ARTEMIS magazine

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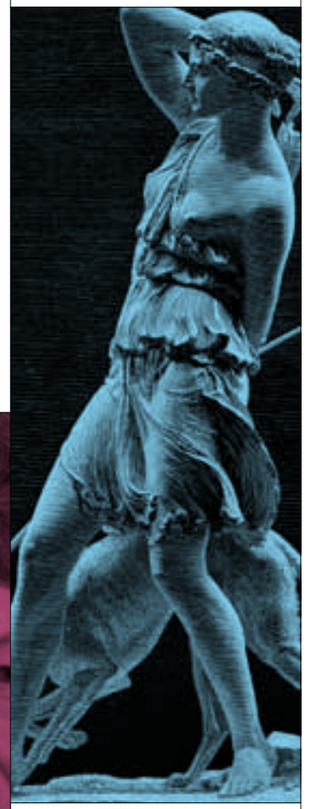

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## FOREWORD

**Jan Lohstroh**
*Secretary General*
ARTEMIS Industry Association

Dear ARTEMIS Friends,

The ARTEMIS Programme, which comprises 6 calls, is well underway. The outcome of the selection process of the call 2012 (the 5th call) will be known at the time this Magazine arrives at your desk. The last call will be organised in 2013.
In the meantime we are discussing with the Commission and Member States a follow-up programme that should organise its first call in 2014. A short article about this you can find in this Magazine.

Important of course is the portfolio analysis of the current programme. You will find the analysis by the ARTEMIS-JU office staff over the first 4 calls summarised in this Magazine.

Our President Klaus Grimm will step down at the end of this year, at the same time as he retires at Daimler. We will thank him and say goodbye to him during our Spring Event in Brussels next year, where he will be our guest of honour. An interview with him about his presidency in the ARTEMIS Industry Association is printed in this Magazine.

It is important that our cooperation with ITEA is continuously increasing. We installed a cooperation committee with the name ARTEMIS ITEA Cooperation Committee (AICC), in which ARTEMIS-IA, ARTEMIS-JU, ITEA 2, the Commission and Member States are represented. A first document by the AICC was presented in the Co-Summit 2012: Vision 2030. You will find an article about this vision in this Magazine.

Other topics in this Magazine are: Co-summit 2012 in Paris, an interview with Thierry Breton - 'The transformation of society' and many more!

I wish you an enjoyable read.

Jan Lohstroh

## FOREWORD

**Eric Shutz**
*Executive Director*
ARTEMIS Joint Undertaking

Dear Friends,

Our 5th ARTEMIS-ITEA Co-Summit, in Paris, end of October, has been a fantastic success! But it also gave me the opportunity to observe and highlight some important changes or evolutions:

> ARTEMIS is now a mature programme. The number of projects presented in the exhibition, the presentations and the panel discussions demonstrated what we could envisage in the previous editions of this Co-Summit: ARTEMIS is now an essential instrument, and probably the most pan-European one, for our European Industry.
> ARTEMIS is a new type of Social Network. With our blue logo, our relatives are Facebook, Twitter, LinkedIn, the Blue Kiwi of ATOS…They are changing our daily life. So will ARTEMIS!
> With its 5th Call in 2012, ARTEMIS has switched to third gear. Starting in 2008, in first gear, with the first projects, ARTEMIS has developed clusters of projects, switching in 3rd gear with its 2010 Call. This year, in 2012, the introduction of the ARTEMIS Innovation Pilot Projects, or AIPPs, has moved us into 3rd gear. For 2013, we just have to turn on the overdrive!
> Our Paris event has demonstrated that ARTEMIS and ITEA are forming ONE family. We have the same ambition and the same objectives. Unified in our diversity, we'll work and fight together for the future of Europe and of our children, not forgetting the "ambition of happiness", as Rudolf Haggenmüller said, or the search for "fun and fantasy" as I preferred to formulate it.

For all these good reasons, don't miss the next Co-Summit, next year, in Stockholm!

Eric Schutz

# SHARING A VISION FOR ICT INNOVATION

*ARTEMIS and ITEA Co-Summit 2012 in Paris, France, on 30 and 31 October*

*written by* ***Chris Horgan***

# CO-SUMMIT 2012

## SHARING A VISION ON ICT INNOVATION

**The spectacular architectural landscape of La Défense on the outskirts of Paris provided a stunning futuristic backdrop to this fifth ARTEMIS-ITEA Co-Summit and perfectly complemented the theme of this Co-Summit. This fifth Co-summit was generously supported by the Ministère du Redressement Productif, DGCIS, Airbus, Alcatel-Lucent, Bull, Institut Mines-Telecom, Technicolor and THALES.**

The exhibition floor hosted a wealth of fascinating projects, with a special focus area section on reliability, a walk of fame, star performers and plenty of opportunity over the two days to look at how the future was already happening now in the ARTEMIS and ITEA 2 projects. There was, of course, to give the project representatives the chance to share insights with their colleagues from other projects. Guided tours also gave a number of projects the chance to present the impact of their work to various guests. Inspiring keynote speakers captivated the audience with inspirational addresses and skilful moderators stirred challenging debates among expert panellists.

Jointly opened by Klaus Grimm (President of the ARTEMIS Industry Association) and Rudolf Haggenmüller (Chairman of ITEA 2), and welcomed by Cécile Dubarry, Director for ICT at the Ministère du Redessement Productif, the Co-Summit kicked off with an address by Thierry Breton, Chairman and CEO of ATOS, who boldly proclaimed that internal e-mails would be a thing of the past in his company by the end of next year. Having the vision to make such a prediction was based on an actual survey that revealed the disconcerting fact that the company engineers were spending inordinate amounts of time on their e-mails to the detriment of their effective operational time. A vision driven by an actual issue. In much the same way as the ARTEMIS vision of projects driven by key societal issues. As suggested by the vision shared by ARTEMIS and ITEA 2 for ICT innovation, the coming years will see the environment in which projects operate subject to significant change, not only in terms of the speed of that change but the intrinsic nature of that change. A society that is not undergoing evolution or revolution, according to Thierry Breton, but a metamorphosis. It is indeed a time for visionaries. So, now even more than ever, it is a time for ARTEMIS and ITEA2 to share a vision for ICT innovation.

### KNOWING AND NOT KNOWING

Taking up this theme, the stage gave way to a panel discussion hosted by Emile Aarts, formerly Chief Scientific Officer at Philips Research and now Professor of Computing Science at Eindhoven University of Technology. This very lively debate, featuring four prominent players from different fields, was inspiring and gave the captivated audience plenty to think about. For instance, one question asked by Emile Aarts to Heinrich Daembkes, Vice President of System and Software Engineering at CASSIDAN, was 'What did you not anticipate?' when looking back on the impacts of technology during the past twenty to thirty years. The answer was revealing: the spectacular impact of social media – the size and speed at which it happened could not have been anticipated. Even more revealing by implication, then, is what it is we don't know about what will happen tomorrow.

### PARALLEL SESSIONS

There were three panel sessions scheduled for the Tuesday afternoon. One focused on the role of EIT ICT Labs as a catalyst for project results, for example, in the field of safety at home among the elderly and very young, whereby the results were being applied in real home-based cases by the EIT ICT Labs catalyst 'Test Beds, Testing Platforms and Simulation Tools'. The insights gained from a health and wellness test bed not only focus attention on human-scale issues but also reveal the care benefits for the elderly and their carers.

Reliability was the central project theme at this Co-summit, and the parallel session devoted to this revealed both the complexity of reliability issues and the need to resolve them. Four top projects – TIMMO2USE, RECOMP, DIAMONDS and CHARTER – highlighted some of the innovative approaches and solutions that were being applied to resolve these issues. The rise of new technologies like multicore processing and the need to optimise cost while integrating both critical and non-critical technologies underline the major challenges being presented to the modern design paradigms of safety-critical systems. This session focused on the very latest techniques being employed for high-reliability system design and the discussion turned to forward-looking issues, including mixed-criticality systems, to guarantee safety using new hardware architectures and system security.

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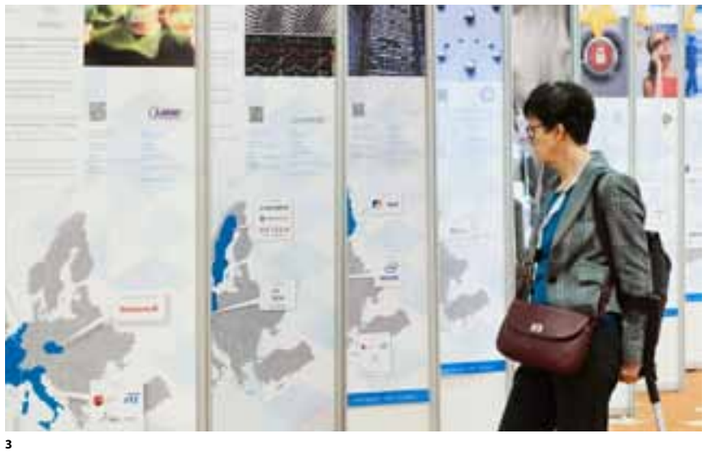

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*1 During the 5th edition of the Co-summit visitors could use 'terminals' to vote, get information and plan personal tours focused on the themes they would like to see.*

*2 pSHIELD leader Josef Noll from Norway signs his ' Walk of Fame Star'!*

*3 During the Co-summit 'The Walk of Fame' shows that all finished projects within the ARTEMIS programme are stars.*

Vision 2030 and the Living Roadmap explored the implications of change for the project communities. Co-presented by Laila Gide of ARTEMIS-IA and Philippe Letellier of ITEA 2, the session began with a review of the European research community against the background of a changing world. While the changes that are taking place, ranging from population growth to the growth of the healthcare sector, are clear challenges to society at large, they provide distinct opportunities for the ICT sector. The European ICT sector has clear weaknesses such as fragmented investment, speed of reaction, the brain drain and the growth of off-shoring; however, these were counterbalanced by strengths in terms of competency and the existence of the research ecosystem. The opportunities and challenges of such profound change are responded to in the ITEA-ARTEMIS Vision 2030. Some of the ideas are developed in the ITEA Living Roadmap - which will allow steady, consistent adaptation to changes as they manifest themselves in the market.

### RELAXING BY THE SEINE

'All work and no play makes Jack a dull boy' and following a dynamic, educative and 'happy' day, the evening allowed scope for networking on a more sociable scale at the Ô restaurant on the banks of the Seine. The quality of the fare during the day was matched by the fare and conviviality of the evening. Well nourished with good food and conversation, the day ended with a sense of satisfaction all round and a sense of anticipation of what was to come.

## COMMUNITY AT WORK

The Wednesday morning was not bathed in quite the same degree of sunlight as the previous day but the glittering parade of innovation and achievement in the CNIT conference centre continued as ARTEMIS kicked off the day with a brief retrospective by Executive Director, Eric Schutz, in which he put the spotlight on the ARTEMIS projects before introducing a fascinating discussion among four panellists very capably moderated by Dr. Irene Lopez de Vallejo.

