# CO-SUMMIT 2013

BOLSTERING SOFTWARE INNOVATION TO FOSTER HI-TECH EMPLOYMENT AND INDUSTRY OPPORTUNITIES, THE CO-SUMMIT 2013, HOSTED IN SWEDEN ON 4-5 DECEMBER, PROVIDED A PLATFORM FOR CUTTING-EDGE RESEARCH DISSEMINATION AND COLLABORATION. *INTERNATIONAL INNOVATION* PRESENTS KEY HIGHLIGHTS AND INTERVIEWS FROM THE TWO-DAY EVENT AND DISCUSSES THE CHANGES FORECAST FOR THE DIGITAL TECHNOLOGY LANDSCAPE FROM NOW TO 2030

# WELCOME TO HI-TECH INNOVATION

Focused on the theme 'Software innovation: boosting high-tech employment and industry', the Co-summit 2013 was hosted at the SCANDIC Infra Business Center in Stockholm, Sweden, on 4-5 December. Collaboratively organised by ARTEMIS and ITEA, in cooperation with VINNOVA, the two-day event was designed to boost STI innovation across Europe

Showcasing transnational ARTEMIS and ITEA 2 projects and their results, the event encouraged innovation, business-based impact and research exploitation. Propelling science, technology and innovation advancements across Europe, the conference was designed as a platform to enhance hi-tech product and service development in industry and provide opportunities for employment, while presenting attractive prospects for collaboration.

Almost 650 delegates from around 80 leading European companies and institutions were in attendance at the Co-summit, including keynote speakers who participated in a high-level panel discussion on hi-tech innovation. Alongside the engaging project exhibition area, a new project-based element was incorporated into the event, consisting of four 'Speakers corners' in which project representatives were given an opportunity to introduce their project, organise debates on relevant topics and provide tours of their exhibition booths.

The event offered representatives an opportunity to interact with one another and develop collaborations with participants from industry and academia, government officials and media representatives from all around Europe in order to devise mutually beneficial solutions that meet the challenges of the 21st Century.

## ARTEMIS

ARTEMIS Industry Association (ARTEMIS-IA) represents R&D actors in embedded systems – specialised computer systems that have a specific function within a larger system or machine – with approximately 180 members and associates from across Europe, including 23 member states. The Association comprises a multidisciplinary research community involving industry, universities and research institutes participating in the ARTEMIS Joint Undertaking (ARTEMIS JU). The programme focuses on downstream research, or the translation of technological R&D to create innovative products and services ready for market. Encouraging research activities through open calls for submissions, the Joint Undertaking scheme will last 10 years with a budget of €2.5 billion invested in the development of embedded computing systems. The ARTEMIS network of communication, cross-disciplinary collaboration and dissemination fosters the development of innovative initiatives and technological ideas that will positively impact European hi-tech industries.

In 2014, ARTEMIS JU will merge with ENIAC JU and the EPoSS Technology Platform to form Electronic Components and Systems for European Leadership (ECSEL), a 10-year programme beginning in early 2014. ECSEL will build further on the successes of these instruments in order to help Europe maintain and strengthen its position in the hi-tech sector.

In parallel to the merging of ENIAC JU, ARTEMIS JU and EPoSS Technology Platform, ARTEMIS-IA will continue to represent actors in Embedded and Cyber Physical systems in Europe and continuously promote the R&D interests of its members at the EC and Member State public authorities. ARTEMIS-IA will also be a private partner in the yet to be established ECSEL Joint Undertaking.

## ITEA

ITEA is a EUREKA Cluster programme supporting innovative, industry-driven, pre-competitive R&D projects in the area of Software-intensive Systems & Services (SISS). SISS are a key driver of innovation in Europe's most competitive industries, such as automotive, communications, healthcare, aerospace and consumer electronics. For Europe, an industry strong in software innovation is a prerequisite for maintaining global competitiveness and securing high-value jobs in Digital Technology and other, more traditional industries that are dependent on digital technology.

ITEA stimulates projects in an open community of large industry, SMEs, universities, research institutes and user organisations active in SISS. The community is founded in Europe based on the EUREKA principles and is open to participants worldwide. ITEA's mission is to be the recognised partner for European industry, optimising support for companies and R&D actors active in ITEA projects, thus making best use of funding made available by the ITEA supporting countries.

ITEA 3 is the third phase of the ITEA programme. Beginning in January 2014, ITEA 3 will run until 2021 with a budget of €3 billion and an objective to mobilise 20,000 person-years of research. This new phase has much in store for the ITEA programme. In its first month alone, it received ISO 9001 accreditation for its quality management system which is in place to ensure adaptability to the changes ahead. Furthermore, ITEA 3 has a living roadmap as a permanently updated baseline for innovation in order to ensure it stays at the cutting-edge. One of the most exciting developments of ITEA 3 is that it has restructured its annual call calendar and can now take an idea to project start within 10 months. ITEA 3 also benefits from strong partnerships, such as with other EUREKA clusters, ARTEMIS, the European Institute of Innovation & Technology (EIT) ICT Labs and national competitiveness clusters.

## SMART CITIES

One of the focal points of the Co-summit 2013 was an exhibition area dedicated to projects associated with 'Smart Cities', with both ARTEMIS and ITEA discussing the impact of innovation in software and embedded systems in urban spaces. During the event, ARTEMIS projects ARROWHEAD, ACCUS, ENCOURAGE and DEMANES, among others, disseminated their work on the implementation of smart technologies in European cities. ITEA projects showcasing their results in the focus area included SUS and IMPONET. Topics spanned a wide range of applications, such as driving of collaborative automation via network-enabled devices for the provision of energy; the innovative development of smart grids; urban transport and traffic; effective energy usage in buildings; and large-scale monitoring systems. A panel discussion provided the representatives with an opportunity to discuss the impact of smart technologies in order to better understand issues such as suitability, sustainability, performance and security. The scale of many of these undertakings will require joint endeavours between European projects, to ensure that the most effective and necessary innovations and solutions are developed.

## CO SUMMIT 2013 EXHIBITION AWARDS

The Co-summit 2013 included ARTEMIS and ITEA Exhibition Awards based on posters and demonstrations designed by project partners to showcase their objectives, results and overarching accomplishments. To win the annual prizes, posters had to represent the project and its goals vividly, demonstrations had to be clear and convincing, and representatives had to be able to communicate their work and its business value effectively.

AMALTHEA won the ITEA Exhibition Award, demonstrating its development of a consistent, open and expandable tool platform for use in automotive engineering. CRYSTAL was awarded the ARTEMIS Exhibition Award, which establishes workflows based on current and emerging technologies for use in engineering environments to reduce system design costs.

## ITEA ARTEMIS IA HIGH LEVEL VISION 2030

The ITEA ARTEMIS-IA High-Level Vision 2030 'Opportunities for Europe' report has been developed in response to the disruptive societal changes forecasted, including lifestyles and business practices, from now until 2030. This timescale has been established based on the estimation that the global population will surpass 8 billion people in 2030; 23 per cent of which will live in either Europe or the Americas. The report describes seven areas of major change, referred to as 'Grand Challenges': globalisation and demographic change; management of scarce resources; climate change; urbanisation; mobility; healthcare; and digital society. In response to these issues, ARTEMIS and ITEA have highlighted the need for research and innovation that will benefit the economy, provide job opportunities and improve European ecosystems. The leading roles predicted for digital technologies in society in the next 15 years has further signalled the need for Europe to develop innovative and purpose-built ICT-based systems in order to respond effectively to the increasing demands of global competitiveness.

