ARTEMIS Magazine is published by ARTEMIS-IA and ARTEMIS-JU. The magazine provides information on the developments within the ARTEMIS European Technology Platform, ARTEMIS Industry Association and ARTEMIS Joint Undertaking.

REMIS

August 2010 NO.7 ~ ARTEMIS Strategic Research Agenda

Mobile and cloud power enabling massive scalability and opportunities for growth

WHAT THE FUTURE HOLDS ..



What does Neelie Kroes think about ARTEMIS?



Rolf Ernst states embedded systems to be the nervous system of society.

Contents

- PAGE 2 ~ JAN LOHSTROH
- PAGE 3 ~ ERIC SCHULTZ
- PAGE 4 ~ DIGITAL AGENDA FOR EUROPE
- PAGE 8 ~ NO PAPER TIGERS
- PAGE 10 ~ THE IDEAL HOUSE
- PAGE 12 ~ ARTEMIS SUMMER CAMP 2010
- PAGE 16 ~ SRA 2010 THE NEW ORDER
- PAGE 19 ~ ARTEMIS DERIVING RESEARCH PROBLEMS FROM COMPLEX SOCIETA L CHALLENGES
- PAGE 23 ~ ARCADIA ALIGNING EUROPEAN NATIONAL AND REGIONAL RESEARCH AGENDAS
- PAGE 26 ~ FIRST ARTEMIS TECHNOLOGY CONFERENCE
- PAGE 28 ~ CALL 2009 PROJECTS UP AND RUNNING
- PAGE 29 ~ POLLUX
- PAGE 30 ~ **R3-COP**
- PAGE 31 ~ CHIRON
- PAGE 32 ~ CO-SUMMIT 2010
- PAGE 34 ~ CPS WEEK 2010 IN STOCKHOLM
- PAGE 35 ~ CALENDAR
- PAGE 35 ~ EDITORIAL INFORMATION



FOREWORD

PLENTY OF HIGHLIGHTS

ARTEMIS is now in full swing and we are indeed very pleased to note the acknowledgement given by new EU Commissioner Neelie Kroes to the importance of embedded systems. Her contribution to the ARTEMIS Magazine underlines her commitment and confirms our own belief in the centrality of the role ARTEMIS is playing in the embedded systems world in Europe.

Other highlights include the importance attributed by Aldo Covello, representing the Public Authorities, to embedded systems and the fact that the ARTEMIS-JU is a JTI with the involvement of the member states. Jan van den Biesen, the ARTEMIS representative in the JTI's Sherpa team that is advising the Commission on improvements to current and future JTI's, gets the opportunity to say a little more about the Sherpas report in our magazine.

The Summer Camp 2010 was the most recent contributor of input to the ARTEMIS-SRA 2010 to be issued later this year and several participants report on this event, such as the co-chairs Laila Gide and Tatu Koljonen who talk about the process involved while Rolf Ernst, who gave an excellent key note in the Summer Camp, describes his vision of the future. He states that embedded systems are the central nervous system of society. Furthermore, Sergio Bandinelli and others provide an overview of the ARCADIA project, also as input for future programmes.

A novel activity of ARTEMIS is the ARTEMIS Technology Conference organised by one of the running projects in the ARTEMIS-JU. We hope to see more initiatives like this.

As for the call 2009 developments, we highlight a few projects as well as report on the CPS week in Stockholm. Finally, we are very pleased to announce the Cosummit 2010 with ITEA2. The theme of this years Co-summit is "Mobile and cloud power enabling massive scalability and opportunities for growth". We certainly hope to look into the future with you from the past in Belgium's famous historical city of Ghent!

Harbon

Jan Lohstroh

The JU office exists to serve the ARTEMIS community of stakeholders, which means there will be constant communication between the JU Office and all the partners, including the Commission, the ARTEMIS Member States and ARTEMIS Industry Association.







FOREWORD

As I write this, on a sunny July day, the ARTEMIS Call for 2010 is about half way through its process. At the end of March, 72 eligible proposals comprising about 1000 partners had been submitted. These were each assessed by pairs of independent experts, whose feedback was brought together at a panel meeting in Brussels. Each proposal's feedback was reviewed and edited, where needed, for accuracy and clarity while at the same time being subjected to a consistency check. That way, the Joint Undertaking could be confident that all project proposals were given the best and most useful feedback possible.

From the point of view of the programme, and based on the inputs provided by the experts, the coverage of the various ARTEMIS Sub Programmes can be described as 'Very Good'. The distribution of the Full Project Proposals can of course change, especially when proposers take to heart the advice to sharpen the focus of their proposal onto the main sub programme they address. This is a clear sign that the vision and goals of the ARTEMIS programme are maturing in the minds of the European embedded systems R&D community who are – as ever – responding immaculately.

With about five weeks to go before the deadline, I imagine the 70 or so project coordinators and the people at those 1000 partners are all slaving away over their proposals. Meantime, in the ARTEMIS JU office, we are busy getting the 60 or so experts lined up and finalising all the other logistics so that the FPP evaluations can run smoothly and efficiently. There may be other nice things to do on a sunny July day, but there you go. I wish you pleasure reading ARTEMIS Magazine 7.

1

Eric Schutz



Brussels ~ European Commission

DIGITAL AGENDA FOR EUROPE Ms. Neelie Kroes is since February 2010 Vice President of the European Commission and Commissioner for the Digital Agenda.

