

Editorial

Dear reader,

This is the first issue of OMEGA News, the newsletter of FP7 Integrating Project OMEGA.

In this newsletter, we will inform you about the activities and results of our project on innovative concepts and solutions in home networking.

We will give you a report straight from the lab on the research work done for the radio prototype that will enable the OMEGA home networking solution to work without any new wires.

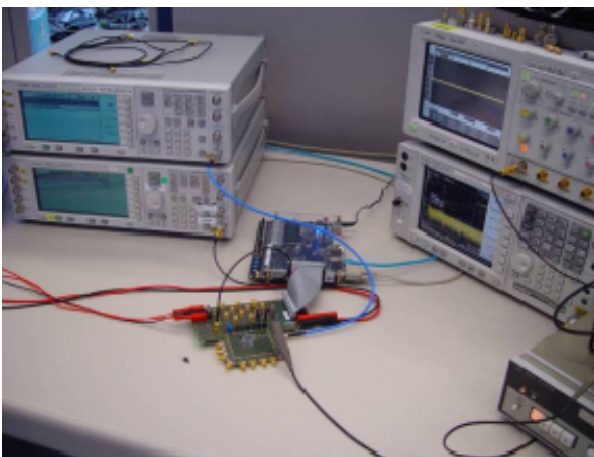
I hope you will find the contents of this newsletter interesting, and I would appreciate your comments and suggestions.

Milon Gupta, editor

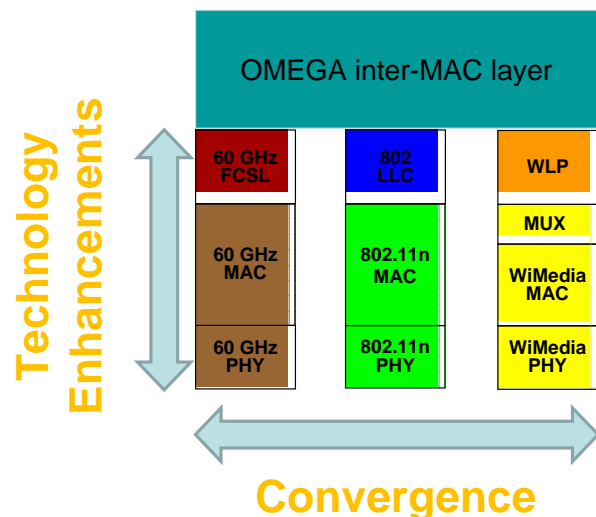
Project results & activities

First results for radio prototype

Current and future services and contents in home area networks put diverse demands on the underlying transmission technologies.



In order to fulfill all the requirements to the desired extent without the need of new wires and to avoid inefficient and cumbersome solutions with coexistence problems as experienced today, OMEGA will integrate various adapted technologies into a converged heterogeneous home area network, which meets the customer's demands with respect to quality of service, reliability, throughput, ubiquity, and self-configuration. The considered radio technologies comprise enhanced WLAN (IEEE 802.11n), emerging UWB (WiMedia), and upcoming 60 GHz communication (IEEE 802.15.3c, IEEE 802.11ad, ECMA-387). The most promising designs will be prototyped and then integrated into the OMEGA platform.



The main features, system requirements, and the roadmap of the radio prototypes were recently specified in the public deliverable D2.2. Accordingly, a 3x3 IEEE 802.11a/b/g/n compliant prototype will be provided. It will support a maximum data rate of 450 Mb/s and integrate enhancements to assure coexistence and to enable convergence. In order to assess the performance of the prototypes and to evaluate the OMEGA enhancements, an IEEE 802.11n compliant reference board was produced and benchmarked. Additionally, Wi-Fi certified IEEE 802.11n network modules were tested and measured.

Concerning 60 GHz communication, an OFDM based system providing a maximum data rate of 1 Gb/s at 10 m will be prototyped. This system will support a narrowband scheme with 504 MHz and up to 1.2 Gb/s as well as a wideband scheme with 2016 MHz and up to 5.3 Gb/s.

In order to demonstrate convergence of the WiMedia technology with WLAN and 60 GHz, a standard development kit with a state-of-the-art feature set will be integrated.

Prototyping of the specified systems has already been started. First tests and measurements show promising results. Therefore, a demonstration of the first prototype versions will be shown at the end of 2009.

Oliver Hoffmann, University of Dortmund

Past events

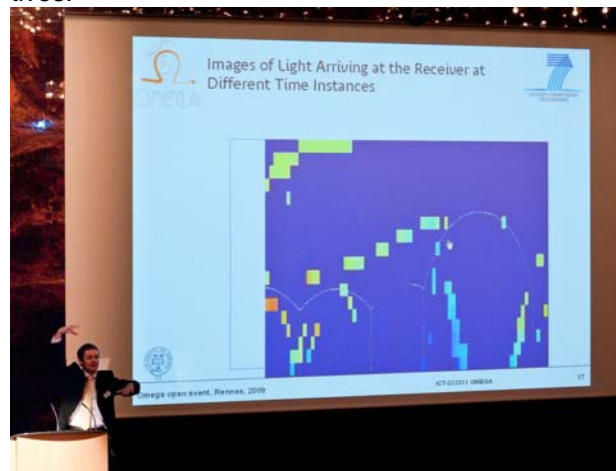
First OMEGA Open Event in Rennes

From 5 to 6 February 2009, OMEGA held its first Open Event on home networking in Rennes, France. About 80 home networking experts from Europe and Japan participated in the event, which presented the state-of-the-art on home networking technologies and OMEGA's technological concepts. The event focused on four main topical areas OMEGA is pursuing: Radio Communication, Power Line Communication (PLC), Wireless Optics, and the Inter-MAC.

