of an Adaptation layer between the Control plane and the IEEE 802.16 MAC layer.

Authors: Castrucci, Ciulli, Ichimescu, Landi, Marchetti, Nardini, Neves

- **Pedro Miguel Neves** (Portugal Telecom Inovacao): “*WiMAX for Emergency Services: an Empirical Evaluation*”

Abstract: WiMAX, as a Broadband Wireless Access technology for Metropolitan Area Networks, supporting fixed and mobile terminals, is very promising for Next Generation Networks. Emergency Services can also strongly benefit from WiMAX

features, allowing the exploitation of novel application scenarios and business models. This paper presents a set of scenarios, such as Environmental Monitoring, Telemedicine and Fire Prevention, defined and implemented in several European testbeds, interconnected by the European research network GEANT 2, in the framework of the WEIRD project¹. In particular, we focus our attention on the scenario implemented in the Portuguese testbed – Fire Prevention – providing a detailed description about the testbed planning, implementation and evaluation.

Authors: Pedro Neves, Paulo Simões, Álvaro Gomes, Luis Mário, Susana Sargento, Francisco Fontes, Edmundo Monteiro, Thomas Bohnert

- **Tuomas Nissila** (VTT): *“Adapter Implementation between WiMAX specific Layers and Network/Application layers”*

Abstract: Several recent studies show that future high data rate broadband wireless access (BWA) technologies require the use of adaptive and co-operative techniques to more efficiently utilise the resources in link and system level. In this paper we propose an adapter module to be utilised in the data link layer (DLL) and optionally in the application layer to serve different adaptive triggering routines among the networks. The adapter is used to retrieve the necessary information from hardware (HW) to aid different adaptation processes in system. The adapter is also used to trigger the preferred control and management actions in the media access control (MAC) and physical (PHY) level of the related HW. The usability and performance limits of the designed and implemented adapter solutions were measured with relevant performance evaluations and the derived results validate the feasibility of the proposed adapter solution.

Authors: Tuomas Nissila, Jyrki Huusko, Ilkka Harjula, Marcos Katz

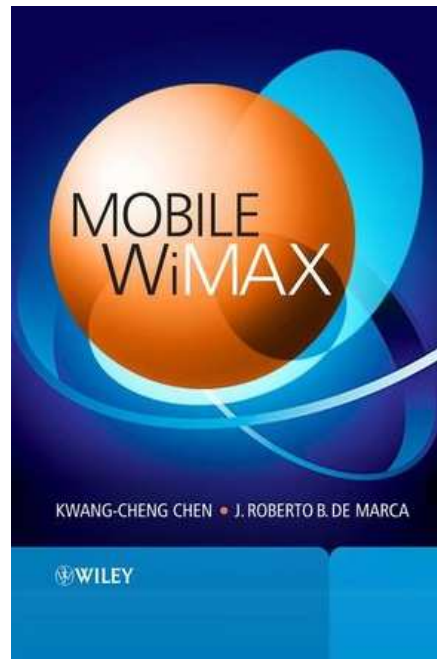
The interest of the participants to the workshop for the WEIRD project has been demonstrated by several questions proposed to the speakers. In particular a good impression has been given to the key-speaker of the workshop, mr. Maximilian Riegel, from Nokia-Siemens Network, co-chair of the WiMAX Forum Network Working Group.

The next edition of the Broadband Wireless Access workshop has already been scheduled and it will be co-located with IEEE CCNC 2008. The WEIRD project will be participating also to this new appointment with two new papers:

- *“A QoS model based on NSIS signalling applied to IEEE 802.16 networks”* - Ciulli, Landi, Curado, Leao, Bohnert, Mitrano, Nardini, Tamea
- *“WEIRD – Real Use Cases and Applications for the WiMAX Technology”* - Silvano Mignanti, Pedro Miguel Neves, Mario Castellano, Vincenzo Augusti, Cinzia Mambretti, Giuseppe Martufi, Fausto Andreotti

PUBLICATION

WEIRD chapter in “Mobile WiMAX”



“Mobile WiMAX”, available from February 2008, is the first book to cover one of the hottest subjects in wireless communications today:

- Summarises the fundamental theory and practice of Mobile WiMAX
- Presents topics at introductory level for readers interested in understanding communication and networking knowledge for Mobile WiMAX, whilst addressing advanced / specialised subjects related to it
- Contains the latest advances and research from the field and shares knowledge from the key players working in this area

It is ideal for:

- Mobile WiMAX R&D/practicing engineers (systems, applications and services, field, terminal, IC design, integration), business development professionals, academic researchers.
- Graduate students conducting research and graduate students studying in mobile WiMAX and next generation wireless communications.
- Undergraduate students studying mobile WiMAX related subjects.

Published by: Wiley

Editor: Kwang-Cheng Chen

Co-Editor: J.Roberto B. de Marca

The WEIRD project is present in the book with an entire chapter:

CHAPTER 17: “WiMAX Extension to Isolated Research Data networks: the WEIRD System”, by E.Guainella, E.Borcoci, M.Katz, P.Neves, M.Curado, F.Andreotti, E.Angori.

Abstract: WiMAX is one of the most promising technologies for Broadband Wireless Access, both for fixed and mobile use. Many application scenarios have been studied so far, running on different network infrastructures, e.g. Wireless Local Loop, Wireless DSL and as an alternative to 3G in developing countries. This chapter presents a WiMAX based end-to-end architecture and novel applications running on top of mobile WiMAX, to extend the European research network Geant 2. The scenarios include monitoring of impervious areas, fire prevention, tele-medicine and tele-hospitalization, all to be developed in the framework of the European collaboration project named WEIRD.

The WEIRD chapter, included in “Mobile WiMAX”, book is based, and extends, the paper published and presented at the following conference:

IEEE Mobile WiMAX 2007, Orlando, March 2007:

- “*WiMAX technology support for applications in environmental monitoring, fire prevention and telemedicine*” - E. Guainella, E. Borcoci, M. Katz, P. Neves, M. Curado, F. Andreotti, E. Angori