The theme was healthcare and manufacturing automation. Responding to

the opening question of how the panellists interpreted the concept of 'think big', Andrei Lobov (e-Sonia) proposed a twist, suggesting that to 'think open' is a gateway to acting big while Mladen Berekovic (R3-COP) emphasised the ambitious target of a large tool platform on which knowledge-based design provides the food for solutions. The 'big' for Frank van der Linden (High Profile) centred on the cross-domain aspect whereby imaging technology is not confined to healthcare but incorporates non-healthcare companies and organisations all the way from image capture and presentation. Silvio Bonfiglio (CHIRON) saw the 'big' in terms of projects having critical mass and societal impact. An interesting remark on this 'big' issue came from Andrei Lobov when he cited the essential participation of SMEs as a driver of innovation and a key to the value chain. The challenges are evident but so is the progress being made by ARTEMIS projects in meeting those challenges and making significant inroads to really improve the quality of our lives. In presenting the ARTEMIS Recognition Awards to all twelve completed projects, Eric Schutz turned the spotlight once again on the people who were responsible for making their ARTEMIS walk of fame projects such a success (in alphabetical order): CAMMI, CESAR, CHARTER, CHESS, eDIANA, EMMON, iLAND, INDEXYS, pSHIELD, SCALOPES, SMART, SOFIA and SYSMODEL.

At the end of this red carpet of glittering prizes, Eric Schutz stressed that these stars on stage were just twelve of the stars in the ARTEMIS heaven, proudly announcing that 'Every project is a star' (separate, more detailed article on the Community session can be found on page 11).

The Co-summit prizes awarded to the projects voted by the participants as the most impressive on show went to the ARTEMIS **R3-COP** project and the ITEA **DIAMONDS** project. Three young enthusiastic demonstrators of the R3-COP stepped up to receive the award for their project that addresses robotic autonomous systems in domains like surveillance and rescue, agriculture, people care, home environments and transport. The DIAMONDS project is developing a new, model-based approach to software testing with applications in multiple industries – such as banking, transport and telecommunication.

## HAPPINESS AND FUN

The final afternoon of the Co-Summit was devoted to innovative engineering as Gérard Roucairol, President of Tratec, challenged four panellists to confront this very challenging subject for the research and innovation community. Such as the extremely different lifetimes of software and the products in which software constitutes a vital embedded element. Or the growth of 'multi-X' dimensions of software and systems engineering. With demand for the three essential ingredients of software-intensive systems and services – safety, security and reliability – continuing to increase, innovative engineering was very pertinent topic for this final debate. Serious though such challenges are, both Eric Shutz and Rudolf Haggenmüller underlined in their joint ambitions that there should be plenty of scope for happiness and fun. Sometimes a hidden element in the mix, like embedded systems, these are essential ingredients for the successful recipes of the ARTEMIS and ITEA programmes, especially with a view to the challenging and exciting future as expressed in the shared vision for ICT innovation.

The Co-Summit was closed by Dr. Charlotte Brogren, Director General of the Swedish governmental agency for innovation systems, VINNOVA. Pointing to the Swedish tradition of ICT innovation and world leading companies like Ericsson, she looked forward to the Co-Summit 2013, which will be held in Stockholm on 3 and 4 December next year.

# HERE TODAY, GONE TOMORROW

## THE TRANSFORMATION OF SOCIETY

### Thierry Breton's keynote speech during the Co-Summit 2012

"By the end of 2013, there will be no more emails at ATOS." This bold prediction by the CEO of ATOS in his keynote address at the Paris Co-Summit was a statement that reflected the transformation our society is undergoing, and the role IT is playing in this transformation. Thierry Breton has a rich track record in over thirty years in the IT industry, having begun his career as an entrepreneur in New York where he started up his own software company. He headed strategy at the Bull Group and was CEO at Thomson Electronics and France Telecom before serving as French Minister of Finance from 2005 until 2007.

Thierry Breton began his keynote address by reiterating the importance of continued collaboration between ARTEMIS and ITEA, stressing the benefits European IT innovation gains from these two programmes. In sharing with the audience the ATOS vision of the future, Thierry Breton foresaw a "really fascinating period of fantastic evolution in the information technology industry in terms of hardware, software and services and the emergence of a user and application environment in which people increasingly take control of their social network and where mobility and interaction with and between mobile devices means an even more significant role for individuals." With around 2 billion smartphones and tablets connected by 2014 and more than 1 billion social network users, the power of the Internet is evident along with the highly developed Internet of things, which will pervade all our lives, and the use of cloud computing. He pointed out how appropriate it was that the Co-summit was taking place "at the cradle of the IT service industry, which started in France forty years ago."

#### VIRTUALISATION AND REGULATION

"So the challenge for the future is virtualisation and embedded software. And, of course, security is also a significant challenge. But let's look at the first challenge. I don't think we have realised yet the significance of the change we are facing. Everything will be virtualised, and we don't realise yet the paradigm shift that this will imply. We will need more and more cloud availability. We will need more and more networks. Not just in terms of quantity but also in terms of high-speed and high-quality networks. But the problem is that the regulations that have been put in place in Europe do not tackle the issue. I believe that now is the time to change the regulations so that they are appropriate to this challenge."

These networks will be crucial because network power is the heart of generating and managing data for applications. "As I mentioned," Thierry Breton went on to say, "all embedded software will be virtualised in the cloud and the Internet of Things will make every user a generator of data – so

*“ I’ve always accepted challenges in my life.”*

here, too, the quality of the network will be crucial. And nobody is taking care of that yet.” With everything becoming virtualised in the ‘cloud’ and more and more power needed for computing, Europe was still leading the way but there is a clear need for significant investment. “We need regulation that forces the operators to invest heavily – as much as 200 billion euros over the next ten years – in processing network power so that we have the quality of network that we need. And we also must create the right regulatory environment if we are to foster the considerable amount of innovation that is involved in bringing about the IT revolution.”

## ZERO EMAILS

“Finally, I would like to come back, as promised, to the topic of the enterprise social network. This is something we are keenly developing within our own organisation. We launched this initiative at ATOS 18 months ago. I was pretty shocked when I read an internet survey. I tried to understand how our engineers worldwide were working, how they were using the tools that we give them to work together. We realised they were spending 16 hours a week just on checking emails. And this is time spent at home in addition to normal work time. It became clear from our survey that less than 20% of emails are important. And the last one in is the first one read.” What this implies is that all the emails have to be read to make sure that an important email does not slip through the net. Email is a personal tool for productivity but is not very efficient for mass collaboration.

“I’ve always accepted challenges in my life. Always. And at ATOS, I’m no different. I claimed that we will be the first email-free global company by the end of 2013. Zero emails,internally. Of course, we will continue to have emails for outside communication, which is great. Because there is also a legal aspect to this. So I will continue to email my colleagues. But when we are working for customers on contracts, we have the tools. We don’t have to use email. We have put all of this into a technology – blue kiwi – to enhance collaboration, to enhance knowledge within our organisation and to reduce wasted time. It is important that companies make strategies to establish good communication tools for coordinating internal collaboration. For creating social network collaboration the organisation needs to focus on the purpose, because without purpose there is no reason for people to use social networks. We need to change attitude and this is because of the centralised role of an individual within his environment. The zero email company is possible and we are implementing our plans through Bluekiwi. But this is not so much about technology but about a change in behaviour. Look at the new generation. The new engineer. They are not like us. They think differently. They are at the centre of their own environment.”

In closing, Thierry Breton took a positive note on the future of his company, a note that also implicitly applies to other companies that dare to take risks. “I believe that we have so many new exciting applications today in our industry and I am absolutely convinced that, in this uncertain time, this is the way to create new frontiers for our company, for the customers and their customers, and for the new generation.”



# EIT ICT LABS: OPPORTUNITY FOR COOPERATION?

***Petri Liuha*** *interviewed by* ***Chris Horgan***

EIT ICT Labs wants to turn Europe into a global leader in ICT innovation. ‘How can we get from producing brilliant people with brilliant ideas to actually having an impact on the market, on society?’ is the rhetorical question addressed by EIT ICT Labs. Petri Luiha considers the impact on a spin-off from the SOFIA project.

*Petri Liuha*

‘During the last year of the SOFIA project we started an activity in EIT ICT Labs. There were two main reasons for doing this,’ Petri explains. ‘Firstly, to explore new use cases that were not originally on the project’s agenda and, secondly, to give students an opportunity to see what they could come up with.’

*So how did the contact come about?*

‘Through people,’ Petri says. ‘There were no formal ties but I was involved in both SOFIA and EIT ICT Labs. We saw an opportunity to install a test bed in Helsinki – something that could be facilitated by EIT ICT Labs – using downstream instruments to deploy results so that developers and students could exploit them. A nice outcome of all this was the creation of a new start-up company. This company is run by my former colleagues at Nokia and their target group is supermarkets, amusement parks, exhibition halls and such places where mass movements occur. The company uses a smart space application, radio technology, to analyse the movements of people in specific venues and provide statistical information to help retailers or operators to adjust their product or service offer, and ultimately boost their sales. The germ of this idea was actually formed early on in the SOFIA project. The company has now been running for one and a half years. So this is a nice example of how we can get something off the ground during a project and also make the results available for researchers and students.’

Another benefit of EIT ICT Labs is the business development coaching it can provide. ‘This helps initiatives like the one I mentioned to get the kind of assistance and supervision to translate a good idea into a more targeted market application.’

*Can the strengths of the ARTEMIS programme and EIT ICT Labs be combined?*

‘Yes, ARTEMIS aims at the big picture, creating scope and resources to develop projects while EIT ICT Labs is able to act in a very agile way to get results exploited. This particular arrangement was an informal, ad-hoc activity but I think with a more formal kind of cooperation, even more opportunity could be enjoyed to develop project research and results further in terms of business exploitation and impact.’

*written by* ***Laila Gide***

*Laila Gide is Vice-President European R&T/D programmes for THALES, a global electronics and systems group serving defence, aerospace and security markets. THALES one of the companies that signed the ETP-document "Building ARTEMIS". The company is also one of the f ounding fathers of ARTEMISIA.*

# EIGHT BILLION OPPORTUNITIES

## QUOTED IN VISION 2030

**There is wide consensus that the time from now till 2030 will be a period of permanent change and constant disruption. By 2030 the planet will be home to 8 billion people, less than a quarter of whom will live in Europe and the Americas. The way of life and business will be fundamentally different from what it is today. A positive response to these trends is to see eight billion opportunities.**

A high-level report, Vision 2030 , the result of the ITEA-ARTEMIS sherpa group, describes these areas of major change and disruption as well as the role of ICT in the global economy and society in 2030 in the context of their common mission: to maintain European leadership in embedded systems and software-intensive systems and services. For Europe, an industry strong in ICT-based innovations is a prerequisite for maintaining global competitiveness. Moreover, such an industry creates high-value jobs in ICT and in other, more traditional ICT-dependent industries.

A short SWOT analysis reveals the need for a new vision. On the weaknesses and threats side are:

> Fragmented investments and different national policies
> Slowness to react to fast changing needs and technological developments
> Brain drain of excellent scientists / decrease of
> 'Off-shoring' of high-value-added products

On the strengths and opportunities side are:

> Competent and highly competitive industry and strong SME base
> High quality supplies of goods and services
> Strong industry backed by leading academics and research organisations
> Incentivised innovation eco-system
> Recognition as 'better supplier'

This SWOT reveals a strong position for the European industry but one that is under constant pressure and threatening to wane. Given the importance of the role of ICT in European industry and its products, a structural focus on the weaknesses and threats will remain essential for the next decades.

### VISION

The vision that drives ARTEMIS is of mankind benefiting from a major evolution in intelligent systems, a world in which all systems, machines and objects are smart, have a presence in cyber space, exploit the information and services around them, communicate which each other, with the environment and with people, and manage their resources autonomously. Digital convergence by emancipation of data, building embedded intelligence into every aspect of life and the internet revolution, are the opportunities of our time. These have changed the way we live as citizens and the way we do business in the new digital economy, and this trend is accelerating and will impact our society even more deeply.

