

Press release

Future Energy-Efficient Technologies for a Smarter Life

- > Collaboration of more than two dozen universities, research institutions and industrial R&D labs in 13 countries
- > Project will use scavenger powered sensors to provide intelligent personal health and safety measures, environmental monitoring and support for disabilities
- > One year research pilot will bid for EU's 10 year, 1 billion EUR flagship project.

Lausanne/Zurich, May 2011. Competing for EU Future and Emerging Technologies (FET) flagship funding, the project "Guardian Angels for a Smarter Life" assembles a pan-European network under the leadership of EPFL (Lausanne) and ETH Zurich to create intelligent and autonomous systems serving individuals in their daily lives. It will meet the technological challenge of weaving together energy efficient information processing, sensing, communication and energy harvesting.

Currently, high energy consumption and the short lifespan of batteries are prohibiting the further progress of many technological scenarios. The "Guardian Angels" (GA) are envisioned as intelligent, non-intrusive and autonomous devices featuring sensing, computation and communication. "Our platform will create the ultimate smart device that will assist us from infancy to old age," said Prof Adrian Ionescu, co-project leader, Ecole Polytechnique Fédérale de Lausanne (EPFL). "One of the key features is its zero power requirement as it will scavenge for energy - think of it as recharging using the environment, sun or movement - a technology that will benefit from bio-inspired concepts."

Multiple applications for visionary technology

- > As personal companions, these Guardian Angels will for instance be used as individual health support tools (physical GA). These digital health assistants will be the key to keeping health and day care affordable and accessible to all in the ageing societies of Europe. For example, a growing number of elderly people will be able to maintain their quality of life in their familiar environment, even in cases of reduced mobility or failing cognitive abilities.
- > Furthermore, Guardian Angel devices will be able to monitor local ambient conditions for environmental danger (environmental GA). Communicating with each other, the devices will enlarge the personal radius of sensory perception. For example, natural disaster warnings will be issued individually and without delay. And gaining access to real time data on a grand scale will result in saving energy in heating, transportation and domestic appliances.
- > Ultimately, the device will also perceive emotional conditions and provide helpful functions for the disabled (emotional GA). Thus, for example, quadriplegic patients will be empowered to interact by thought or the autistic will be enabled to read and send out emotions.

Designed in close cooperation with different social actors, interest groups and future users, paying close attention to environmentally friendly and economically feasible solutions, further beneficial applications for GA technology will be developed over the course of the project. In short, Guardian Angels devices will make our environment more interconnected and smart, more energy efficient and safe.

New technological paradigms create economic head start for Europe

The Guardian Angels project will address new paradigms: great scientific challenges include energy efficient computing and communication, signal evaluation, algorithms and wireless transmission concepts, novel low power sensing and nano-electro-mechanical systems, ultra low power spintronics and disruptive energy harvesting and storage technologies.

Jointly working towards achieving this scientific breakthrough is a consortium constituted by excellent European research institutions, universities and companies (see box below). Together they will strengthen the leading role of Europe in zero power novel technologies, while enabling a stronger role of manufacturing in Europe and improving the competitiveness for leading communication companies. Overall, the project will result in the creation of new employment in Europe in advanced Information and Communication Technology.

The FET Flagship programme

In 2010, the European Union issued a call for a Future and Emerging Technologies (FET) flagship programme. These large-scale research partnerships will be funded with up to 100 million EUR per annum and per initiative for at least 10 years. They will contribute notably to Europe's technological advancement, achieve scientific breakthroughs, create new symbioses in research and result in tangible industry success. At this point, six projects have been selected out of the pre-proposal phase and are funded to submit a detailed proposal by May 2012.

The Guardian Angels consortium partners

Universities

Ecole Polytechnique Fédérale de Lausanne (Switzerland), ETH Zurich (Switzerland), Katholieke Universiteit Leuven (Belgium), Lund University (Sweden), Royal Institute of Technology KTH (Sweden), Université Catholique de Louvain (Belgium), University of Cambridge (United Kingdom)

Research institutions

Centre National de la Recherche Scientifique CNRS (France), Centre Tecnològic de Telecomunicacions de Catalunya (Spain), Commissariat à l'Energie Atomique et aux Energies Alternatives CEA (France), Consorzio Nazionale Interuniversitario per la Nanoelettronica IUNET (Italy), CSEM Centre Suisse d'Electronique et de Microtechnique SA - Recherche et Développement (Switzerland), Instytut Technologii Elektronowej ITE (Poland), Interuniversitair Micro-Electronica Centrum VZW (Belgium), SiNANO Institute (France), Tyndall National Institute University College Cork (Ireland), VTT Technical Research Centre of Finland (Finland)

Companies

HiQScreen SARL (Switzerland), IBM Research GmbH (Switzerland), Infineon Technologies AG (Germany), Intel Performance Learning Solutions Limited (Ireland), NXP Semiconductors Netherlands BV (Netherlands), Sanofi Aventis Recherche & Développement (France), Senarclens, Leu & Partner AG (Switzerland), Siemens AG (Germany), Stichting IMEC Nederland (Netherlands), STMicroelectronics Crolles 2 SAS (France), Thales SA (France)

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For full project documentation please visit www.ga-project.eu