# DIGITAL TECHNOLOGY AND THE GRAND CHALLANEGES

ARTEMIS and ITEA coined the term 'Digital Technology' – including hardware, software, IT services, internal IT and embedded software – to facilitate discussions on hi-tech innovation. Here, *International Innovation* highlights the shift in Digital Technology within the context of some of the key High-Level Vision 2030 'Grand Challenges'

- The global Digital Technology market is estimated to be worth US $3.3 billion – providing 50 million jobs

- 9.1 million jobs in Digital Technology are located in Europe – 8.9 million jobs are in software and services, and 1.1 million jobs are associated with embedded systems

- From 2010-30, GDP will increase by 70% in developing countries and 30% in developed countries

- In less than 20 years, emerging markets will account for more than half of all global GDP

- Global energy consumption will rise by 39% between 2010 and 2030

- By 2030, there will be a shortage of hi-tech metals, threatening the advancement of future technologies such as photovoltaic cells, hybrid propulsion and energy-efficient flat screens

- There will be a 59% increase in the number of people living in cities in 2030, with the urban population growing from 3.5 billion in 2011 to 4.9 billion in 2030

- In 2013, the internet will be prevalent in almost 100% of developed countries

- The internet penetration rate rose from 51% in 2005 to 72% in 2010

Sources: http://itea3.org ; ITEA ARTEMIS-IA High-Level Vision 2013

# " PROFESSOR RUDOLF HAGGENMÜLLER
# PROFESSOR HEINRICH DAEMBKES



**In their joint welcome address, Professors Rudolf Haggenmuller, ITEA chairman, and Heinrich Daembkes, president of the ARTEMIS Industry Association, spoke of how their programmes are entering a period of transition, and how the new versions of their respective funding mechanisms will offer even greater opportunities**

**RH**: For both of our programmes – ARTEMIS and ITEA – this is a very special moment. We both are coming to the end of one phase and the beginning of another phase. For ITEA, it is the end of ITEA 2 and the beginning of ITEA 3 […]. We enter into ITEA 3 with a refreshed body and soul. ITEA 3 will be an asset to master the changes ahead of us. ITEA 3 will be an agile organisation […] with a living roadmap as a permanently updated baseline for our innovations. […] In ITEA 3, the time from idea to project start will be 10 months. […] ITEA 3 in a nutshell stands for: software innovation – this is our business; seizing the high ground – this is our ambition; and happiness – this is our spirit.

**HD**: As Rudolph mentioned, we are at a very important transition. While for ITEA, it is from 2 to 3, we are at the phase of experiencing the phase out of the EU Seventh Framework Programme (FP7) and the entrance into Horizon 2020 which is the new name for FP8, also indicating that it is not just more of the same, it is really trying to do something new. With the expiry of FP7, certain instruments are phasing out […]. With Horizon 2020, we get new instruments at hand; we are getting new opportunities to cooperate.

For ARTEMIS in the first phase, we had only individual and isolated projects, where we prepared on specific elements of need and prioritised certain research results. Then we learnt to cluster projects […]. The last phase, especially starting two years ago or one and a half years ago, is combining all of the elements that we are getting from earlier phases and also recognising that working together is really important. Working together is something that is helping us to master the complex challenges of society. These are the so-called large Innovation Pilot Projects. These Pilot Projects are helping us to cross, or at least start crossing, this Valley of Death, where we have useful results but we are not bringing that to application […].

Complex systems need to be mastered by working together in a well-coordinated way […]. We need to have seamless integration of the various contributions […]. This is enhancing efficiency and helping us to make significant progress for the welfare of the economy. The next phase we are preparing is that we are merging with the hardware part, coming together with smart systems, and the emphasis is on enhanced communication, collaboration on smart systems. This is bringing the embedded systems work to something we are calling Cyber Physical Systems […].

## WHAT ARE CYBER PHYSICAL SYSTEMS?

**Professor Heinrich Daembkes**: ARTEMIS began with a focus on mastering the design and development of complex embedded systems for a large range of practical and relevant applications. As these embedded systems are becoming able to communicate, they are able to network with other relevant smart systems. They thus benefit from the knowledge available within other parts of the overall system, allowing new and better insights and resulting activities. We are calling these networked embedded systems Cyber Physical Systems (CPS).

The definition here in Europe is a bit wider that the original definition used in the US. There, they typically understand CPS as connecting the embedded world to the physical world via sensors and actuators, and in a first approach don't take into account the further networked system. We are viewing the integration of sensors and actuators as being part of a 'smart system'. As smart systems then become networked, we consider the interacting system of smart/intelligent embedded systems as CPS.

**Dr Alun Foster**: Embedded systems' typical applications are in cars, aeroplanes, etc. They are computers that don't look like computers, hidden from daily life but with the functionality needed to fly a plane safely, make a car burn less fuel, etc. The general view of embedded systems is very much that of a small computer that does not take into account too much the real world.

CPS make use of all of this technology to engage with the physical world. The aim is not to make computers with sensors around the outside – it's a much more sophisticated animal than that. Embedded systems in critical applications are always real-time sensitive, so further integrating the physical world requires that time sensitivity to be carried along.

If we look to the future, CPS will be addressed by Horizon 2020 and also the future joint undertaking which will replace ARTEMIS – ARTEMIS-JU will merge with the ENIAC-JU, which is presently working on nanoscale semiconductor technologies – to provide at least two parts of a three-legged horse. The third leg will be the European technology platform on smart systems integration (eposs) activity. Eposs looks at smart systems, smart sensors, etc.; ENIAC is very good at making the technologies required to build very dense, high performance computers; and ARTEMIS focuses on making the software that allows all of these elements to function together. Together, these components form CPS.

# THE EXHIBITORS

More than 80 inspiring ARTEMIS and ITEA projects were showcased at the Co-summit 2013, which sought to promote 'software innovation: boosting high-tech employment and industry'. We present some of the exhibitors, including highlights from the 'Smart Cities' arena

## ARTEMIS PROJECTS

### ENCOURAGE
EMBEDDED INTELLIGENT CONTROLS FOR BUILDINGS WITH RENEWABLE GENERATION AND STORAGE

**PROJECT DURATION**
June 2011-May 2014

**TOTAL COST**
€6.37 million

**PROJECT LEADER**
Dr Arne Skou, Aalborg University, Denmark

**WEBSITE**
www.encourage-project.eu

**PARTNERS**
11 from five countries (Denmark, Ireland, Italy, Portugal, Spain)

The aim of this project is to develop embedded intelligence and integration technologies in non-residential buildings to optimise their energy use and enable their participation in a smart grid. ENCOURAGE seeks to save energy by 20 per cent in three ways: supervisory control strategies, an intelligent gateway, and virtual sub-metering technologies and event-based middleware applications. Supervisory control strategies will coordinate large subsystems such as lighting, renewable energy generation, thermal storage, heating, ventilation and air conditioning. The intelligent gateway will communicate with other buildings and local energy producers to negotiate possible use of their electricity. Virtual sub-metering technologies and event-based middleware applications will be used for monitoring and diagnostics.