### STRATEGY

The ARTEMIS strategy mainly aims to cut barriers between application sectors to facilitate the cross-domain sharing of technologies and research through top-down strategic road mapping and an ambitious set of high level objectives. Such a strategy has generated an outstanding record of successful projects since ARTEMIS has been running (2007-2012). In 2010, the ARTEMIS strategy integrated a third dimension to address the societal challenges and foster innovation to support the development of high-value added Embedded Systems solutions that are reusable across a wide range of application sectors and that can be integrated to respond to a number of societal challenges. But today Europe faces further societal challenges arising from inverted demographic curves, constantly increasing demands for non-renewable natural resources, expectations for improved quality of life, and climate change. The implication for a successor programme is the adoption of a strategy that is inclusive of technology, market and society as well as flexible, open and dynamic to adapt to the continuously evolving challenges in the areas of major change:

> Globalisation
> Management of scarce resources
> Climate change
> Urbanisation
> Mobility
> Healthcare and nutrition
> Digital society

### EMBEDDED SYSTEMS TECHNOLOGY

Already today, embedded software systems assist and control various aspects of our lives. They enable businesses to perform better and make citizen's lives more fulfilling and convenient. Some systems, especially for automotive and aircraft control, medical systems and nuclear power supply, are already critical to human life. This will evolve drastically: future generations will experience "embedded intelligence" pervasiveness that can hardly be imagined today. Embedded intelligent systems will literally be found everywhere and control pretty well everything while citizens' lives and well-being will depend on these systems to an inconceivable extent. Internet has become the dominant connection medium for all communication and will remain so, especially for communication between the myriad of connected Embedded Systems. Internet connected intelligent embedded systems having high-performance computing resources will provide the core of solutions for the major societal challenges as well as raise expectations and concerns about potential failures and safety, privacy and security making the quality and dependability of embedded systems key issues. The 'bigger picture' for Embedded Systems implies change from local networks to open networks of embedded systems leading, in turn, to a shift from single-system ownership to multiple-design processes and responsibilities involving many parties, multi-views and conflicting objectives, as well as advanced resource monitoring, virtualisation and dynamic adaptation. Networked Embedded Systems will, in effect, become the neural system of society, as explained in the ARTEMIS SRA.

The ARTEMIS SRA 2011 points to a series of technical issues that need to be resolved before 2030. First, those issues related to foundational science and technology; second, those related to the application contexts; and third, those encompassing societal challenges. Such solutions to our pressing societal challenges will spur on European competitiveness. The key enabling role of Embedded Systems is becoming increasingly firmly established in European society in the shift from localised, sector-specific improvements – in homes, offices, vehicles, factories, traffic management, healthcare, etc – to smart cities, smart regions and even smart societies.

### MAJOR AREAS OF CHANGE AND OPPORTUNITIES FOR EUROPEAN INDUSTRY COMPETITIVENESS

ARTEMIS aims to establish a new, holistic approach to research, technology and development, innovation and skill creation in Embedded Systems by means of innovation ecosystems. This will increase the efficiency of technological development by seeding projects focusing on EU excellence and, at the same time, enhance the competitiveness of the market in the supply of Embedded Systems technology.

Europe, with its world class automotive, aerospace, communication and medical equipment industries, still has an excellent position in Embedded Systems, which play a key role in enhancing the capabilities, availability and usefulness of these products. Only through adequate coordination and collaboration and with the help of public funding can this position be maintained to help solve the enormous challenges emerging from the areas of major change and, at the same time, spur European competitiveness in many areas. Pan-European action is and remains essential to keep Europe at the forefront of product innovation by research in embedding intelligence. ARTEMIS is a key player in achieving a pan-European approach to product innovation and maintaining the competitiveness of the European industry towards 2030.

*written by* ***Chris Horgan***

# COMMUNITY

## FUN AT WORK

### PROJECT LEADERS, ERIC SCHUTZ AND IRENE LOPEZ DE VALLEJO ON STAGE

**'The visionary architectural landscape of La Défense, bathed in morning sunlight and casting a stunning futuristic backdrop to this fifth Co-Summit, perfectly complemented this year's theme of the event. ITEA and ARTEMIS reflected their common ambitions through an exhibition floor of fascinating projects, a walk of fame, a special focus area section on reliability, star performers, inspiring keynote speakers and challenging debates.'**

The second morning of this glittering display of innovation and achievement got under way in the CNIT conference centre as ARTEMIS kicked off the day with its community session and a brief retrospective by Executive Director, Eric Schutz, in which he put the spotlight on the progress and achievements that have been made by the ARTEMIS projects over the past four years. Eric identified a series of phases, beginning with the project phase in 2008. "But in this phase there was no structure, no strategy. It was an observation of what our years, what we can see are projects working on common themes, capitalising on the results of previous projects and so we arrive at the cluster of projects phase, which reflects a more strategic approach." He went on to explain the big change that had happened this year in the creation of a new concept of AIPPs, or "application and innovation pilot projects. This is what I call phase three – the pilot phase. This has generated commitment from the members states. In fact, the level of funding from the member states has never been so high as it has been this year. The success of this third phase will be important for the transition into the next stage of ARTEMIS – the future. I am convinced there will be a successor to cover the needs of our industry."

#### HEALTHCARE AND AUTOMATION

Eric Schutz then explained the change in approach to this community session. Not a series of project presentations but a panel-based discussion on two topics that had not perhaps received as much attention in the past in the community sessions: manufacturing automation and healthcare. Joined on stage by the moderator of the debate, Irene Lopez de Vallejo, ICT Partnerships Director at IK4-TEKNIKER and member of the ARTEMIS Presidium, Eric then invited the four familiar ARTEMIS faces who would be giving their opinions in the debate: Andrei Lobov (e-Sonia), Mladen Berekovic (R3-COP), Frank van der Linden (High Profile) and Silvio Bonfiglio (CHIRON).

#### THINKING BIG

Taking centre stage, quite literally, Irene got the ball rolling after each of the panellists had briefly introduced themselves and their work. Starting with the question of how each of the panellists interpret the concept of 'think big', Andrei Lobov proposed a twist, suggesting that to 'think open' is a gateway to acting big while Mladen Berekovic (R3-COP)

*'ARTEMIS Community session pictures (from left to right): Frank van der Linden giving his speech, the panel with moderator Irene lopez de Vallejo and Eric Schutz on stage at the 2012 Co-Summit, Mladen Berekovic speaking animatedly and Eric Schutz & Irene Lopez de Vallejo handing out the recognition awards.'*

emphasised the ambitious target of a large tool platform on which knowledge-based design provides the food for solutions. The 'big' for Frank van der Linden (High Profile) centred on the cross-domain aspect whereby imaging technology is not confined to healthcare but incorporates non-healthcare companies and organisations all the way from image capture and presentation. Silvio Bonfiglio (CHIRON) saw the 'big' in terms of projects having critical mass and societal impact. Before moving on, Andrei Lobov suggested that in thinking big SMEs should be regarded as an essential driver of innovation and a key to the value chain.

## THE USER AND THE MAN IN THE STREET

Irene Lopez de Vallejo gave her own interpretation of the 'think big' notion by suggesting that we should consider "how we can get the developments being made in technology and innovation out there to the general public so that they are more aware of the benefits that projects like yours can bring to them." She offered two possible solutions: "One is that we get users involved right from the beginning in the design process and two is to develop awareness campaigns if we want to change behaviour but such activities are not funded by these types of project." This prompted responses from the panellists. Mladen Berekovic wondered whether we needed to have "a game changer such as was the case with Apple in the mobile market where people developed the applications, the factor of the future. So should we sit here or should we sit out there in the public where the other people are?" Fran van der Linden responded that "of course, there are people thinking in this direction and indeed we do involve academic hospitals in our development and project but it needs to be regulated because as the final integrator we must be sure that everything is safe and secure and that privacy is respected."

A voice from the audience, Alun Foster, programme manager for the ARTEMIS JU, chipped in at this point. "I must say I detect a kindred spirit over there. We're constantly telling people we have to get out and tell the general public what we are doing. We have been working on providing communication guidelines to demystify the work that is going on and we have to show that the taxpayers money is going to benefit them in the long term. I'm pleased the question came up because it has given me the opportunity to once again pass on the message: please think about the man in the street that is funding our projects. So let's communicate on a wider platform, not just scientific journals but local newspapers, too."

## COOPERATION AND COLLABORATION

The next question centred on cooperation. To what extent did the panellists cooperate within the community. For Frank van der Linden and Silvio Bonfiglio cooperation between these projects was already firmly established, with Frank citing the example of an iPad application developed in the CHIRON project being taken on board in the High Profile project to enable doctors to have patient information available on an iPad. This was just one of the many examples of such collaboration and cooperation. Slivio Bonfiglio added that this was "a good example of multi-domain collaboration in which, for instance, we adapt a middleware application for our specific domain." Mladen Berekovic also pointed to the importance of collaboration and sharing in respect of standardisation activities in the field of safety and creating platforms where results can be reused in other ARTEMIS projects. The final word went to Andrei Lobov who reiterated the comments of his fellow panellists when he talked about building the value chains where the collaboration is pushing beyond ARTEMIS projects to the manufacturers of the applications being developed within the projects.

With time for just one final audience question, the subject of the social network, which was part of the keynote address by Thierry Breton the previous day, came up. "Could there not be a social collaboration platform within ARTEMIS?" Jan Lohstroh, Secretary General ARTEMIS Industry Association, confirmed that steps were already being taken to look into this question, and Irene Lopez de Vallejo added that while a Linked-in group already existed to foster contacts between projects, "not everybody was a social media user and to create a community social network will need a change in behaviour. But, certainly, this is a point that is worth exploring."

So, winding up the panel session, Irene thanks the panellists for their contribution to the debate and reminded the community of its huge responsibility to succeed in bringing impact of embedded systems to the market through products that make a positive contribution to our society.

## ROLLING OUT THE RED CARPET

The panel debate revealed that challenges faced were real but the progress being made by ARTEMIS projects in meeting those challenges and making significant inroads to really improve the quality of our lives was equally real. The session then moved on to the ARTEMIS Recognition Award presentations. This year, all twelve completed projects were singled out as award winners, and Eric Schutz turned the spotlight once again on the people who were responsible for making their ARTEMIS walk of fame projects such a success. In alphabetical order, the award-winning projects were:

- CAMMI – adaptive cognitive man-machine interfacing and human-centred communication
- CESAR – Reference Technology Platform to reduce development time and effort by up to 50%
- CHARTER – concepts, methods and tools for the development, verification and certification of critical embedded systems
- CHESS – building languages to model and evaluate extra-functional properties as component contracts
- eDIANA – multi-purpose framework to enable the building sector to optimise energy consumption
- EMMON – research, testing and development of a functional prototype for large-scale wireless networks
- iLAND – enabling technologies for modular, component-based middleware
- INDEXYS – cross-domain instantiation of GENESYS embedded system architecture
- pSHIELD – pioneering investigation to address security, privacy and dependability in embedded systems context
- SCALOPES – enabling the evolution of low-power, multi-core computing platforms
- SMART – creating an innovative low-power wireless video-capable sensor network infrastructure
- SOFIA - making information in the physical world available for smart services in embedded and ubiquitous systems
- SYSMODEL – developing supportive modelling tools to enable SMEs boost performance and reduce time to market.

