FET Flagship Pilot session

# Guardian Angels for a Smarter Life

The goal of the FET Flagship Guardian Angels for a Smarter Life is to develop enabling technologies for personal assistants envisioned as intelligent, autonomous systems-of-systems featuring sensing, computation, and communication, and delivering features and characteristics that go well beyond human capabilities. It is intended that these personalized Guardian Angels will provide assistance from infancy right through to old age, they will help for example elderly people to maintain their living quality even in case of continuous reduction of mobility and cognitive abilities. They will help individuals recognizing environmental threats and dangerous situations early enough and they will collect data from other devices in the vicinity to increase the data base by information far beyond the radius of action of the individual. It is further envisioned that these personal companions directly interact the human neurological system to allow for man-machine interfaces for e.g. disabled persons. The GA will enlarge the cognitive abilities of individuals.

A key feature of these Guardian Angels will be their zero power requirements as they will scavenge for energy and as they will exploit ultra low power technologies for sensing, computation and communication. Key technologies for the Guardian Angel are ultra low power IC technologies, algorithms, and wireless transmission concepts for autonomous communication, security concepts, novel sensors and nano-electro-mechanical systems and disruptive energy harvesting technologies to enable zero – external – power operation.

**Speakers:**

- H. Fanet, CEA-LETI, France: “Technological platform: novel functionality and disruption versus reality check’’
- F. Balestra, SINANO, France: “Fundamental scientific challenges and limits for ultra low energy computation”
- C. Hierold, ETHZ, Switzerland: “Ultra low power nano sensors”
- E. Sangiorgi, IUNET, Italy: “Fundamental scientific challenges and limits for energy harvesting”
- K. Sivula, EPFL, Switzerland: “Energy conversion inspired by nature”
- G. Gielen, KUL, Belgium: “Design strategies for ultra low power systems-of-systems”
- D. Bertrand, Hiqscreen, Switzerland: “Guardian Angels: breakthrough toward e-Health”
- R. Plana, CNRS, France: “Energy efficient communications”
- A.M. Ionescu, EPFL, Switzerland: “One billion Euros for Zero Power Guardian Angels?”

**Contact:**
Karin Jaymes, karin.jaymes@epfl.ch
Isabelle Buzzi, isabelle.buzzi@epfl.ch
Ecole Polytechnique Fédérale de Lausanne