The initiative can also be applied to residential buildings, the ultimate goal being to establish interoperability between various types of energy generation, consumption and storage devices; inter-building energy exchange; and systematic performance monitoring.

### E-GOTHAM

**PROJECT DURATION**
April 2012-March 2015

**TOTAL COST**
€6.84 million

**PROJECT LEADER**
Santiago Benito Gregorio, Instalaciones Inabensa S.A., Spain

**WEBSITE**
www.e-gotham.eu

**PARTNERS**
17 from five countries (Estonia, Finland, Italy, Norway, Spain)

The primary objectives of e-GOTHAM are to implement a new aggregated energy demand model that will integrate and give priority to renewable energy sources, match demand and supply, encourage monitoring products and services, and create a market for energy-efficient technologies. The idea is to divide the main power grid into smart microgrids, or localised grids, that have advanced communications abilities, particularly between producers and consumers. The impact of this project is expected to be felt by industry, through optimising energy use and production from electricity, gas, combined heat and power (CHP) plants, and solar panels; consumers, through a reduction in energy failures, peak values and overall bills; and the tertiary sector, through energy and monetary savings, as well as improved maintenance.

## ITEA PROJECTS

### ENERFICIENCY
USER LED ENERGY EFFICIENCY MANAGEMENT

**PROJECT DURATION**
December 2011-February 2014

**TOTAL COST**
€4.6 million

**PROJECT LEADER**
Max Grau Stenzel, Cassidian, France

**WEBSITE**
https://itea3.org/project/enerficiency.html

**PARTNERS**
Seven from three countries (Belgium, France, Spain)

Through the development of two specific open software platforms, the overall objective of ENERFICIENCY is for consumers to manage their energy efficiency by using smart appliances and control systems that can react 'intelligently' to the power grid. The idea is to integrate a variety of data sources and convert these data for energy efficiency management, auditing and benchmarking. The first platform is aimed at industrial plants and other large-scale buildings and will use pre-designed process patterns to optimise energy consumption; the second is geared towards the residential market. The project team hopes that by analysing users' needs and expectations the configurable energy-information platforms will enable businesses – particularly SMEs – to compete in traditionally closed energy markets.

# SMART CITIES

Offering a fascinating insight into our urban future, a common theme among some of the Smart Cities projects is sustainable energy and consumption. Others focus on interoperability, making use of intelligent technologies to improve services and citizens' quality of life

## SMART URBAN SPACES (SUS)

**PROJECT DURATION**
July 2009-December 2012

**TOTAL COST**
€18.3 million

**PROJECT LEADER**
Jean-Pierre Tual, Gemalto SA, France

**WEBSITE**
www.smarturbanspaces.org

**PARTNERS**
34 from three countries (Finland, France, Spain)

By facilitating interoperability, urban regions are able to attract investment, a qualified workforce, tourists and consumers; however, service standardisation can pose problems. Through the development of software and design frameworks, SUS sought to enable European cities to implement the most advanced mobile technologies, offering interoperable eServices for citizens and visitors. 47 pilot projects were developed and grouped into four areas: ticketing, education and day care, transport and city visits. SUS employed a combination of contactless proximity – near-field communication – and context-aware technologies, which are currently being applied in various cities across Finland, France and Spain. During the 2013 Co-summit, the SUS project was awarded the ITEA excellence award in the category 'exploitation'.
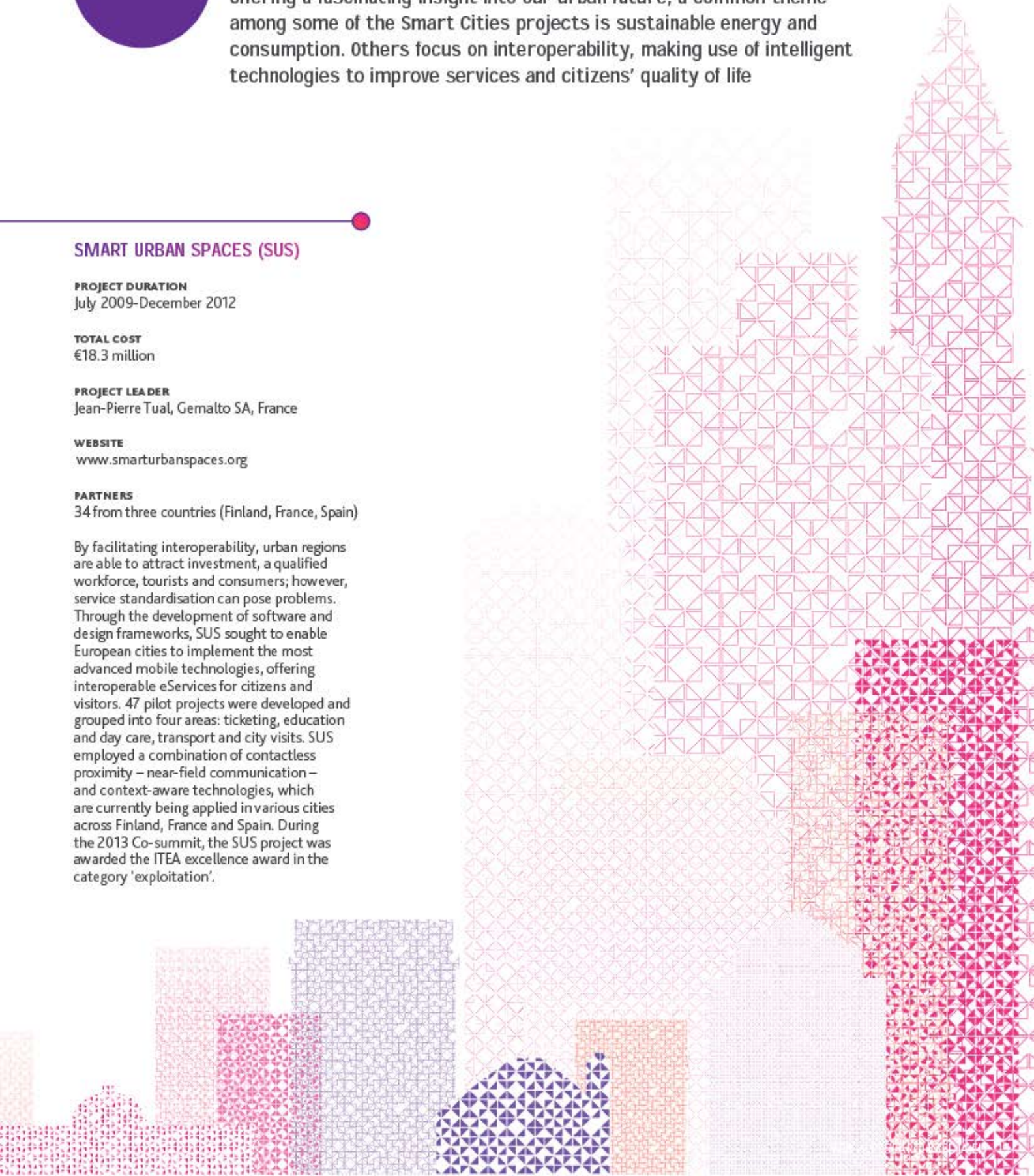
# OTHER EXHIBITORS

The ARTEMIS and ITEA exhibition enabled project teams to present their vision, achievements and results through posters and demonstrations. Here is a snapshot of some of the transnational initiatives that are promising to drive Europe's hi-tech industry, employment opportunities and competitiveness