But this glittering array of prize winners was not the end of the story. Eric Schutz stressed that these stars on stage were just twelve of the stars in the ARTEMIS heaven, and proud announced that 'Every project is a star'.

**Irene Lopez de Vallejo on moderating the panel session:**

*"It was wonderfully exciting time. I feel it is a great honour and a huge responsibility to have been invited to moderate the session. I know most of the ARTEMIS community personally after a few years working with them and this was a small contribution to highlight projects that are pioneers in bringing two key areas, advanced manufacturing and healthcare, in the spotlight of the Embedded Systems community. Also, I had fun doing it! Andrei, Mladen, Silvio and Frank are good serious fun and we managed to enjoy the stress of being on stage under the limelight having a friendly conversation. Yes, I can say we had fun doing it! Afterwards I talked to other ARTEMIS projects and their leaders and participants and they were quite impressed with this way of presenting them not only to the community but to the wider world."*

# THE ARTEMIS BROKERAGE EVENT 2013

## ARTEMIS BROKERAGE EVENT CALL2013

### WHY SHOULD YOU BE THERE?

- *propose your project idea to potential project partners*
- *check project ideas from others to join their consortium*
- *work out project ideas*
- *build a project consortium*
- *build and enlarge your collaboration network*

Early in 2013 ARTEMIS Joint Undertaking is expected to launch its Call 2013 for project proposals. To help with the preparation of drafting proposals and search for the right consortium partners, ARTEMIS Industry Association organises **the ARTEMIS Brokerage Event** at the **Sheraton Skyline Hotel**, near **London Heathrow airport**. This 2-day international event will take place on **Tuesday 15 & Wednesday 16 January 2013**. About 250 participants from all over Europe are expected to attend this event.

The Brokerage is an event that gives you the chance to meet consortium partners and to get involved in drafting project proposals with the starting consortia. The event is also an important indication for public authorities to sense the field of interest in advance. Furthermore it informs on the **Annual Working Programme 2013 (AWP2013)** for the ARTEMIS Call 2012 and gives updates on the timeframe and procedure for the Call.

The International Brokerage Event in London is the place to be for everyone interested in responding to the ARTEMIS Call 2013. It's the place where cutting-edge project ideas, cooperation needs and interesting partners all come together.

Before the Brokerage, we invite participants to make their project ideas known through a new web tool: **ARTEMIS Project Idea Tool** (an extension of our Partner Search Tool) to support consortium building. This ARTEMIS Project Idea Tool also generates a project idea poster for showing at the event. Consortia that have uploaded their idea in will get the opportunity to:

1. Present their idea in the plenary session in a **short project pitch (3 min)** to promote their poster.
2. Get poster space to further generate interest during the poster session (after project pitches).
3. Get a reserved meeting space during the break-out session.

More information about the Brokerage and the Project idea Tool can be found via www.artemis-ia.eu.

photo's from Co-summit 2012

GET READY FOR
THE SIXTH
TAKE OFF!

# ARTEMIS BROKERAGE EVENT CALL 2013

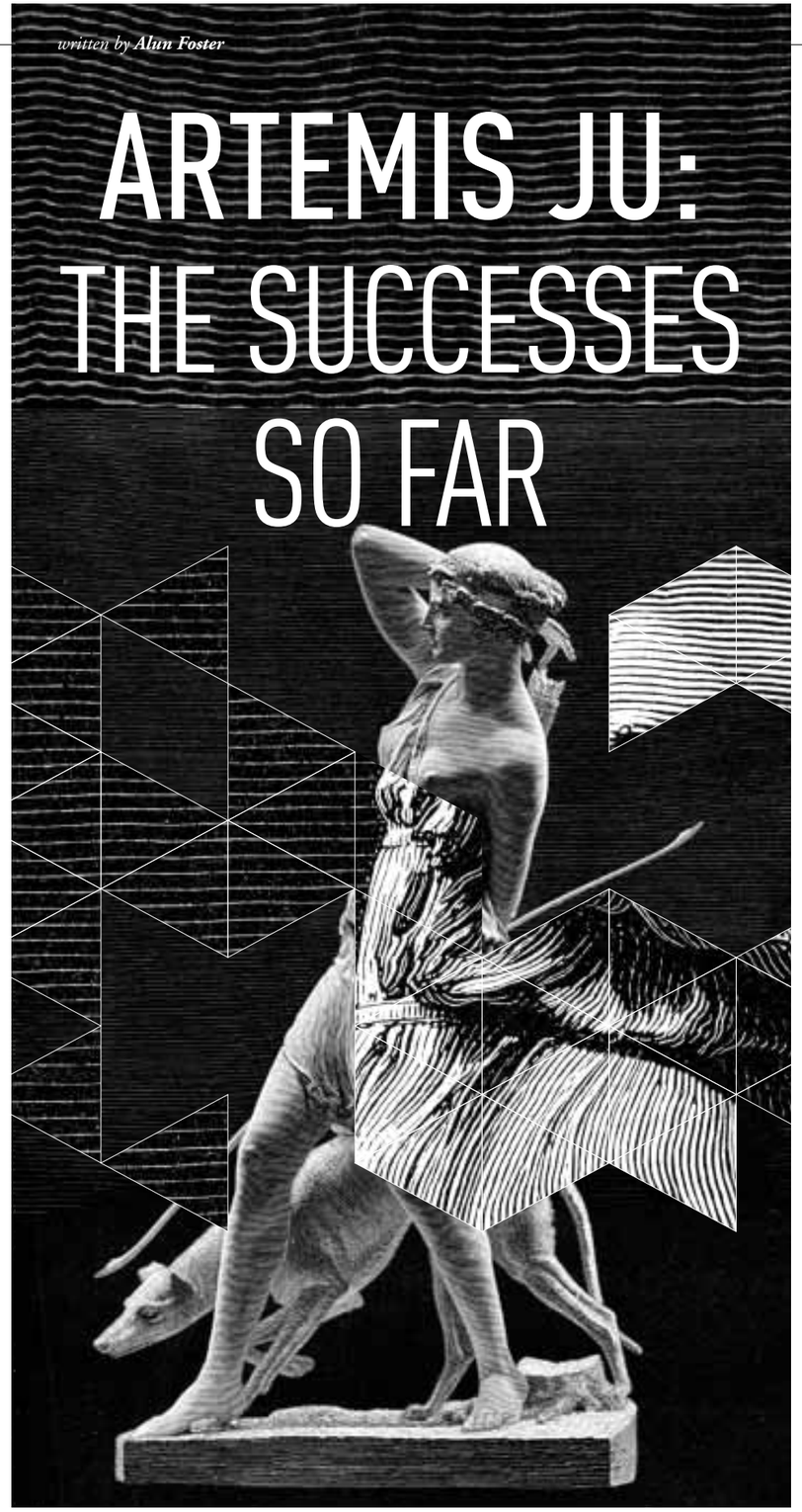
*15 & 16 January*

*Sheraton Skyline Hotel, London Heathrow*

ARTEMIS

*written by* ***Alun Foster***

# ARTEMIS JU: THE SUCCESSES SO FAR



With the projects from four calls up and running, and in some cases already completed, and now with the fifth Call well under way, it is time to take stock of what the ARTEMIS-JU programme has achieved to date, compared to what we originally set out to do. What follows are some abstracts and a synthesis of a "portfolio analysis"[1] carried out by the ARTEMIS-JU staff during the summer of its this year, which itself consolidates the day-to-day follow-up of the programme and its projects.

The ARTEMIS programme, with its four calls from 2008 to 2011, has to date amassed a total of 44 projects:

> Call 2008 – 12 projects
> Call 2009 – 13 projects
> Call 2010 – 10 projects
> Call 2011 – 9 projects

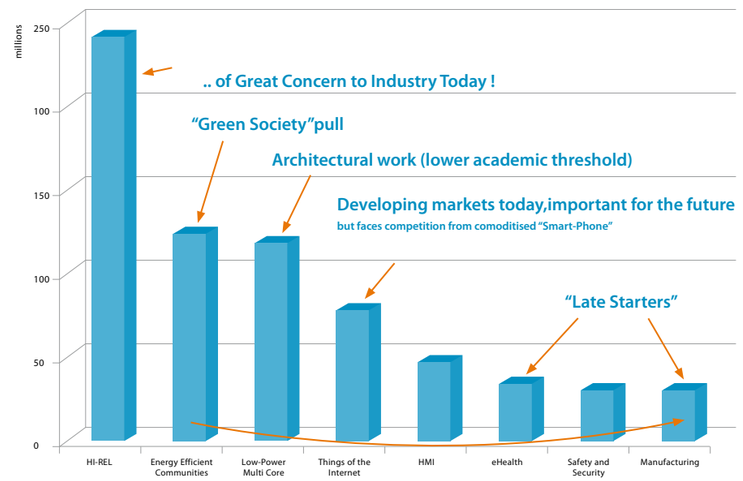
The projects represent a total RD&I investment of some €700 m, the source of which is shown in the table below. Participants' own means (the unfunded part of the work) is roughly 52% of the total. The ratio of national funding to EU funding is important for the JU, as this "leverage factor" shows how much national investment the EU contribution can attract: it must be greater than 1.8.

In addition to this, we can observe that the Average Countries per Project is nearly 7 (6.68). This indicates that the ARTEMIS programme has achieved one of its high-level goals of reducing fragmentation, by enlarging the typical 'footprint' at a European level (historically, averages of 3 to 5 countries per project are more typical).

ARTEMIS classifies participants into "Public Research Organisations" (PRO), which embraces universities and other publicly funded institutions, "Large Enterprises" (LE) and "Small and Medium-sized Enterprises" (SME). The last two together represent the Industrial participation in the programme.

The relative participations of each partner type shows that 33% are PROs, 39% are large enterprises and 28% are SMEs. From this, two interesting observations may be drawn. Firstly, that the programme has succeeded in attaining a strongly industrial focus, with 67% of the total participations being industrial players, large or small. Secondly, though ARTEMIS has an ambition to increase the enrolment of SMEs, the mechanisms available for this is at the Programme level are limited. There is no quota or other method applied, though the participation rules in certain member states do require or encourage SME participation (for example, with favourable funding rates). Still, 28% of the total number of participations is from SMEs, indicating that the vision, goals and work programme of ARTEMIS are indeed attractive to them, possibly because of the participation of Member States who understand more fully the needs of their SME communities.

A key aspect of the ARTEMIS-JU MASP/RA is that it promotes "Self-Sustaining Innovation Ecosystems" to maximise R&D impact. Looking at all the project so far, we can already see that some powerful project clusters have emerged, most notably but not limited to the area of ultra-reliable




| Total Costs (investment) € m | Total National Funding € m | Total EU funding € m | Total Public Funding € m | Participants' own means € m | RATIO National vs EU funding |
|---|---|---|---|---|---|
| 708.06 | 228.17 | 116.17 | 344.35 | 363.71 | 1.96 |

system design that is critical, for example, the transport and healthcare industries. The chart here gives the total investment in ARTEMIS projects to date, split per "cluster" that the projects contribute to:

Why is this important? It is the strong belief of those involved in the ARTEMIS programme that such clustering is a vital aspect in facilitating the concrete valorisation of R&D project results, and therefore converting the R&D efforts into true Innovations in products, services and ways of working to produce these. Past experience has shown that this can only be brought about by the attainment of sufficient "critical mass" with enough industrial "buy-in" of (non-differentiating) technological solutions. (See the ARTEMIS SRA document on Innovation Environment for more on this). While respecting the Pan-European vision of the programme, it is the expectation that such Innovation Eco-Systems can condense to form structured "Centres of Innovation Excellence" ("CoIE", modelled on the existing "Competitiveness Centres" or simply "Centres of Excellence" for scientific work). The ARTEMIS Industry Association has initiated a labelling scheme such that CoIEs can be recognised as such. On this point, the ARTEMIS-JU faces a limitation in that the funding it provides can be used only for R&D activities – supporting activities that can financially support such non-R&D activity are not fundable under the present scheme.

