

Heterogeneous Technology Alliance



Vision – Mission – Strategy



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Background

Micro- and nanoelectronics is one of the key enabling technologies as defined by the High Level Expert Group of the European Commission. As one of the KETs, micro- and nanoelectronics is of major importance for industrial competitiveness and growth as well as for Europe's ability to address grand societal challenges in the coming years. "Mastering and deploying Key Enabling Technologies (KETs) in the European Union is central to strengthening Europe's capacity for industrial innovation and the development of new products and services needed to deliver smart, sustainable and inclusive European growth"¹.

EARTO (European Association of Research and Technology Organizations) has stated that "RTOs play a key role in tackling the major social concerns and economic opportunities of the day". They are "contributing through science and technology to improved collective and individual welfare, and to sustainable economic development and competitiveness, by working with government and business to develop and deploy relevant technologies"².

Furthermore, the European Commission has defined key targets for a smart, sustainable and inclusive growth³. They comprise the necessity of adequate R&D investments, the need for high level education, and a reduced consumption of resources to limit the climate change with the goal to maintain a sufficient employment rate, and to reduce poverty and social exclusion.

To be prepared for these demands, four major European research institutes –CEA (France), Fraunhofer (Germany), CSEM (Switzerland) and VTT (Finland) – have joined forces and pooled their focused expertise on microtechnologies, nanoelectronics and smart systems into the Heterogeneous Technology Alliance (HTA). Building the bridge over the so-called "valley of death" between academia and industry, the objective of this wide-ranging Alliance is to carry out joint research projects and develop innovative solutions which contribute to the Grand Societal Challenges.

Following the demands of the Grand Challenges, the European Union has started a huge transformation process. Today's well established information oriented society has an enormous need for microtechnologies, nanoelectronics and smart systems. These technologies have become enabling technologies used everywhere in a modern society.

The transformation of Europe is ongoing. A future society will be based on mobility, and information technologies. This will further increase the need for microtechnologies, nanoelectronics and smart systems. This transformation needs extended collaboration schemes, infrastructure and ways of operating to create innovation necessary to support this transformation.

Vision

The transformation into a future, mobile, information, carbon-free footprint, and inclusive & welfare society is a must for European competitiveness. HTA is the key player for European Union and industry to make this transformation happen.



Mission

The mission of the comprehensive HTA alliance is **to ensure competitiveness of European industry through cutting-edge research and technology transfer services.**

This will be done by

- Developing innovative solutions and products for industry
- Developing key enabling technologies in microtechnologies, nanoelectronics and smart systems
- Developing infrastructure in coordination and collaboration for research, piloting and small scale production

Strategy

In order to fulfil our mission, the HTA partners will

- Related to innovative solutions and products
 - Respond to the requirements of industry in particular of small and medium sized companies for the benefit of all European member states
 - Give access to cutting-edge application oriented research and development at an extremely early stage, thus giving a distinct competitive advantage to the companies
 - Produce prototypes and small series when needed by customer
 - Help the industrial customers to address the global challenges for the benefit of Europe as business location.
- Related to key enabling technologies
 - Build shared vision and common roadmaps
 - Define joint focal areas of research
 - Carry out joint research projects
 - Fulfil the applied research requirements
- Related to infrastructure
 - Create and offer common platforms
 - Offer pilot production facilities
 - Operate small scale production
 - Bridge the innovation gap (“valley-of-death”) between research and production

The four HTA partners are joining forces by

- Pooling their technological and scientific expertise
- Initiating a smart specialization of the partners’ technological sites
- Jointly defining visions, goals and programmes to support the European Commission

The main focus of HTA lies on the further development of innovative Smart Systems which are aiming at a most efficient use of resources like energy and rare materials. This requires



significant efforts in technological development for new sensors and actuators adopting nanoscale effects to microsystem applications, solving the challenges of energy harvesting and energy storage and management, developing new and more efficient system architectures by learning from nature, as well as further miniaturizing technical systems.

Providing adequate education for young people and maintaining and extending the technological knowledge base is a prerequisite to keep production of high-end systems in Europe. Production is needed to maintain a sufficient employment rate and create a value added high enough to increase quality of life and to reduce social exclusion. **Therefore HTA will act as a key pillar for the bridge between academia and industry which will help to overcome the “valley of death” between invention and innovation.**

The HTA-partners appreciate the support from local and federal authorities as well as from the European Commission. Enhanced support of European Research Alliances like HTA is necessary to form a joint European Research Community which is able to take over the lead on Smart Systems Development in the global competition. The foundation of HTA was a first step towards this goal. HTA now becomes a voice being heard in Europe and will act as a Think Tank for the European Commission.

¹ High-Level Expert Group on Key Enabling Technologies, Final Report, European Commission, June 2011

² Addressing the Grand Challenges: The Contribution of Research and Technology Organisations; EARTO Technopolis Group, October 2010

³ Europe 2020 - A European strategy for smart, sustainable and inclusive growth; European Commission, March 2010