## ITEA PROJECTS

### RECONSURVE
RECONFIGURABLE SURVEILLANCE SYSTEM WITH COMMUNICATING SMART SENSORS

**PROJECT DURATION**
January 2011-December 2014

**TOTAL COST**
€9.9 million

**PROJECT LEADER**
Dr Cengiz Erbas, Aselsan, Turkey

**WEBSITE**
www.reconsurve.eu

**PARTNERS**
Nine from three countries (Turkey, France, Korea)

Awarded the 'Most Innovative and Commercially Viable Project' by the Korea Institute for Advancement of Technology (KIAT) in June 2013, RECONSURVE's intention is to improve maritime security and sea-border surveillance. Current systems are fragmented across Europe; thus, to tackle the increasing number of complex maritime issues such as illegal immigration, the project seeks to offer a common interoperable surveillance system with smart data processing, situational awareness, the ability to use several platforms with a variety of sensor types and advanced algorithm-based capabilities. These competencies can be employed for unmanned aerial vehicles, sonar sensor networks and thermal cameras. The idea is not to develop another surveillance system, but to create a framework of existing systems.

### A2NETS
AUTOMATIC SERVICES IN MACHINE TO MACHINE (M2M) COMMUNICATION NETWORKS

**PROJECT DURATION**
November 2010-June 2014

**TOTAL COST**
€22 million

**PROJECT LEADER**
Juhani Latvakoski, VTT Technical Research Centre, Finland

**WEBSITE**
https://itea3.org/project/a2nets.html

**PARTNERS**
23 from four countries (Finland, France, Spain, Turkey)

Seeking to boost the M2M market, A2Nets focuses on making communication networks more usable for both humans and machines. The project team is applying automatic computing – self-configuration, self-healing, self-optimisation, self-protection and communications – to smart metering for electricity delivery and car-sharing services. By the end of the project, A2Nets intends to achieve a smart M2M service approach applicable across industry.

### ACOUSTICS
ACOUSTIC WAVE APPLICATION FOR THE ANALYSIS OF THE QUALITY AND SAFETY OF POROUS FOOD AND NON-FOOD MATRICES

**PROJECT DURATION**
April 2011-April 2014

**TOTAL COST**
€0.5 million

**PROJECT LEADER**
Professor Grazina Juodeikiene, Kaunas University of Technology, Lithuania

**WEBSITE**
https://itea3.org/project/acoustics.html

**PARTNERS**
Six from two countries (Lithuania, Ukraine)

This project involves the use of a non-invasive wave technique to improve food quality and safety, and minimise production costs. Pathogenic microorganisms, mycotoxins, bovine spongiform encephalopathy, genetically modified organisms and pollutants are specific problems which require intensive control, data logging and data treatment. The team is therefore employing analytical tools and algorithms to monitor and determine, for example, certain mycotoxins in cereal grains, structural or textural changes in baked goods and defects in non-food products such as textiles, paper and building materials. They are building several prototype acoustic spectrometers which have industrial applications and can be used in laboratories, as well as a portable acoustic system to be used by farmers to assess mycotoxin contamination in cereal crops.

### DICOMA
DISASTER CONTROL MANAGEMENT

**PROJECT DURATION**
December 2011-June 2014

**TOTAL COST**
€6.2 million

**PROJECT LEADER**
Eloy Gonzalez Ortega, INDRA Software Labs, Spain

**WEBSITE**
https://itea3.org/project/dicoma.html

**PARTNERS**
17 from four countries (Finland, Israel, Spain, Turkey)

Natural disasters and human-made crises brought about by war, terrorism or ecological change require the cooperation of numerous national, and often international, agencies. The DiCoMa team is designing an interoperable software platform to help organisations responsible for disaster management and decision makers work together and receive relevant information. The platform will incorporate complex event-processing engines, data-mining services, simulators, geographical information systems and decision-support systems, all of which should allow fast understanding of the information available, improve the exchange of that information and reduce the training effort required.

# ARTEMIS PROJECTS

## COPCAMS
COGNITIVE AND PERCEPTIVE CAMERAS

**PROJECT DURATION**
April 2013-March 2016

**TOTAL COST**
€41.64 million

**PROJECT LEADER**
Christian Fabre, Commissariat à l'énergie atomique et aux énergies alternatives (CEA), France

**WEBSITE**
www.copcams.eu

**PARTNERS**
20 from seven countries (Denmark, France, Poland, Slovenia, Spain, Turkey)

Although a ubiquitous feature of our daily lives, today's surveillance cameras are unable to scale beyond a certain size. COPCAMS proposes to design large-scale vision systems using a new many-core programmable accelerator platform. The resulting smart cameras and gateways will be able to extract meaningful information and respond to their surrounding environment, contributing to a revolution in visual analytics.

## HIGH PROFILE
HIGH-THROUGHPUT PRODUCTION OF FUNCTIONAL 3D IMAGES OF THE BRAIN

**PROJECT DURATION**
April 2011-March 2014

**TOTAL COST**
€17.12 million

**PROJECT LEADER**
Dr Frank van der Linden, Philips Medical Systems NL B.V., The Netherlands

**WEBSITE**
www.highprofile-project.eu

**PARTNERS**
17 from five countries (Austria, Belgium, Finland, Italy, The Netherlands)

Real-time image processing has become increasingly complex. Focusing on advanced imaging of the central nervous systems, this project aims to integrate equipment for diagnostics to support combinations of images from different modalities. The team expects to contribute significantly to the diagnosis and therapy of brain and central nervous system diseases by exploiting high-performance digital signal processors as well as computing and content management systems.

## VETESS
VERIFICATION AND TESTING TO SUPPORT FUNCTIONAL SAFETY STANDARDS

**PROJECT DURATION**
May 2012-April 2015

**TOTAL COST**
€20.20 million

**PROJECT LEADER**
Steve Neill, Infineon Technologies UK Ltd, UK

**WEBSITE**
www.vetess.eu

**PARTNERS**
22 from eight countries (Austria, France, Germany, Italy, The Netherlands, Spain, Sweden, UK)

VeTeSS aims to address some of the challenges associated with adopting new safety standards such as ISO 26262; an international, automotive-specific regulation. Companies producing safety-relevant embedded systems are currently faced with verification protocols that are often ad hoc and manual, differing for digital and analogue, hardware and software. The team seeks to develop standardised tools and methods for verifying the robustness of safety-relevant systems, particularly against transient common-cause faults. Strategically focusing on the automotive market, the project is expected to enable vendors to offer standard components for multiple applications, rather than products designed to a specific customer's requirements. Projected outcomes of VeTeSS are to improve the safety, quality and reliability of products and increase road user safety through innovative technologies.

## ARROWHEAD

**PROJECT DURATION**
March 2013-February 2017

**TOTAL COST**
€67.62 million

**PROJECT LEADER**
Professor Jerker Delsing, Luleå University of Technology, Sweden

**WEBSITE**
www.arrowhead.eu

**PARTNERS**
77 from 15 countries (Austria, Belgium, Czech Republic, Finland, France, Hungary, Italy, Latvia, The Netherlands, Norway, Portugal, Spain, Sweden, UK)

One of the largest projects featured at the Co-summit, ARROWHEAD aims to address the technical and adaptive challenges of cooperative automation – a driver of interactions between energy producers and energy consumers, machines and systems, and people and systems, etc. Technology such as the Internet of Things and service-orientated architectures facilitate such exchanges. However, to streamline cooperative automation, ARROWHEAD will propose solutions for integration with legacy systems; develop real experimentations in applicative domains; specify accessible innovations; and lead the way in standardisation. The project focuses on four areas: production (or process and manufacturing automation), smart cities, electrical mobility and, finally, energy production and demand (or smart grids).