To address this, and under the stimulus of the ARTEMIS-JU Office, the ARTEMIS community has adopted the idea that project clustering is a valuable first step towards establishing CoIEs and has implemented this through a series of annual inter-project workshops called the "ARTEMIS Technology Conferences". Some of these conferences have been particularly successful in getting projects' results used more widely in other projects ("re-use" is another focus of the ARTEMIS SRA), and, together with the other events organised for the ARTEMIS community, have proved invaluable when setting up future projects or larger entities, like the ARTEMIS AIPPs.

[1] *A public version of the full portfolio analysis will be released at the end of 2012.*

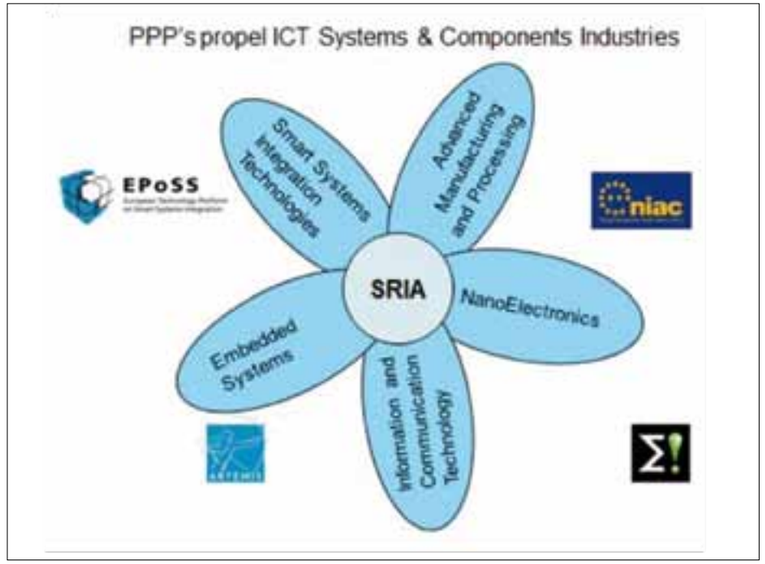
# High Level Strategic Research and Innovation Agenda of the ICT Components and Systems Industries as represented by ARTEMIS, ENIAC and EPoSS

*written by* ***Jan Lohstroh***

On the request of the Commission the ETPs of ARTEMIS, ENIAC and EPoSS (representing the European Components and Systems Industries) have written a common denominator document of a Strategic Research and Innovation Agenda (SRIA) describing the Research & Development & Innovation (R&D&I) vision, mission and strategy of companies, referred to as ICT Components and Systems Industries in the document, for the purpose of simplification. These industries cover a wide range of technologies and activities and must be interpreted in a wide sense, including systems integrators, equipment and material suppliers.

The document, dated 25 April 2012, gives the common high-vision, mission and strategies of the R&D&I activities of the industries mentioned and looks forward to 2020. For detailed strategies the document points to the separate SRAs of the ETPs involved. For the ARTEMIS-ETP it is the ARTEMIS SRA 2011.

The document pays attention to the landscape of the ICT Components and Systems Industries, including the level playing field in Europe, and also highlights the roles of the Industry and the Public Authorities. It is stressed that the Public Private Partnerships (PPPs) like ARTEMIS, CATRENE, ENIAC, EPoSS, EURIPIDES and ITEA play an important leveraging role in Europe, and their importance for the industry cannot be overstated.




The document has 50 pages; it can be downloaded from the website of the ARTEMIS Industry Association: www.artemis-ia.eu

This article contains the Executive Summary only, this is as follows:



## EXECUTIVE SUMMARY

**of the High Level Strategic Research and Innovation Agenda of the ICT Components and Systems Industries as represented by ARTEMIS, ENIAC and EPoSS**

### VISION-MISSION-STRATEGY

The European ICT Components and Systems Industry, including knowledge institutes, share a common Mission, Vision and Strategy at the highest level of their Strategic Research and Innovation Agenda's. Based on a very wide set of technologies they will together enable the provision of breakthrough products and services.

### VISION

The vision driving the ICT Components and Systems industries is of mankind benefiting from a major evolution in intelligent systems, a world in which all systems, machines and objects become smart, have a presence in cyber space, exploit the information and services around them, communicate which each other, with the environment and with people, and manage their resources autonomously. The vision of the European ICT Components and Systems industries is to provide Europe in a concerted approach with the controlled access for creating the indispensable technology basis for new products, systems and services and their applications essential for a smart, sustainable and inclusive European 2020 society.

### MISSION

The mission of the European ICT Components and Systems industries is to progress and remain at the forefront of state-of-the-art innovation in the development of highly reliable complex systems and their further miniaturisation and integration, while dramatically increasing functionalities and thus enabling solutions for societal needs.

### STRATEGY

The strategy of the European ICT components and systems industries is based upon exploitation of European strengths and opportunities:
Exploiting strengths implies building on the leading positions in specific technology and application domains by increasing industry effectiveness, and reducing fragmentation, Creating opportunities implies for Europe to be positioned at the forefront of new emerging markets with high potential growth rates and to become a world leader in these domains.

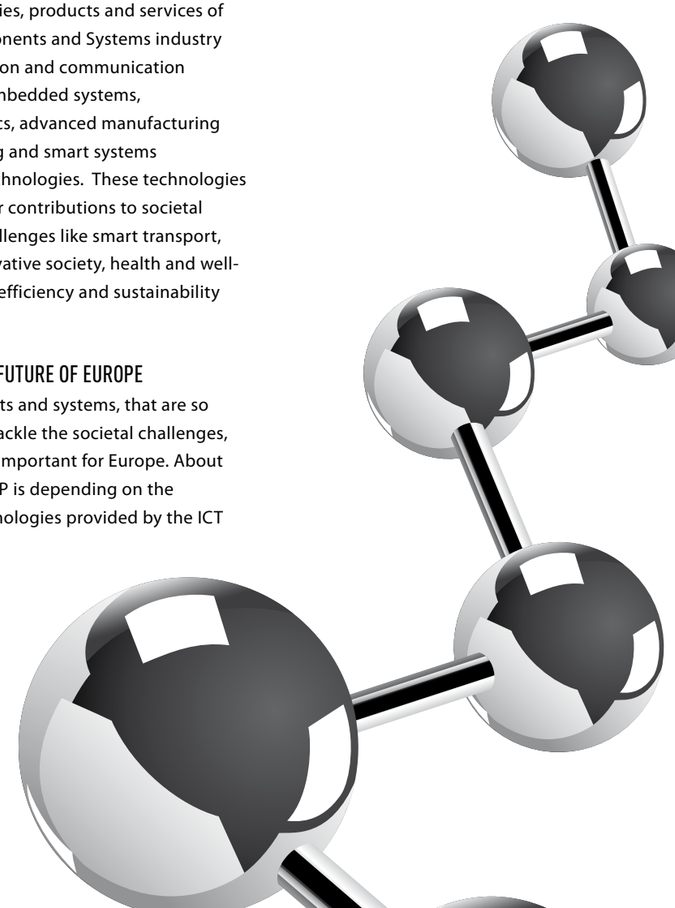
Innovation is a key point for the strategy. It is propelled by efficient transnational eco-systems of industry, institutes, universities and public authorities. Detailed Vision-Mission-Strategy elements are published in the strategic documents (VMS resp SRA's) of each ETP.

### TECHNOLOGIES AND SOCIETAL NEEDS

The technologies, products and services of the ICT Components and Systems industry span information and communication technology, embedded systems, nanoelectronics, advanced manufacturing and processing and smart systems integration technologies. These technologies will offer major contributions to societal needs and challenges like smart transport, inclusive innovative society, health and well-being, energy efficiency and sustainability and climate.

### POSITION AND FUTURE OF EUROPE

ICT components and systems, that are so important to tackle the societal challenges, are extremely important for Europe. About 10% of our GDP is depending on the enabling technologies provided by the ICT Components and Systems Industries, which implies a significant impact on employment as well. From an R&D perspective Europe has currently a good position in all these technologies. In the highly complicated products and services, as provided by the ICT industry, cooperation is essential as one company cannot master all technology elements in one house any longer. Therefore the initiatives to fund industry driven R&D&I programmes contribute significantly to the attractiveness of Europe. To make Europe also attractive for large investments in ICT a level playing field is mandatory. This must be accomplished by Member States and the European Union in comparison to other countries/areas in the world.



C O L U M N

# BATON BLUE(S)

*This column is the fourth in a series in which various members of the ARTEMIS community pick up the baton and have a say on developments from a personal perspective and in their own way before passing the baton on. In this edition* ***Jan van de Biesen****.*

**Dr. Jan van den Biesen, Vice President Philips Research for Public R&D Programs, is a physics graduate of Leiden University. Following a year as a PostDoc at the University of California in Berkeley, he joined Philips in 1983 to work on semiconductor research. After a period of liaising with Dutch public authorities on Philips' participation in national R&D programmes and participating in a major corporate strategy study on multimedia along with completing an Executive MBA, in 1997 Jan became responsible for developing Philips' policy regarding publicly funded programmes for collaborative R&D and coordinating Philips' worldwide participation in such programmes. Jan van den Biesen was born in Breda, the Netherlands, in 1954. He is married and has three children.**

*Jan, you have been very active in ARTEMIS from the very beginning. How did it all begin?*
Well, from that first beer in a Brussels bar in 2004 with Kostas Glinos (at that time responsible for embedded systems research at the European Commission) to my position now as Advisor to the Presidium and Steering Board of ARTEMIS-IA, there has been plenty to keep me busy. I first became involved in establishing the ETP and later chaired the ETP WG on governance and funding structures that prepared the establishment of the JTI together with European Commission and Member State representatives. I guess you could sum it up in the way that the first ARTEMIS chair, Yrjö Nuevo, once did: the Chief Bureaucrat of ARTEMIS.

*What do you consider to have been the biggest achievements of ARTEMIS?*
Certainly pioneering a new co-funding mechanism combining EU and national resources must be there at the top since this had never been done before, and creating a European Research Area in Embedded Systems comes close on its heels. Based on the ARTEMIS model, ENIAC did the same in the domain of nanoelectronics. In that context I received the ERA Achievement Award from ITEA in 2005 and an ARTEMIS Award in 2006, which in some way reflects those achievements.

*How did ARTEMIS help your company find new collaborative centres of activities in Europe?*
We are finding new centres of activities by being active in the ARTEMIS network (governance structures and working groups) and also by bringing in our own network, leading to successful projects like eDiana, Sofia and Smarcos. A direct spin-off of our participation in the SRA working group is the contact with the EICOSE CoIE on safety-critical systems. While mainly dedicated to transport, it appears to be relevant to our healthcare systems, which are also safety-critical. Thanks to the AIPP 1 project Crystal, on critical systems engineering, we are now connected to this community, which is new to us.