The Open Event consisted of two parts: a training seminar on the first day, and a workshop on the second day. In the training seminar, senior experts from the OMEGA project held tutorials on three key areas of home networking.

Prof. Dr.-Ing. Rüdiger Kays from the University of Dortmund gave a lecture on "Wireless Home Networking based on Radio Technologies". He first explained the context of converging networks, devices, and services and then gave an overview on the radio technologies relevant in current and future home networking scenarios.

In the second tutorial, Marie Le Bot from Orange Labs presented the state of the art in Power Line Communications (PLC). She explained the role of PLC within the OMEGA concept, whereby PLC is meant to function as an in-home backbone with an expected data rate of 1 Gb/s. She particularly focused on how a PLC access network could be designed and how the challenge of electromagnetic compatibility has been tackled by various initiatives.



Prof. Dominic O'Brien from the University of Oxford explained in his tutorial the characteristics and challenges of optical wireless. He particularly explored the benefits and challenges of line-of-sight (LOS) technologies in the home network context.

The workshop on the second day started with a joint keynote presentation by Hiroshi Sakai from AS Business Partners and Josef Faller from Homefibre. Mr Sakai gave an overview on the home networking situation in Japan. Fibre to the Home (FTTH) is already quite strong in Japan: the number of FTTH users is above 11 million, and the growth rate of FTTH has exceeded that of ADSL already in 2006. Digital TV broadcasting in Japan started in 2003 and the cable TV market is going strong with more than 25 million subscribers.

Mr Sakai continued to explain the different service areas in home networking, which cover entertainment, learning, and business applications as well as life support services.



Mr Faller strongly advocated Polymer Optical Fibre (POF) in his part of the keynote. According to Mr Faller, POF has significant advantages for the home network applications over other physical media, and is particularly attractive in case rewiring of a house becomes necessary, for whatever reason.



The following presentations from the OMEGA project covered the four main investigation areas Radio Communication, Power Line Communication (PLC), Wireless Optics, and Inter-MAC, explaining

OMEGA's vision and concepts beyond state-of-the-art. It was stated that a first demonstration of the OMEGA home network is scheduled at the end of 2009.



Overall, the event showed the high interest and the rapid pace of technological advance in home networking and in particular, the high relevance of OMEGA's concept for the future of home networking in Europe.

[Open Event site](#)

IEEE ISPLC 2009 in Dresden

The 13th IEEE International Symposium on Power Line Communications and its Applications (ISPLC) was held in Dresden, Germany, at the premises of Dresden University of Technology, from 29 March to 1 April 2009. The ISPLC conference was started in 1997 by communications researchers in Europe and Asia as a forum for the discussion of the issues associated with the use of electrical power distribution wires as a viable communication channel.

OMEGA contributed to the programme with 3 papers from Orange Labs on the following subjects:

- "Transmission Capacity for Indoor PLC",
- "An Information Theoretic Analysis on Indoor PLC Channel Characterizations", and
- "OFDM/OQAM Performance Analysis under Asynchronous Impulsive Noise".

[ISPLC 2009 website](#)



OMEGA News

April 2009



Upcoming events

MCSS 2009

Herrsching, Germany, 5 - 6 May 2009

1 OMEGA paper

[MCSS website](#)

IPHOBAC Workshop

Duisburg, Germany, 18 – 20 May 2009

At least 1 paper from Orange Labs

[IPHOBAC website](#)

ICT 2009

Marrakech, Morocco, 25 - 27 May 2009

2 OMEGA papers

[ICT 2009 website](#)

ICT Mobile Summit

Santander, Spain, 10 - 12 June 2009

4 papers and a special session (8e) on OMEGA

[ICT Mobile Summit website](#)

ICC 2009

Dresden, Germany, 14-18 June 2009

1 OMEGA paper from IFX

[ICC 2009 website](#)

MESH 2009

Athens/Vouliagmeni, Greece, 18-23 June 2009

1 OMEGA paper

[MESH 2009 website](#)

Third Workshop on PLC

Udine, Italy, 1-2 October 2009

Deadline for contributions: 10 July 2009

1 OMEGA tutorial

[WSPLC 09 website](#)

About OMEGA

OMEGA is an Integrated Project in the ICT area funded by the European Commission under the Seventh Research Framework Programme (FP7). The project is running for three years from January 2008 to December 2010.

OMEGA will develop a user-friendly home area network capable of delivering high-bandwidth services and content at a transmission speed of one Gigabit per second. The interdisciplinary project consortium consists of 20 European partners from industry and academia.

[OMEGA website](#)