# DR CHARLOTTE BROGREN

**In her keynote address at the Co-summit 2013, Dr Charlotte Brogren, Director of the Vinnova Governmental Agency for Innovative Systems, argued that many of the challenges of the 21st Century should be thought of as opportunities**
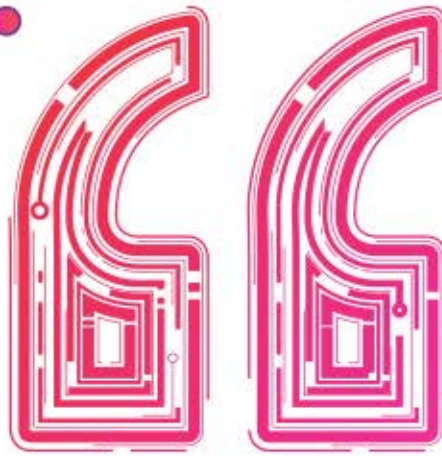
"I'd like to ask the question, what is innovation? Or maybe it's even easier to ask, what is the opposite of innovation? One way of looking at it could be imitation, and for certain periods and conditions, imitation might be the right way to go to market. But we all know that long term this is not sustainable […]. We know that innovation is a key process if you want to stay long-term competitive […].

## A whole new world

Just going back 25 years, we had quite a different world to what we have today. We had the Berlin Wall, IBM was a hardware company, the telephone was a place and you didn't know who would answer – today, you don't know where the person is but you know who is calling […]. 10 years ago companies such as Facebook and Twitter did not exist, and we all know that they are impacting our daily lives quite extensively today, and many of our kids could not understand how they could live without these applications and companies being available. If we look at the Forbes list of the 500 largest companies, and we compare this list over a timeframe of 10 years, we see that 30 per cent of the companies are gone [within this period]. In most cases, this is due to lack of renewal, lack of innovation. For sure, you have to constantly renew yourself, constantly innovate when it comes to new technologies, new ways of going to market, because otherwise you are outmanoeuvred by different competitors.

## Legislating innovation

So, do we need an innovation policy? Of course, we do, because even if we have a great history, a great culture of innovation in Sweden, we see that the competition is getting tougher and tougher from other countries, other markets. And if we don't constantly push ourselves, […] we will not be in the league we are in today.

Therefore, we are very happy that the Swedish Government a year ago took some key initiatives to push the future innovation policy. It was a research and innovation bill […] and we are one of the agencies that has the task to implement this policy going forward. We are focusing on funding research projects, but not research projects for the science itself, it's really research projects to generate key results that can help our Swedish industries to become competitive, as well as impact Swedish society. […]

## Challenges or opportunities?

We have a number of challenges ahead of us in the form of climate, demographic challenges, water, energy, etc. We see that these problems do not have a single scientific perspective, and we also know that many of these challenges cannot be solved by a single company, a single government, a single structure – we have to start to work in a different way. And if you're working in another way, if you really start to try to combine research from different disciplines together, skills from different sectors, apply technologies into new applications and also bring good expertise from all over the world together, I would say that these challenges are not challenges any longer – these are really key opportunities for business, as well as providing extremely interesting areas for scientific and technology projects.

Since a few years back, Vinnova has been running a programme called Challenge Driven Innovation, and we have identified four areas where we have been focusing our efforts upon: sustainable, attractive cities; information society 3.0; future healthcare system; and competitive production.[…] Now, a few years after the programme started, we see that the ICT component is quite significant: in the area of future healthcare system, we see that more than two-thirds of the content is ICT-related; in the area of attractive cities, it is 60 per cent; and for competitive production it is 50 per cent. So ICT is a key enabler to address many of these […] opportunities.

We also now see a real explosion in how ICT can really enable and be a core technology to address other opportunities that we have going forward.[ …] What was wrong can be right if you dare to think out of the box, and innovation is really a core process to control your own destiny."

## DANIEL JOHANSSON

**State Secretary to the Swedish Minister for IT & Energy, Daniel Johansson offered a welcome address at the Co-summit 2013 in which he outlined the importance of ICT to the development of the Swedish nation**

"I was happy to hear that happiness was one of [ITEA's] core values. […] My former boss was vice-Prime Minister in Sweden for a long time, she said: "The ones that have most fun are also the ones being most successful". And when I first heard her say that I wasn't totally convinced but she was older and wiser than I am, and I have more and more reason to believe this is actually true […].

For Sweden, ICT has been important for several decades. A large part of our society depends on ICT, both via our companies and also as an integrated part of our society. I would like to say a few words about our digital agenda. We started work on this Digital Agenda for Sweden in 2010 and finalised it in 2011. We addressed four challenges for society.

Changing demographics – meaning people are getting older; a larger part of our citizens are more than 65 years old. This puts a demand on better solutions; for instance, better healthcare in people's homes, which is obviously an ICT-related challenge.

Education and knowledge – actually we had some sad [news] yesterday for Sweden's educational results. Obviously, ICT is an enabler for future education systems – it's an enabler to be more advanced, it's also an enabler to make more students successful.

It is a tool that can actually inspire a larger percentage of our students.

Prospering countryside – we are one of the most urbanised countries in the world. And obviously with the ICT possibilities and digital infrastructure, you can work from anywhere given that you have the right conditions and the right skills […]. For instance, today a farmer is dependent on a broadband connection to the rest of the world, it's part of the business

Environment and energy – this is one of our times' biggest challenges: how can we use ICT to lessen our carbon footprint? […]. And here, the imagination is the only limit. […]

The ICT sector in Sweden is immensely important for growth and jobs. 192,000 people are working in the ICT sector and that doesn't include all the people working with ICT in traditional Swedish companies. We have many innovative, leading companies within ICT; Eriksson is a global leader and we have, equally, digital services such as Spotify, Minecraft, just to mention a few. But – and this is very important actually to me – I think that ICT is sometimes underestimated. It's an enabler for traditional Swedish industrial companies as well, and it's actually a tool that they are developing to be successful."

**ICT FOR EVERYONE**

## A DIGITAL AGENDA FOR SWEDEN

To meet the challenges that exist both internationally and nationally, the Swedish Government wishes to make use of the opportunities offered by digitisation, and has therefore taken a decision on ICT for Everyone – A Digital Agenda for Sweden and proposed a new goal for ICT policy, that Sweden should become the best in the world exploiting the opportunities of digitisation. The Agenda identifies needs for efforts in four strategic areas based on the user's perspective: easy and safe to use, services that create benefit, the need for infrastructure and the role of ICT for societal development.

# THINK BIG

Alun Foster, Programme Manager and Acting Executive Director of the ARTEMIS Joint Undertaking, argues that networking and communication – both between stakeholders and within technology – hold the key to progress and innovation in ICT

**TRANSLATION**

**NETWORKING**

I tell people 'try to address a non-specialist, intelligent, educated person', in order to be sure that the communication is clear. When people do this, they find they have to tell the story of their project, and if they can tell this story well, then it is likely that what they are doing is going to be worthwhile.