*Are you satisfied by the reactions of the Commission to the report of the Sherpa group in which you participated on behalf of ARTEMIS?*
Yes, a recent analysis I made shows that the main recommendations of the JTI sherpas are basically all being implemented by the Commission. For example, a new article has been added to the Financial Regulation on the EU budget, creating the new special legal status of PPP body as a lean and mean alternative to the legal status of Community body that the current JTIs have. These changes will really make a difference in establishing the next generation of JTIs and contractual PPPs and making them more efficient, effective and fit for purpose.

*In the last Baton Blues, Werner Damm asked you about the relative positioning of ARTEMIS, ITEA and the EIT in terms of projects*
Thank you, Werner, for this tricky question. I think there is a lot of grey here, rather than distinct black and white. First of all, you're comparing apples and oranges. The EIT with its KICs should not be seen as yet another R&D funding programme; the ICT KIC acts as a catalyst that adds value in terms of education, innovation and exploitation to existing carrier projects, like ARTEMIS or ITEA R&D projects. Also keep in mind that the KIC activities are in principle only open to KIC partners, whereas participation in ARTEMIS and ITEA projects is fully open. As for ARTEMIS and ITEA, we see them as two complementary instruments serving a common goal, both in an industry-driven approach. ARTEMIS is somewhat more European and top-down while ITEA is an intergovernmental initiative with a more bottom-up character. There is significant overlap in terms of scope but ITEA is more application oriented with a focus on fast exploitation and business impact while ARTEMIS is more technology oriented with a focus on cross-industry commonalities. Very good relationships exist between the three organisations. My company (including myself) has been very actively involved in establishing each of them, and is a major participant in all three.

*What is your view on the Commission's wish to combine ARTEMIS and ENIAC in a follow-up Joint Undertaking?*
In terms of efficiency and synergy this makes a lot of sense, provided that the budget has a fixed breakdown between nanoelectronics, embedded systems and smart systems.

*What message do you have for the stakeholders now working on the follow-up Joint Undertaking?*
"Sense and simplicity", the same brand slogan of Philips.

*To whom do you wish to hand over the column and why? What particular question do you have for this person?*
To Jozef Affenzeller, who is a member of the Steering Board. If I remember well, he has been involved in the ARTEMIS ETP right from the beginning, like me. He is engaged in many European projects and advisory groups. It would be very interesting to get his views on the benefits of ARTEMIS and its added value compared to other programmes from the perspective of a very innovative, medium-large company.

*What music goes together with reading of the column?*
Johan Sebastian Bach, as I can't get enough of his music, no matter in what mood I am. By the way, on http://www.myspace.com/artemischamberensemble/music/songs/js-bach-brandenburg-5-24982671 you can hear the Artemis (!) Chamber Ensemble play his Fifth Brandenburg Concerto.

# ARTEMIS INNOVATION PILOT PROJECTS (AIPPS)

## WHAT THEY ARE, WHERE THEY CAME FROM AND WHERE THEY ARE GOING

*written by* ***Alun Foster***

An important aspect of the ARTEMIS SRA, and consequently of the ARTEMIS-JU work programme, is the will to strengthen Europe's ability to convert its excellent scientific, research and development capability into commercially viable products and services, or improved production methods for existing products; i.e. to seek the holy grail of economic and societal well-being through innovation. In order to reinforce the larger perspective of ARTEMIS' goals, being primarily to boost valorisation of R&D results and to stimulate true Innovation (capital 'I') with short- to medium-term valorisation prospects, four guiding principles were adopted:

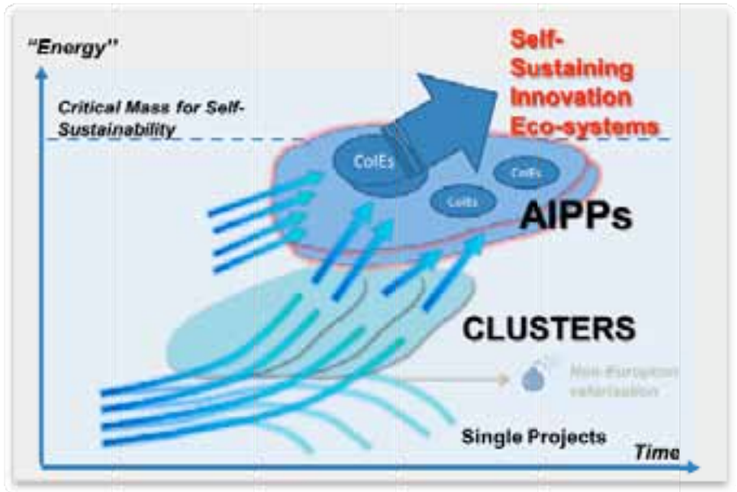
**"Think BIG" i.e.**, consider that ARTEMIS projects should have appropriate critical mass, and market or societal insight to assure significant impact of the public funds used ("taxpayer value-for-money"). This is moderated by observing that "Big" refers to the IMPACT of a project, not necessarily to its size in terms of partners or total budget;

the idea being the ARTEMIS adage that the programme should comprise some "large projects supported by smaller, targeted initiatives", and that all projects – large or small – must think beyond their limited lifetime to see what real effect their results can have in a European socio-economic context.

**"Act Socio-Economic"**: the main goals being improved industrial efficiency "... to strengthen European competitiveness and allow the emergence of new markets and societal applications," i.e., a focus on key technological issues, offering solutions to high-visibility concerns with commercially valorisable results.

**"Act Multi-national"** (= "Act Pan-European"), consider national and/or regional strategic priorities and the specialisations in scientific and technological excellence available within the diversity of the European Union. "Think Different": i.e., strive for significant and complementary added-value to existing projects and programmes. Be bold enough to change the way things are done; become game-changers in tackling the barriers to Innovation.

In the Multi-Annual Strategic Plan of the ARTEMIS-JU, all this is approached through the vision of establishing "Self-sustaining Innovation Eco-Systems", which past experience shows can be brought about by the attainment of sufficient "critical mass" with enough industrial "buy-in" of (usually non-differentiating) technological solutions. (See also the ARTEMIS SRA document on Innovation Environment, available at http://www.artemis-ia.eu/sra). Considering the Pan-European vision of the programme, it is the expectation that such informally defined Innovation Eco-Systems can "condense" around the leading players (often larger enterprises or institutions) to form structured "Centres of Innovation Excellence" ("CoIE", modelled on the existing






"Competitiveness Centres" or simply "Centres of Excellence"). Indeed, the converse is also true: many ARTEMIS projects already emerge from pre-existing CoIEs (for example EICOSE, on systems with a high relevance for safety). The ARTEMIS Industry Association has initiated a labelling scheme such that CoIEs can be recongised as such and, to date, three CoIEs are already labelled (EICOSE, ProcessIT on process automation and ES4IB on intelligent, energy-efficient buildings – more details on http://www.artemis-ia.eu/coielabel).

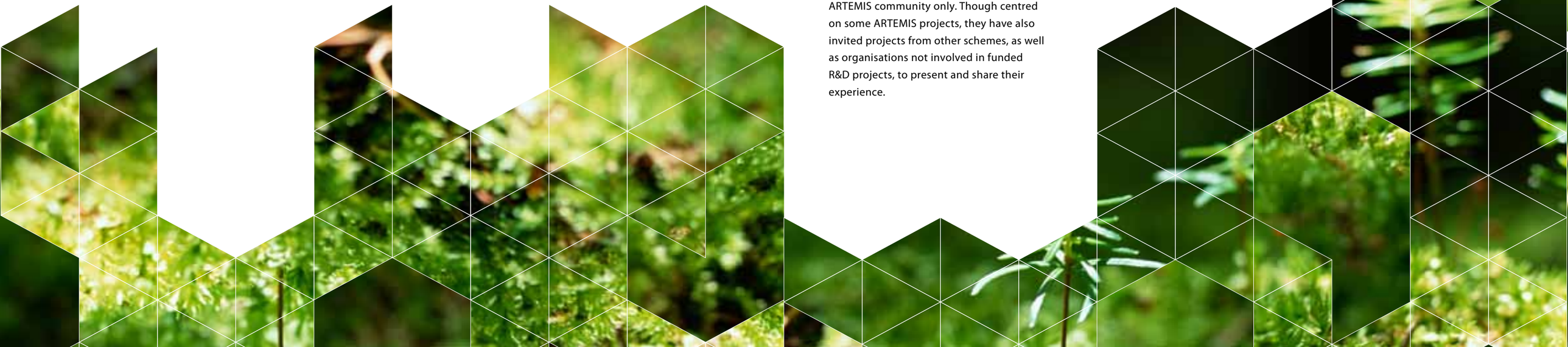
However, the basic charter of the ARTEMIS-JU is to fund projects, and past experience has shown that projects do not usually chose to interact in any spontaneous way: they are often too busy with their own work to look around outside. What we can observe, however, is that smaller, stand-alone projects very often tend to "fizzle out" fairly quickly after they finish. To address this, and under the stimulus of the ARTEMIS-JU Office, the ARTEMIS Industry Association has adopted the idea that project clustering is a valuable first step towards establishing CoIEs and has helped work pro-actively towards achieving this, most visibly through a series of annual inter-project workshops – the "ARTEMIS Technology Conferences". Incidentally, these workshops are not "closed" events for the ARTEMIS community only. Though centred on some ARTEMIS projects, they have also invited projects from other schemes, as well as organisations not involved in funded R&D projects, to present and share their experience.

Already after 4 Calls, we can see that projects are "clustering", sharing ideas around (non IPR-critical) topics, delivering (public) results to each other and even forming new consortia for follow-on projects. The fifth ARTEMIS Call, for 2012, has taken this clustering to a new level, with the introduction of a specific type of project – the ARTEMIS Innovation Pilot Projects.

AIPPs are specifically designed to bring about the economies of scale and efficiency when defining, designing and building technological demonstrators or platforms of sufficiently large scale to assure strong industrial and societal take-up. As a logical extension to project clustering, AIPPs are supposed to be large initiatives: "Think Big" becomes "Think even bigger". (Large initiatives like AIPPs indeed contain an element of risk, but without a vision for change and the courage to take a leap into the unknown, progress beyond the status-quo is simply not possible).

The Call 2012 work programme identifies six fields where it is expected that such major clusters can bring a real impact, both commercial and societal, while the criteria for selection emphasise the market-facing nature and expected market impact even more than the "standard" ARTEMIS Sub Programmes do (Call 2012 also accepted proposals for ASP-style projects). AIPPs are intended to be the clouds within which CoIEs can form or develop further, ultimately attracting sufficient industrial attention and energy to become self-sustaining – i.e. through this route the ARTEMIS strategic goal of building "Self-Sustaining Innovation Ecosysems" becomes concretely realisable.

At the time of writing, we wait in anticipation to learn which of the proposed AIPPs received through the 2012 Call will selected for funding and, further ahead, look forward to them producing the game-changing results they promise.



# INTERVIEW:
# KLAUS GRIMM

At the end of this year, Klaus Grimm will be retiring from his position at Daimler AG and as president of the ARTEMIS Industry Association. Looking back at the time he took over the presidency from Yrjö Neuvo, he admits that during this early phase of the programme he faced the considerable challenge of ramping up and keeping the programme running smoothly and overcoming a number of hurdles that were present due to the way in which the joint undertaking had been constructed.

*What are the main highlights of your time as president of ARTEMIS-IA ? And what progress have you seen?*
I would say that one highlight is that we made good progress in achieving this challenge. Another highlight would be the progress we have made in achieving our goal of overcoming fragmentation in research, development and innovation. We have our SRA that serves as a guiding principle and our latest success of the ARTEMIS Innovation Pilot Projects, which I believe are the right steps towards defragmentation. Another highlight is our ability to establish very good project clusters in specific areas, especially in safety and reliability where we aim to develop reference technology platforms in projects like CESAR and MBAT.

