



**ACCORDANCE:  
A converged copper-optical-radio  
OFDMA-based access network with  
high capacity and flexibility**



**AIT participates in a research project contributing to the  
development of the “Network of the Future” in Europe**

The Athens Information Technology Center is pleased to announce the kick-off of the European Research Project ACCORDANCE since January 1<sup>st</sup> 2010, where AIT participates as project leader. ACCORDANCE is a Specific Targeted Research Project that is funded by the European Union within the 7<sup>th</sup> R&D Framework Programme. The project duration is 36 months and the level of funding provided by EU is 3.500.000 €.

The ACCORDANCE project introduces a novel ultra high capacity extended reach optical access network architecture based on OFDMA (Orthogonal Frequency Division Multiple Access) technology/protocols, implemented through the proper mix of state-of-the-art photonics and electronics. Such architecture is not only intended to offer improved performance compared to evolving TDMA-PON solutions but also inherently provide the opportunity for convergence between optical, radio and copper-based access.

The project consortium comprises 4 academic R&D centers, 2 telecom equipment vendors and 2 telecom operators:

- RELIT - Athens Information Technology (Greece), *Project Leader*
- JCP-Consult (France), *Project Management*
- Euprocom OÜ (Estonia), *Project Management*
- Alcatel-Lucent Deutschland AG (Germany)
- Deutsche Telekom AG Laboratories (Germany)
- INTRACOM S.A. Telecom Solutions (Greece)
- Telefónica Investigación y Desarrollo (Spain)
- University of Hertfordshire (United Kingdom)
- Karlsruhe Institute of Technology (Germany)
- Universitat Politècnica de Catalunya (Spain)

*Athens Information Technology* participates in the ACCORDANCE project with their *High Speed Networks and Optical Communications (NOC) Research Group* ([http://www.ait.gr/ait\\_web\\_site/research\\_HSN.jsp](http://www.ait.gr/ait_web_site/research_HSN.jsp)). AIT's NOC group will have a leading role during the project execution phase (Dr. Tomkos has been elected as Project Leader). AIT researchers will contribute in ACCORDANCE with their expertise in the field of optical access networks. More

specifically AIT will lead the work package which will define the overall architecture and elements of ACCORDANCE. In addition, AIT will be involved in physical layer issues (studies of transmission and impairments) both using computer simulations and experiments in the lab facilities of AIT, as well as in the MAC layer based on the experience and expertise of its personnel regarding current and next generation PON MAC protocols and algorithms.

Those interested in getting more information about the project may contact the NOC group leader Dr. I. Tomkos, [itom@ait.edu.gr](mailto:itom@ait.edu.gr), tel: 210 668 2771 or Dr. K. Kanonakis, [kkan@ait.edu.gr](mailto:kkan@ait.edu.gr), tel: 210 668 2823.

*JCP-Consult* is a French consulting company, specialized in the set-up and coordination of European collaborative projects, dissemination, technical training and R&D on network compression techniques. In ACCORDANCE, JCP-Consult will have a leading role in dissemination activities, contribute to the organization of the several project-related events and is perform the project administrative coordination.

*Euprocom* will mainly contribute to the administrative coordination of the project, the set-up and animation of the web site and the dissemination of the project outcomes.

*Alcatel-Lucent Deutschland AG* will bring into the project its widespread experience in the research, design and implementation of wireline and wireless access solutions like GPON, NG-PON and their follow-ups on the fibre side as well as LTE and WiMAX on the radio side. The main focus of Alcatel-Lucent Deutschland AG in ACCORDANCE will be the coexistence of diverse transmission systems (optical/wireless) within the same infrastructure and the arising consequences for network operation. Alcatel-Lucent Deutschland AG will develop enhanced wireless deployment scenarios making use of the centralised processing offered by the approach in ACCORDANCE and will explore opportunities for extending the capacity of current optical access solutions by exploiting the results on OFDM in optics as elaborated in ACCORDANCE. Accordingly ALUD contributes to the overall network conceptual and implementation works of this project in WP2 and WP3. The radio focused WP5 will be led by ALUD. Due to its involvement in international standards bodies like FSAN and ITU-T ALUD will also contribute to WP7.

*Deutsche Telekom AG Laboratories* will bring strong competences into the project to reach the ACCORDANCE objectives. These consolidated competences to build on, include the following areas of expertise: research and design of large scale broadband access networks, techno-economic assessment of different architectures and related technologies, deep understanding of networks, technologies and operational processes as well as network optimization, convergence and migration strategies. DT has a strong background in operation of large scalable carrier networks (Fixed/Broadband and Mobile networks). Accordingly DT will contribute to architecture development, network assessment and migration in WP2 as well as to system design and network convergence in WP3 and WP5. Furthermore DT will lead and actively contribute to the WP7 "Dissemination, standardization and exploitation activities".

*INTRACOM S.A. Telecom Solutions* will build on its experience of participation in NG-PON related projects by contributing to ACCORDANCE with algorithmic and computer simulation studies on OFDM modulation and OFDMA dynamic bandwidth allocation techniques.

*Telefónica Investigación y Desarrollo* will participate in ACCORDANCE with their *Broadband Access Networks* and *New Network Technologies* groups. Both groups are related with broadband networks projects inside the Telefonica Group and participate in several IST projects such as BONE, ePhoton/ONE and BANITS. Their objective is to cover broadband access networks such as FTTx and WiMAX, the core network, and its convergence with mobile networks.

*University of Hertfordshire* will lead the work package set to investigate the MAC layer issues for the support of flexible bandwidth allocation. In particular research will concentrate on the development of a dynamic MAC protocol suite for metro equivalent long-reach PON link spans that would enable WDM integration of mobile end-users. This will be achieved by managing datacentric traffic with quality of service in view of diverse multi-user access technologies. In addition individual tasks are expected to be addressed with particular relevance to the development of ONU base station and OLT node architectures for the support of wireless technologies over the optical infrastructure.

*Karlsruhe Institute of Technology* participates in ACCORDANCE with the *Institute of Information Processing Technology (ITIV)* and the *Institute of Photonics and Quantum Electronics (IPQ)*. ITIV contributes to ACCORDANCE with its experience of integrating the digital signal processing algorithms (e.g. FFT, IFFT) on the selected FPGA platform. Another topic covered by the ITIV is the connection to the modulator alternatives via AD / DA converters and the related IP blocks to control them. The IPQ will design, and implement the optical transceivers. This includes evaluation and characterization of components, electrical high speed wiring and implementation of control algorithms. It will also support the ITIV with the FPGA development.

*Universitat Politècnica de Catalunya* will contribute to ACCORDANCE with PON-related issues, ONU/OLT optical transceiver design and implementations, transmission impairment analysis and minimization and implementation of up-stream control system for optical beat interference avoidance in the PON and evaluation of up-stream coupling interplay with the MAC layer.