The observation I have from the past is that there has been a lot of money poured into research projects to produce beautiful shining jewels of results, but nobody gets to see them. By exposing projects through exhibitions and poster presentations and by getting project researchers involved in the community, people pick up on ideas and see how they can integrate those results into their work.

We're seeing more and more cross-domain research happening. Recently, we hosted a kick-off meeting of a new ARTEMIS project on eHealth which is working on how to use new technologies, such as smartphones, to help people engage and remain engaged in therapy programmes or certain types of medication, etc. I was talking to the usual geeky computer guys (like me!), and I turned around and was suddenly talking to a psychologist who actually specialised in how to keep patients engaged in a particular therapy. This is a good demonstration of how experts from different fields are working together to allow the technology to be accepted into the end-user environment.

We've become expert in making communication systems, middleware platforms, etc., but what we really need to do now is look at how these new technologies can be more quickly taken up by other stakeholders: local communities, local authorities, the healthcare system and administration, health insurers, etc., in our eHealth example. We need to bring all of these players together in some kind of framework in which they can work. I think this is an important subject that we need to look at for the future, to help drive the quicker deployment of such innovations.

Whilst there are a lot of complicated diagrams of the innovation pipeline, ultimately the aim is to get some sort of product on the market. This is very much a one-track-minded approach. Innovations happen sometimes in very surprising ways, but they all happen due to interactions between people.

Let's take a smartphone as an example. People hold this up as a perfect embodiment of innovation, but if we analyse what the innovations are, we see a different picture. There is the availability of very dense, high performance computer chips. Is that an innovation? Well, it's not an innovation in its own right; it's the logical continuation of R&D spanning decades. There are a lot of elements that are innovations in their own right constituting the hardware platform; for example, there is some innovative radio equipment such as GSM and Bluetooth (both European inventions). But these elements are not innovations in terms of smartphones, they are innovations in their own right and in their own particular fields. One possible innovation is the use of a touchscreen – that's quite a remarkable game-changer. However, the real innovation as to what makes it so popular in the market is simply

**IMPACT AND INNOVATION**

Let's make one thing clear – we have to have basic, exploratory research because without that ultimately we will run out of ideas. However, innovation is not just found in the domain of science and technology, it's the way that we put things together to create value, such that companies can survive, employ people and prosper. The wealth created by this process diffuses into the whole of the community and ultimately benefits everybody– this is why we need innovation.

Finding ways to get universities and companies working together towards this kind of innovation is very important. I always try to persuade ARTEMIS project leaders to think about their proposal in terms of a business model. They should think that they are trying to get people to invest in their idea, so they need to sell it to potential investors. How can they turn their proposal into some real added value at the end of the day? I'm not really asking them to make a proper business plan – these are not business experts, they are technical experts – but at least I'm trying to get them to think in that direction.

## SUPPORTING INNOVATION

the apps. The smartphone is a platform to distribute other commercial items. So the innovation is not really the technology, but it's the way that it has been put together to enable further innovations and also business models.

If you were to design a smartphone, you could try to write software for it from scratch but you would probably fail, as you would require all sorts of tools and other support. And how would you ensure that you design your smartphone or other embedded computing equipment so that it works reliably? There is a whole suite of innovation information on how to do this – designing such systems is not easy. So there exists a massive domain outside of this rather narrow thinking on a single product which lends itself to innovation. There are innovations in the way we conduct work as well as the end product of that work. From this example, it is clear that innovation does not necessarily follow the very linear model always put forward.

ARTEMIS-JU, which is a legal body that provides funding through a fairly complicated but nonetheless very advantageous mechanism to get research projects to work, has a limit on what it can fund. We can fund R&D but we cannot fund product development nor anything else that is not related to an R&D activity. Unfortunately, much of what you need to innovate is not actually the direct technical research itself, but the elements around it; standardisation, for example.

Although standardisation can be addressed within individual ARTEMIS projects to some extent, the necessary large-scale coordination needed to really make a standard 'stick' simply isn't fundable. However, with the public-private partnership (PPP) model we can stimulate a community which will be able to undertake such tasks itself: ARTEMIS Innovation Pilot Projects aim to provide the technological inputs to such a community. These Projects will produce and integrate results into particular structures and make demonstrators, but most importantly they're big enough to attract interest from a large portion of the community, which will carry those results into innovation (in this example, by driving a standard). Without this concept of scale, innovation-supporting mechanisms like standardisation just cannot happen in reality.

ARTEMIS is a PPP and this is a very beautiful model, because on the one hand there is the public sector, which can fund parts of the activity where there is a market failure, and by collaborating with the private sector very closely, we can be sure that that funding will be channelled into a very productive end result. We begin with projects; the community then works to make these into clusters through stimulation of the people involved; these clusters generate ideas like the ARTEMIS Innovation Pilot Projects, which are very big and require specific technological development, for which the public sector provides funding; and finally they bring this work forward to build much larger structures to support innovation, that really can make an impact at the end of the day.

www.artemis-ju.eu

www.artemis-ia.eu

The ARTEMIS mantra 'think big' doesn't mean that all projects have to be huge ones like the ARTEMIS CESAR project (Cost-efficient methods and processes for safety relevant embedded systems), which has about 58 partners and about €68 million of investment, it means thinking about the impact that the project will have. This is very important because if you don't think beyond the end of your project, you're not thinking about innovation, you're just thinking about a project. It's very interesting to see that this mindset is propagating not only in the industrial partners but also throughout the academic ones.

# PROBLEM SOLVER

**ARTEMIS Industry Association President, Professor Heinrich Daembkes is both proud of what ARTEMIS has already achieved and enthusiastic about the potential for further progress through the future ECSEL programme**
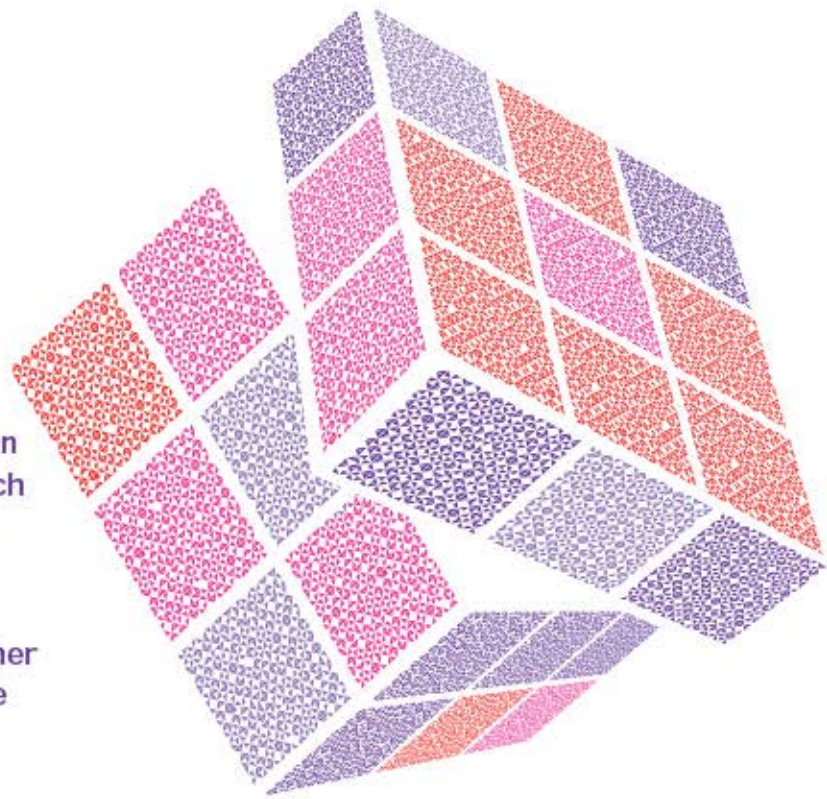
**Q COULD YOU OFFER AN OVERVIEW OF YOUR BACKGROUND? WHAT MADE YOU WELL-SUITED TO TAKING ON THE ROLE OF PRESIDENT OF THE ADVANCED RESEARCH AND TECHNOLOGY FOR EMBEDDED INTELLIGENCE AND SYSTEMS INDUSTRY ASSOCIATION (ARTEMIS-IA)?**