Another area in which we have made good progress is in cross-sectoral activities. For example, tool platforms, centres of innovation excellence and standardisation activities. Also the good degree of involvement from SMEs has been very pleasing and the programme has really proven itself to be industry driven. And it's really pan-European. We have on average seven countries per project, something that underlines that we are heading in the right direction to achieve the overall ARTEMIS goals.

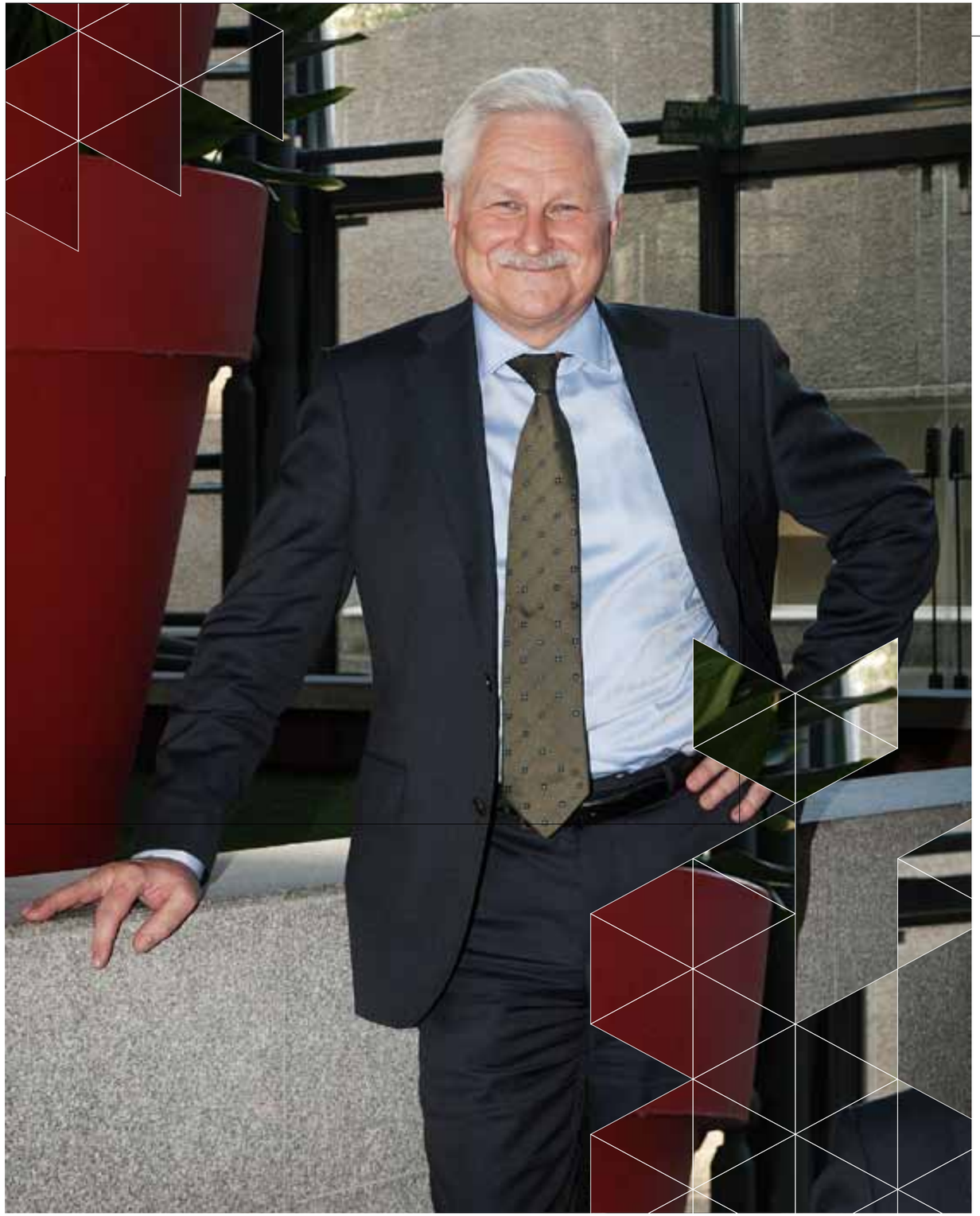
*What would you consider to be the greatest value that you brought to the organisation?*
I think I was able to provide some good support for solid sustainable management of the interests of the Industry Association. I believe I could be a significant contributor to bundling these interests, supported of course by the presidium and the office. I couldn't have achieved this on my own without their help. And the second area of value I had was to moderate the different interests of the various stakeholders. I think this is one of my skills, to be a good moderator. Sometimes it was quite difficult to reach a compromise between the European Commission, the member states and the Industry Association. And in my era we also managed to establish a very good and fruitful 'friendship' with ITEA. So I am satisfied that I was able to moderate these processes quite well.

*What do you feel is the biggest success during you tenure?*
As I already mentioned, we made a really good step towards bundling forces, which is one of the chief ARTEMIS aims. And when I look at the more than 200 members of the Industry Association and all the countries involved, I think this progress has been a real success.

*What is your fondest memory of ARTEMIS?*
I really appreciated working with so many important and influential people from industry and the scientific community from all over Europe. And the appreciation from the different stakeholders for my contribution to ARTEMIS. I heard from many of them that they are quite disappointed that I will be leaving, so that makes me feel very appreciated.

What does the future hold for you?
After five years of commuting between Berlin and Stuttgart, I am relishing the time I will have to spend doing things with my wife and certainly enjoying more of my home city and other nice places all over of the world, something I have not had too much opportunity for over the past five years.

*What parting message would you like to give to the people/colleagues you leave behind?*
I would like to encourage them to keep going, to stress and underline the importance of embedded systems as the neural system of society, as we say in our SRA. And what I have learned is the need to spread the responsibility over many shoulders. I would like to encourage all ARTEMIS-IA members to contribute actively to all the activities, at least the Steering Board and our Working Groups, because I feel we still do not have enough people who really actively contribute. And, of course, good luck and every success in the discussions on the future of ARTEMIS.



# ARTEMIS AUSTRIA CONFERENCE IN VIENNA

The ARTEMIS Austria platform was created in 2009. Each year it organises and hosts an international conference in Austria, contributing to the innovation eco-system activities of ARTEMIS. This year's ARTEMIS Austria conference took place in Vienna on 20 and 21 September 2012 and was attended by some 80 people who were interested to find out more about "Future Embedded Systems – Solving Societal Challenges". The scientific programme was organised by Roman Obermaisser, Professor of Embedded Systems at the University of Siegen and previously at the Vienna University of Technology. The regional organisation was coordinated by Erwin Schoitsch and Josef Affenzeller. The twenty presentations at the conference covered an interesting spectrum of ARTEMIS topics, such as Safety and Security, Energy Efficiency, Systems-of-Systems as well as revealed the results of ARTEMIS projects.

## SPEAKING WITH ONE VOICE

During his welcoming address, Michael Wiesmüller, Head of ICT, Industrial and Nano-Technologies and Space at the Austrian Federal Ministry of Transport, Innovation & Technology, suggested that Austria was "currently in a very important and thrilling phase concerning the implementation of ARTEMIS with respect to the large demo and pilot projects. These are generating more innovations that are really quite close to the market." He went on to say that ARTEMIS is helping "to create a platform on which we are starting to see the actors from various industry sectors beginning to speak with one voice in response to specific challenges."

The conference began with keynote presentations. Sabine Herlitchka of Infineon spoke about the perspectives on global challenges from the point of view of a leading technology company. Infineon is a well known chip producer, but is also an active partner in the field of embedded systems. Rolf Ernst from the TU Braunschweig, well known in the European embedded systems community, presented his insights on deriving research problems from complex societal challenges while Heinrich Daembkes of EADS spoke about cyber-physical systems, followed by Rainer Zimmermann from the European Commission, who focused on the strategies for embedded computing research in Horizon 2020. A further keynote address by Laila Gide of Thales entitled "Vision and Facts for the Future of the ARTEMIS Strategy" provided a short introduction about the next steps in ARTEMIS activities as well as calls.

Further sessions focused on the key challenges of embedded systems. The increasing interconnections between safety-relevant embedded systems brings rise to questions about safety and availability. The academic view was presented by Werner Damm from the University of Oldenburg, followed by a report on the results of the research project nSHIELD from Luigi Trono (SELEX Galileo) and, last but not least, an industrial perspective on "Safety and Security in Critical Infrastructures" from Johann Notbauer of Siemens.

The energy efficiency of embedded systems is relevant not only for battery-operated electronic devices, but also as a research topic from the ecological and economic perspective. In Austria, Infineon's work on semiconductors as key enablers for energy efficiency was presented by Herbert Pairitsch. Electric vehicles and their contribution to energy efficiency was presented by Wolfgang Schelter of AVL, followed by Anders Johansson from the Lulea University of Technology in Sweden, whose perspective on energy efficiency in production includes his experience as leader of the IT Production Cluster "Process.IT".

The session on Systems-of-Systems focused on the increasingly important research about the interconnectivity of previously independent systems. Hermann Kopetz and Andreas Kugi (both Vienna University of Technology) presented an overview of the current state of research and the fundamental challenges. Christoph Scherrer from Thales Austria expanded this perspective to industrial applications with his presentation on rail traffic control and management.

In the last session, Austrian colleagues presented the results of some ARTEMIS projects, three of which were coordinated by Austrian institutions – CESAR, INDEXYS and ACROSS – as well as R3-COP. Rounding off the conference, Lisbeth Mosnik of the Federal Ministry for Transport, Innovation and Technology offered a perspective on the changing R&D landscape in Austria.

Michael Wiesmüller commented on the quality and content of these presentations, saying, "We had some really extraordinary and outstanding presentations with a real international dimension."

The ARTEMIS Austria conference very successfully communicated an overview of the activities and results in the field of embedded systems research in Europe. Aimed at a mainly Austrian audience, the conference highlighted national activities as well as transnational activities with Austrian participation. Next year, ARTEMIS Austria will hold another conference with topics related to Horizon 2020 and the future activities of the European ARTEMIS association. The date will be fixed soon.

A final word goes to Michael Wiesmüller: "This conference was a good example of how, after five years of ARTEMIS, certain topics have reached a maturity and we now have an awareness of what the state of the art is in Europe. For instance, in the area of in-car electronics, with collaboration between the OEMs, supply chains, companies developing electronics … we have a very clear pathway to where we should be heading in Europe."

# GEARING UP FOR ARTEMIS 2

## LAST CALL OF THE ARTEMIS JOINT UNDERTAKING

The last call of the ARTEMIS-JU will take place in 2013. The ARTEMIS Industry Association is very actively promoting in the Commission and Member States to have a successor funding programme in place in 2014 to continue the programme of the current ARTEMIS Joint Undertaking and to organise its first call in 2014.

## BACKGROUND

The ARTEMIS Industry Association (ARTEMIS-IA) was constituted in 2007 for two reasons: to be prepared to become the legal private entity in the ARTEMIS Joint Undertaking (constituted in 2008) and to continue the ARTEMIS European Technology Platform. We have been happy that the ARTEMIS-IA membership base grew to more than 200 members in 2011. Apparently, we have been doing well in representing the interests of our members in the ARTEMIS Joint Undertaking and successfully been working to foster the ARTEMIS community with all our initiatives like Working Groups, Labels, events, etc.

