

Researchers provide framework to evaluate and drive down the energy consumption of mobile networks by 70%

July 31 2012

After two and a half years, the EARTH research project, partially funded by the European Union's Seventh Framework Program (FP7), has reached a successful conclusion.

EARTH (Energy Aware Radio and neTwork tecHnologies) was a highly ambitious and unique FP7 IP project, investigating the energy efficiency of mobile communication systems. A consortium of 15 leading [telecommunications service](#) providers, component and infrastructure vendors and academic institutions had as their common goal to achieve a 50% reduction in the [energy consumption](#) of 4th Generation (4G) mobile wireless communications networks enabling at the same time a strong and steady growth in mobile [data traffic](#).

The award-winning consortium EARTH achieved several accomplishments during its short existence. The solutions developed include everything from more efficient components in radio base stations to solutions on the radio network level. The EARTH project found ways to incorporate its solutions efficiently into integrated solutions. The final evaluation of the EARTH integrated solutions demonstrated that they would allow operators to save up to 70% of energy consumed in their networks. This significantly exceeded the original target of 50%. Key components of the EARTH solutions have been implemented, validated and experimentally analysed, in some cases in an operator's testbed, under realistic operating conditions, which

proved theoretical savings as well as practical ones.

EARTH showed that with these savings it is possible to expand mobile networks to satisfy traffic demands that are doubling every year, without increasing their CO2 footprint. This will be effective until disruptive future solutions also identified by EARTH are matured. Thus EARTH results are pivotal for more energy efficient growth of mobile broadband, which is needed to meet the broader sustainability goals of bridging the digital divide and creating low carbon economies of the future.

Tod Sizer, head of wireless research at Alcatel-Lucent's Bell Labs notes: "We have taken Green to the heart of our research programs. Our commitment to initiatives such as EARTH is a prominent example of how Alcatel-Lucent is driving sustainable innovation. We know it cannot be done alone and we need models of action like EARTH."

Jan Färjh, Vice President and Head of Ericsson Research, said: "We were glad to have a leading role in the EARTH project, and to contribute to creating a broader understanding of trends in network energy consumption over the next ten years. It will be crucial for telecom companies to work even more actively with implementing the best practice concepts developed in the project into reality."

The EARTH project succeeded as a flagship initiative in the area of energy efficient wireless access and is being widely referenced. The EARTH Energy Efficiency Evaluation Framework (E3F) to measure energy efficiency of wireless access networks laid foundations for objective and fair rating of wireless network [energy efficiency](#). The importance of this contribution has been confirmed by major operators to be what has been long desired and now manifests in current standardisation activities in ETSI (European Telecommunications Standards Institute). Thus EARTH set an important global foundation

for continued development of [energy](#) efficient wireless access networks.

The members of the EARTH consortium are: Alcatel-Lucent (Project Coordinator), Ericsson (Technical Manager), NXP Semiconductors France, DOCOMO Communications Laboratories Europe GmbH, Telecom Italia S.p.A., CEA, University of Surrey, Technische Universität Dresden, imec, IST- Technical University of Lisbon, University of Oulu, Budapest University of Technology and Economics, TTI and ETSI.

In May, 2012, the EARTH project won the prestigious 4th Future Internet Award, for its enabling contributions to sustainable and environment friendly growth of mobile broadband infrastructure, bridging the digital divide and supporting smart growth. EARTH accepted the prize in the closing plenary of the Future Internet Assembly of 2012 held in Aalborg.

The detailed documentation of [EARTH](#)'s technical results is available on the project web page.

More information: Project Website: www.ict-earth.eu/

Provided by IMEC

Citation: Researchers provide framework to evaluate and drive down the energy consumption of mobile networks by 70% (2012, July 31) retrieved 12 May 2024 from <https://phys.org/news/2012-07-framework-energy-consumption-mobile-networks.html>

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