A From an education as an electrical engineer, I extended my knowledge into semiconductor technology, quantum physics and high frequency electronics. Later, I started a spin-off company – UMS – for high frequency devices and components, working as CEO and head of design and product lines. UMS was a German-French joint venture, through which I learned to work in international teams with different cultures.

In the last 10 years, I have had the opportunity to be Head of Engineering for what was called EADS Defence Electronics. In this function, I learnt to organise the design of complete systems consisting of hardware and software. In the role, I recognised the high importance of systems engineering and of appropriate design processes that enable the cooperation of teams.

A major focus of this work was safety-critical systems, especially for aeronautical applications. This required very stringent regulations from several extended domains, including civil aeronautics certification. Here, I also learned to appreciate the extremely high relevance of embedded and Cyber Physical Systems (CPS).

All of this has been a very sound base to understand the challenges that need to be addressed by ARTEMIS and the future Electronic Components and Systems for European Leadership (ECSEL) initiatives.

**Q HOW DO ARTEMIS AND INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT (ITEA) MEASURE THE IMPACT OF THEIR PROJECTS?**

A At the Co-summit 2013, ARTEMIS and ITEA for the first time provided together solid data on markets, economic impact and impact on employment of software-intensive systems. For me especially, the impact of embedded systems is of key importance.

The key selling and differentiating features of most important European technical products are determined by their built-in embedded intelligence, in the form of embedded digital technology/systems (EDT). They define whether a customer will buy the product or go to the competition.

We provide data from leading European industries about impact, which show that today about 50 per cent of key selling features depend on EDT/ICT, with an expected further increase to about 70 per cent in 2020. For 2030, we hardly dare to think where the trend will go. Therefore, mastering EDT will enable us to be competitive and successful on the world market – this is key for the economy of Europe.

From various sources, we provide specific data on direct employment in the embedded systems and software domain. For instance, in Europe 1.1 million people are directly employed in the embedded systems domain currently. With a growth rate of about 5 per cent per year, up to 50,000 new jobs will be created by this technology, and this figure does not take into account new jobs induced by new products or enabled by new technologies – there is a very strong multiplication factor!

All these data are now available for decision makers. We hope that they will be used by politicians as well as by industrialists and researchers.

**Q** WITH EXPERIENCE IN BOTH ACADEMIC AND INDUSTRIAL WORLDS, YOU ARE IDEALLY PLACED TO SEE THE CHALLENGES IN CREATING EFFECTIVE PIPELINES FOR INNOVATION. ARE THERE IMPROVEMENTS THAT COULD BE MADE IN TAKING IDEAS TO MARKET?

**A** In order to shorten the time for transfer of knowledge and solutions, ARTEMIS-IA labels recognised Centres of Innovation Excellence (CoIEs). CoIEs are groups of stakeholders around specific domains or technologies that are interested in better use of R&D results. They comprise the entire value chain, from basic research via development across production, service support or operation and even end of life.

CoIEs typically also address large industrial players as well as SMEs for industrialisation. The aim is to establish and extend new ecosystems around the results of the projects.

In parallel, ARTEMIS-IA supports the EC's idea to establish a network of 'Design Centres'. The concept is to have a network of knowledgeable institutions able to address new (and old) stakeholders who want and need support in applying new technologies for their specific products or applications/services. This will happen in cooperation under the new Framework Programme – Horizon 2020, and ARTEMIS-IA CoIEs will play a major role.

**Q** DO YOU BELIEVE FUNDING AND OTHER SUPPORT SHOULD FOCUS ON DEMAND-DRIVEN PROJECTS, THE MORE TRADITIONAL BLUE SKY/ BASIC RESEARCH OR SOME COMBINATION OF BOTH?

**A** This question touches on a fundamental issue: the ARTEMIS Joint Undertaking as a public-private partnership (PPP) has been established to follow and support technological research focused on industrially driven demands, where a clear deficiency is identified. It is a construction to enhance the competitiveness of European industry in key domains.

But responsible leaders need to ensure that the pipeline of innovation is not running empty. Therefore, we also need to care about new technologies in order to prepare for the future. Personally, I would restrict the amount of so-called blue sky research – that is, research without an immediate orientation towards application – to a certain low level.

**Q** WHAT ARE THE MAIN DIFFERENCES BETWEEN ARTEMIS AND ITEA?

**A** As a EUREKA programme, ITEA brings together players from different nations, where all projects have to gain (part) funding from national authorities/agencies; no EU budgets need to be available. This often leads to small and flexible consortia operating on very focused topics. The challenge is to synchronise the workflow of the nationally split subprojects in a reasonable time schedule. Depending on the availability of budgets, this is not always easy.

Content-wise, ITEA is addressing the entire domain of software-intensive systems and services with all related opportunities for the economy.

ARTEMIS is by construction a tripartite activity with funding money from the EU and Member States involved. Therefore, great efforts in harmonisation are required during preparation. In return, partners of funded projects all begin at the same time. ARTEMIS projects promote the ethos of 'thinking big'. Particularly during

the last call, we managed to start several ARTEMIS Innovation Pilot Projects (AIPPs). These Projects target large-scale transfer of R&D results into applications, supporting those wishing to cross the Valley of Death. In this context, standardisation is a priority. Content-wise, ARTEMIS is strongly focused on the embedded part of the software domain. Real-time aspects, safety and security, and professional applications are our core domains. Also, the development of systems engineering processes, methods and tools are common interests.

For me personally, it is exciting to be part of an extremely engaged and knowledgeable community of people. It is encouraging me to continue on a path which, step by step, is bringing us forward and pushing the limits of what can be achieved for the benefit of society. One day, I hope to personally benefit from the results of new products and services generated by ARTEMIS and ITEA.

**Q** WHICH CURRENT ARTEMIS-SUPPORTED PROJECTS ARE YOU MOST EXCITED ABOUT?

**A** There a number of exciting projects inside ARTEMIS. Of course, those in which you are or were personally involved are the ones you are deeply excited about. For me, this is the Cost-efficient methods and processes for safety relevant embedded systems (CESAR) project, which I consider as a kind of 'mother project', inspiring at least five or six other ones.

**Q** HAVE COMPLETED ARTEMIS-SUPPORTED PROJECTS MADE AN IMPACT ON EUROPE'S COMPETITIVENESS IN ICT? COULD YOU OFFER SOME EXAMPLES?