## FOLLOW-UP

We are convinced that R&D in embedded systems is and will remain crucial in the next two decades for the innovation of products and services and hence essential for the competitiveness of the European industry on a global scale.

The first signals from the European Commission and Member States on a successor programme are positive. Even if a merger with ENIAC (and maybe also with EPoSS) would occur, as is currently promoted by the European Commission, we strongly insist that this should be limited to an administrative merger of JU's, with separate programmes and separate funding allocations for embedded systems and nano-electronics, in which the ARTEMIS Industry Association and the other Industry Association(s) will play separate roles in defining the contents of the industry-driven (sub)programmes.

## DECISIONS

Decisions will be taken in the first months of the next year. We will keep our membership base informed.

## ARTEMIS-IA MEMBERSHIP

If your company/institute/university is not an ARTEMIS-IA member yet, we encourage you to become a member, because the more members we have the more impact we can make.

Klaus Grimm
*President*
*ARTEMIS-IA*

Jan Lohstroh
*Secretary General*
*ARTEMIS-IA*

# ARTEMIS JOINT UNDERTAKING NEWS

*written by Alun Foster*

## CALL 2012

On 6 September, the ARTEMIS Call for 2012 closed. Twenty-five proposals had been submitted, though one submission was evidently an error and it was declared ineligible. With 24 proposals safely dispatched for evaluation, time to take a look at what the ARTEMIS community had submitted.

Call 2012 was the first to ask for "AIPPs". You can find a more detailed description elsewhere in this magazine, but AIPPs are meant to be very large initiatives, which are challenging to put together and submit. Among the 24 eligible proposals were two such AIPPs, both with exciting content and, on paper at least, a strong ambition to build significantly on Europe's capacity to innovate. In addition to the two AIPP proposals, both for more than €80 m total cost each, 4 "ASP" proposals of more than €20 m and 8 proposals of more than €10 m and another 5 of very close to €10 m were submitted. A distinct step is noticeable to the smallest proposals of around €5 m and less. This indicates that the majority of proposers have understood the "Think Big" message of ARTEMIS, though a few – at first sight quite good – proposals are indeed the smaller range. Hopefully, the proposers have taken the ARTEMIS message of "Large projects supported by smaller, targeted initiatives" to heart, to ensure that the "Impact" required of an ARTEMIS project, even a small one, can be realised.

The €486 m "Total Costs Requested" in the proposals results in a request for funding of €244 m, or a little less than twice the available budget for the Call. A quite traditional pattern of over-subscription can be seen across the countries involved, though the distortion given by the mix of AIPP and ASP proposals and budgets makes a single "Oversubscription rate" figure of rather questionable use for this Call.

Analysing the participation of the different participant types shows that Call 2012 has again attracted a nicely balanced mix of industry and academia appropriate for its market-facing programme, and again a very healthy participation by SMEs. The details of this breakdown are given in the figures.

**Participation by Total Costs**

**Total participations**

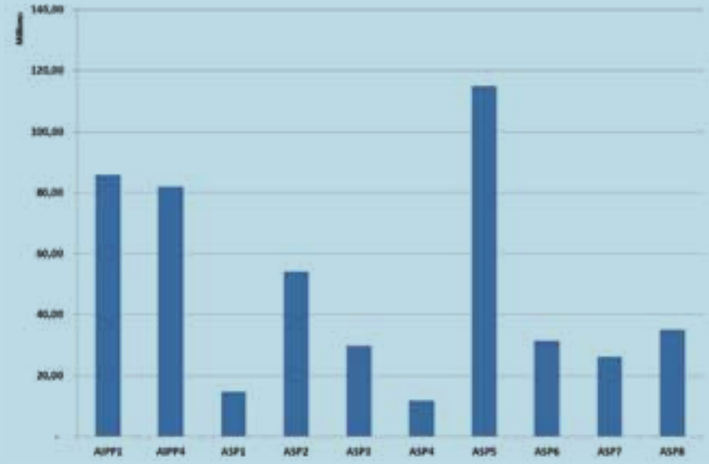
**Unique participants**

## COMPLETED PROJECTS

From a programme coverage standpoint, the introduction of the AIPPs has brought about a significant change in the distribution of total costs across the various AIPPs and ASPs. With AIPP1 closely matching the content of ASP1, this traditionally highly subscribed ASP shows the expected reduction in importance over the other ASPs. Refreshingly, a significant dedication to ASP2 (support for healthcare) has grown while, on the other hand, the ASP5 still appears to be attractive, offering as it does a lower threshold for "further from market" activities while still supporting end-market demonstrators.

At the time of writing, the proposals that successfully passed the technical evaluation are in front of the Public Authorities Board for decisions about funding allocation. We look forward to another interesting, if challenging, set of negotiations once these decisions are known!

The evaluations of the Call 2012 proposals coincided with the ARTEMIS-ITEA Co-Summit held this year in Paris. At that event, past ARTEMIS projects were given recognition: those that had completed were each given a certificate – how could you choose just one to give an award to? They are all special in some way, and without any of them the ARTEMIS programme would not be what it is today. On the same basis, choosing one project to highlight for this article is equally difficult, so I chose one which was presented at the Co-Summit parallel session on "Reliability", which I had the honour to chair. The inset box gives a summary of the CHARTER project and its achievements. It, too, is a fine example of a (very) well managed smaller project that knits very well into the ARTEMIS eco-system around high-reliability design, in particular through its contributions to standards: CHARTER. (More information about this project can be found on their web-site at charterproject.ning.com).




## A SUCCESS STORY: CHARTER

### SUCCESSES:

- Complete, Realtime Java*-based IDE (Integrated Development Environment) for high-reliability software development
- Toolkit includes: Modelling, annotation-code generation, certifiable Real-time Java compiler, Real-time optimised Java Virtual Machine with deterministic Garbage Collection, resource analysis, formal verification, validation and test-generation
- Results made available for the ARTEMIS-CESAR "RTP" platform.
- Demonstrators in Aeronautics, Automotive and Medical domains, referencing ISO 26262, DO-332/ED-217 standards
- Contributions to standards: RTCA SC-205 / EUROCAE WG-71, JCP, JSR(282 and 302), OMG, TOGAF, …
  - Contributed certification guidance for dynamic memory management, that went into Avionics standard DO-332
- Valorisation through a hybrid COTS/OSS model benefits tool vendors while making the key results also widely accessible

(*Java is a popular language for object-oriented programming, particularly in consumer electronics and web applications, and many engineering schools produce designers working with it. Until CHARTER, it has largely not been possible to make use of this language in any real-time critical application. The CHARTER tool-chain enables deterministic, real-time software to be developed using Java, opening up a vast resource of application code and engineering capability for high-reliability product development. It may also be seen as opening a pathway to rigorous, science-based engineering solutions for cost-effective implementations in mixed-criticality systems).

### WORK STILL TO DO:

- Floating point equations are supported but still have the well-known caveats in handling "Not a Number" cases. The strong link with the CESAR project's Reference Technology Platform (RTP) hopes to alleviate this in the near future.
- Full compliance with ISO 26262 (automotive safety standard) could not yet be demonstrated within the timeframe, even though the tools support this capability. Also, AUTOSAR (automotive SW framework standard) is very "C"-centric in its description which complicated proof of compliance of efficient Java code. This can be addressed in the future.

CHARTER

## ARTEMIS BROKERAGE EVENT FOR CALL 2013

***Date***
15 & 16 January 2013

***Location***
London, United Kingdom
Sheraton Skyline Hotel London Heathrow

## HIPEAC CONFERENCE

Forum for experts in computer architecture, programming models, compilers and operating systems for embedded and general-purpose systems. Emphasis is given on either cross-cutting research or innovative ideas.

The 8th HiPEAC conference will take place in Berlin with a ssociated workshops, tutorials, special sessions, a large poster session and an exhibition hall will run in parallel with the conference.

***Date***
21-23 January 2013

***Location***
Berlin, Germany

## WORKSHOP INTEGRATION OF MIXED-CRITICALITY SUBSYSTEMS ON MULTI-CORE PROCESSORS

One-day Workshop on "Integration of mixed-criticality subsystems on multi-core processors" - hosted by the HiPEAC 2013 conference and is a joint collaboration of: ACROSS (ARTEMIS), ARAMIS (BmBF), CERTAINTY (FP7), MultiPARTES (FP7) and RECOMP (ARTEMIS).

***Date***
21 January 2013

***Location***
Berlin, Germany

## IMPORTANT EUROPEAN NETWORKS AND STRATEGIC INITIATIVES

High level event organised by FFG, the Austrian Research Promotion Agency, focussing on EU-Networking and Industrial-led partnerships within the EU R&I-Framework Programme, Outlook for HORIZON 2020. JTIs and PPPs will play a vital role in Horizon 2020 and the event is to inform the Austrian scientific and industrical community on current developments and future plans of JTIs and PPPs and to discuss chances and challenges of involvement

in these networks. One of the speakers is Eric Schutz, Executive Director, ARTEMIS Joint Undertaking.

***Date***
23 January 2013

***Location***
Vienna, Austria

## ARTEMIS SPRING EVENT 2013

The annual ARTEMIS Spring Event 2013 will be in Brussels at Crown Plaza hotel. The event landmarks a very efficient opportunity for industry, R&D and knowledge centres to shake hands during this international event. ARTEMIS will present successes form the past and goals & objectives to create more successes in the future.

***Date***
13 & 14 March 2013

***Location***
Brussels, Belgium
Crowne Plaza Brussels - Le Palace

## SIPC 2013

Call for Papers. The Third IEEE International Workshop on Social Implications of Pervasive Computing (SIPC '13) - in conjunction with the Eleventh IEEE International Conference on Pervasive Computing and Communications.

***Date***
18-22 March 2013

***Location***
San Diego, California, USA

# EDITORIAL INFORMATION

**ARTEMIS Magazine is published by ARTEMIS Industry Association and ARTEMIS Joint Undertaking.**

ARTEMIS aims to tackle the research and structural challenges faced by European industry by defining and implementing a coherent research agenda for embedded computing systems. Its ambition is to help European industry consolidate and reinforce its world leadership in embedded computing technologies.

ARTEMIS Industry Association is the association for R&D actors in embedded systems with 200+ members around Europa. The Industry Association is the private partner in the ARTEMIS Joint Undertaking. It continues the work of the European Technology Platform and is therefore responsible for the ARTEMIS Strategic Research Agenda. The Industry Association creates the meeting place where the stakeholders identify topics for major R&D projects that they want to pursue together, form consortia and initiate project proposals for joint collaboration, and building of ecosystems for embedded intelligence.

The ARTEMIS Joint Undertaking is a Brussels based organisation legally established in February 2008 and gaining autonomy in October 2009. It is a Public Private Partnership with the EC and 23 participating Member States. The ARTEMIS Joint Undertaking adopts a commonly agreed research agenda closely following the recommendations of the Strategic Research Agenda developed by the members of ARTEMIS Industry Association. The ARTEMIS JU will manage and co-ordinate research activities through open calls for project proposals through a 10-year, €2.5 billion research programme on embedded systems.

ARTEMIS Magazine provides information on the developments within the ARTEMIS community. Its aim is to keep the ARTEMIS community and beyond updated about the Association, Joint Undertaking, programme status & progress, achievements and events in embedded systems. An online version of ARTEMIS Magazine is available on www.artemis-ia.eu and www.artemis-ju.eu

ARTEMIS


## CONTRIBUTIONS

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