**A** Two good examples are projects on reference technology platforms and interoperability standards derived from CESAR, and a family of projects around multicore processors, such as ARTEMIS CROSS-Domain Architecture (ACROSS) and RECOMP, now leading to the big Embedded multi-core systems for mixed criticality applications in dynamic and changeable real-time environments (EMC2) project.

European industry is especially strong in the development of complex and safety-critical systems, but also in production control and automation. The above-mentioned projects are helping us to be able to organise new developments in a well-controlled way, allowing seamless cooperation between tools and organisations, with the key resources available. This is enabling users to be faster than the competition, with fewer mistakes and consequently a better success rate.

## www.artemis.eu

# SEIZING THE HIGH GROUND

Sharing his enthusiasm for collaborative research with real-world results, ITEA Chairman Professor Rudolf Haggenmüller explains that innovation is spawned by finding solutions and addressing demands

**Q** COULD YOU OFFER AN OVERVIEW OF YOUR BACKGROUND? WHAT MADE YOU WELL-SUITED TO TAKING ON THE ROLE OF CHAIRMAN OF ITEA 2?

**A** By education, I am a professor of mathematics. I worked for 10 years as a junior professor at Munich University (an institution to which I am still connected), followed by 10 years at Siemens in the domain of software engineering. Then, for 15 years I was the executive director of a small company which was created by Siemens, BMW and the Bavarian State Bank. It was really a small company with the purpose of promoting software innovation in Bavaria. Finally, in the last 10 years I have been Chairman of ITEA. So, I have been well educated in research, as well as big and small industry.

**Q** WITH THIS WIDE-RANGING EXPERIENCE, YOU ARE IDEALLY PLACED TO SEE THE CHALLENGES IN CREATING EFFECTIVE PIPELINES FOR INNOVATION THROUGH INDUSTRY-ACADEMIA COLLABORATION. WHAT ARE THE KEY DIFFERENCES BETWEEN THESE WORLDS?

**A** Unfortunately the two worlds of industry and academia are completely different. When I left university and went to Siemens, some of my previous colleagues regarded me as a person who neglects his identity. They felt that I was behaving against the agreed culture, that I was a renegade. But I was not, I just wanted to experience something different.

In university, you work in your own little bubble, and I had this mentality too. I thought my algebra, my Galois theory, was the most important thing in the world. Even if only three people around the globe were reading my papers, I was convinced, telling my family that I was moving mankind forward. Again, when I was at Siemens I was in application development, and we developed our graphical editor and modelling languages without caring who was paying in the end.

But then, as a boss of a small company, I was always asking the question: who pays? The most important element in a small company is the bank account, and there were times when, let us say twice a week, I called my customers to ask them to pay their bill, because of course I had to pay my employees' salaries.

It's unbelievable how different these worlds are. They have their own cultures and their own way of life, so we have to accept these differences. This is why I like SMEs in ITEA projects, because they are the ones that really go to the market for impact and fast exploitation. For the SMEs, it is very easy because this is their way of life.

**Q DO YOU BELIEVE FUNDING AND OTHER SUPPORT SHOULD FOCUS ON INDUSTRY-/DEMAND-DRIVEN PROJECTS, THE MORE TRADITIONAL BASIC RESEARCH, OR SOME COMBINATION OF BOTH?**

A ITEA is completely industry- and demand-driven. Not all our projects reach this ideal, but the ideal starting point of a project is that somebody identifies a problem that needs a solution and that has an identified market.

For example, Daimler came with the demand that they wanted to speed up their production processes significantly, and asked for a solution through simulation. This was not an unrealistic demand as we knew that Volkswagen was able to improve their metal-forming process significantly. Flat sheets of metal go through this production line and fully formed doors appear on the other side. Through simulations, they realised they can insert the next flat metal sheet and take out the door even before the pressing machine is fully open, significantly accelerating the production process.

**Q THROUGH WHAT MECHANISMS DOES ITEA STIMULATE AND SUPPORT INNOVATIVE AND PRE-COMPETITIVE SOFTWARE-INTENSIVE SYSTEMS AND SERVICES (SISS) R&D PROJECTS?**

A There are three elements to this. First, we have our Project Outline Days where we bring together experienced ITEA community members and other interested potential partners every year. Before they convene, they submit 60-70 project ideas and create posters. We then display the posters in a dedicated session and in the plenary programme a member of each project is given three minutes to pitch their idea during the meeting. In the afternoon of the first day, we have the first working groups between people of similar interests. After two days, there are about 20 condensed project ideas which can be taken forward. Through this, we help to create project ideas that are of interest to several parties.

Second, we evaluate submitted projects and give feedback regarding the market, impact, whether they can add additional partners, etc. Then when there is a full proposal, ITEA, together with public authorities, checks who they will receive funding from. This is the initiation phase.

Last, we conduct a project review annually in which we check the status of the project. This is not some sort of grading but advice and guidance looking at where the project was before and where it is now, what has been achieved, where the project can grow and how the market has developed. In addition, we help projects to deliver innovation reports and encourage them to get to market with their product. I would even like to make ITEA more of a business development instrument.

## https://itea3.org

**Q HOW DO YOU MANAGE THE CONFIDENTIALITY REQUIREMENTS OF LARGE BUSINESSES WITH THE DEMAND FOR OPEN INNOVATION AMONG THE RESEARCH COMMUNITY?**

A In our projects we have documents that outline how to deal with intellectual property. It is mandatory that every partner signs project cooperation agreements. However, sometimes companies want to patent their product. The clear recommendation we give in this situation is that partners cooperate on activities that can be conducted jointly, but as soon as one of the partners wants to make the product their own, it is done outside the project. The ownership of a real product must be very clear.

**Q WHICH CURRENT ITEA PROJECTS ARE YOU MOST EXCITED ABOUT?**

A One is called Reconfigurable Surveillance System with Communicating Smart Sensors (RECONSURVE) which is about maritime surveillance. A very important partner in this project is the Turkish Coast Guard Command. The Command wants a smart surveillance system to help monitor the Turkish coast. They need a solution that combines submarines, drones, sensors around the coast, cameras, etc. The project leader is Cengiz Erbaş from ASELSAN, a Turkish company which was already working with the Turkish Coast Guard Command. Other important partners come from France – EADS and Thales – as well as two partners from Korea. I think this collaboration is wonderful. This summer, in the harbour of Izmir there are plans to have the biggest demonstration we have ever had of an ITEA project. Of course, this is not the full commercial rollout of the results of this project –but it's certainly not just a research paper!

The follow-up project to RECONSURVE has just been submitted. It will be an advance on the current system to make it plug and play, ie. the system must continue to operate even if individual components suffer failure.

**Q WILL THERE BE A CHANGE IN APPROACH IN ITEA 3? WHAT ARE YOUR HOPES FOR THE CONTINUATION OF THE ITEA PROGRAMME?**

A There has been a gradual evolution over the past year and also over the lifespan of ITEA 2; over eight years, we have observed quite a change in the expectations of companies and countries involved. The notion of innovation through business impact and fast exploitation to make sure that during the lifetime of the project you are reaching the market has certainly been supported and driven by the ITEA presidium and myself.

Of course, we have projects that are modest and operate more locally, but I encourage and push our project partners to think and strive for real solutions that are exploitable globally and which are game changers – things that really make you a world market leader and allow you to determine the rules.