From 2004-2010 she was the European Commissioner for Competition. Ms. Kroes is responsible for media and information society issues such as telecoms and ICT research. One can imagine that the ARTEMIS community is curious to meet 'its' new Commissioner: Ms. Neelie Kroes. Therefore ARTEMIS Magazine is honoured to present this interview. Meet the commissioner! Ms. Kroes can you put the Digital Agenda for Europe in context with the Commission 2020 strategy? The Digital Agenda is the ICT element of the 2020 strategy. It has been prepared with a great deal of urgency because there is increasing recognition that solving each of Europe's grand challenges involves an ICT component. While the driver of investment in ICT often has an economic base, and past strategies have tended to focus on one aspect such as telecoms, or IT, this new Digital Agenda takes a different approach. We are saying that Europe needs a comprehensive strategy that aims to maximise both the economic and social potential of ICTs. That is the only way we are going to achieve the sort of smart, sustainable and inclusive growth that President Barroso envisions.

societal problems. I am especially keen to support any ICT system that is trusted by users and which is cost effective. I think embedded systems are naturally well placed to meet those standards. Moreover, embedded systems have a proven track record in many aspects of our lives, from traffic lights and credit cards to energy use.

One of the main challenges in the Digital Agenda will be to ensure that we can generate the Europe-wide uptake and sharing of innovation in embedded systems. So in that respect it is easy for me to support the philosophy of the self-sustaining ecosystems that the ARTEMIS-JU is working on. I think it is important that ARTEMIS projects

> continue to operate through multi-country, multi-organisation R&D partnerships. These partnerships work best when they comprise a range of actors along the value chain.

How do you see the ARTEMIS innovation strategy in a broader context and do you believe it fits into the Digital Agenda? Research is the driving force behind innovation in Europe. And, more specifically, the culture of ARTEMIS is an

example of the culture Europe needs in terms of innovation. It has the right ethos - that of

To give people a 'wake-up call', I would say that without the Digital Agenda there will be no long-term recovery from the crisis. ICT investments are the source of half of our productivity growth and they allow us to fix some of our biggest problems - like the fact that there will not be enough workers to support our ageing population unless we make better use of ICT. Speaking of eHealth solutions, I think they also show that we are focused on ideas and projects that will improve quality of everyday life. This is not an abstract agenda – it is a very

I think this agenda is ambitious but routed in common sense. How will governments and companies be able to meet their massive pension liabilities? How do we get around the shortfall of 20 million carers Europe will experience by 2025? How can we quickly reduce our carbon footprint without also hurting the fragile economy? To me it is clear that the answer is digital. And now my job is to go and make the case and build the partnerships that will enable ICT to contribute to those 2020 goals.

concrete plan for helping citizens and businesses.

And within that I see an important role for ARTEMIS - you are at the heart of tackling those societal challenges. ARTEMIS has a strong application drive, which is exactly what is needed to better link research, application and deployment in areas where Europe wants to lead.

Can you subscribe to the idea of the key role of embedded systems in handling societal problems and how do you see this fit with the Digital Agenda? Yes, besides their economic contribution across all sectors, embedded systems definitely have a key role in fixing

bringing together all the key players across all the sectors who deal with embedded systems - and a well thought-out structure. I hope you can do more to include SMEs at the heart of your work.

Most importantly, I hope you see that you are part of a mindset change that Europe desperately needs. We aren't going to replicate Silicon Valley's success because I proposed an agenda in Brussels, but we might be able to do it by breaking down barriers and forming lots of clusters and direct connections at the level of ARTEMIS projects. I am passionate about creating the conditions where people who share a passion and specialism can work together, even across established barriers: a true level playing field. I will support you in this wherever I can – so don't underestimate the positive impact you can have through your active participation in these research projects.

In these respects, I think ARTEMIS is about much more than just technology. In fact, a lot of our difficulties are about everything except technology – they are about the problems in trying to develop borderless, entrepreneurial, inclusive and competitive research and business cultures. If we develop such cultures, they are priceless – they are worth much more than any funding the EU can provide.

How does the future look from your perspective for ICT research in Europe in the coming years? Positive but difficult. The funding of research (and of its ICT component) was significantly increased through FP7. Together with Commissioner Geoghegan-Quinn, my aim is to continue this trend in FP8. But governments are under pressure everywhere to trim costs, so we

These partnerships work best when they comprise a range of actors along the value chain."

Ms.Neelie Kroes is the current European Commissioner for Digital Agenda Factsheet:

- Grew up in Rotterdam and helped to build family transport business.

- Studied Economics at Erasmus University, before working there for six years as an Assistant Professor.

 First elected to the Dutch Parliament for the liberal VVD party in 1981 and served for seven years as Minister of Telecommunications – amongst other responsibilities.

- President of Nyenrode University from 1991-2000, and member of many corporate and charitable boards, including Lucent Technologies and Volvo.

- First post at the European Commission was Commissioner for Competition 2004-2010.

need the best case possible. And there is more and more competition from emerging economies and from the often more entrepreneurial culture in the US. So important efforts are required to keep our talents in Europe and to actually deliver on the Digital Agenda.

Also, we can't separate the hardcore research aspects of the Digital Agenda from the political and social debates that surround it. What is the point of more and more embedded systems supporting a huge Internet of Things, if the public just does not trust it? That is just one example. My point is that we not only have to make the case for funding, and build a better entrepreneurial culture to support our research, but we also have to keep our research and technologies anchored in European values. That is the way to get sustainable sources of funding and support.

How do you envisage the link between research and innovation and the

role of PPPs in this context? I think my speech at the PPP conference in Valencia in April is a good guide to my detailed thoughts on PPPs. Briefly though, I would say that PPPs are essential tools for innovation. They allow the mobilisation of funding for high-risk projects and they can be useful for injecting the expertise needed to find markets for our ideas. European-level coordination is also important since it's not enough to just have a PPP structure – you need also to coordinate to be efficient. If we get both these things right then Europe can remain an important global player.



Do you see a special role for SMEs in the Digital Agenda? Absolutely. We have to stop just paying lip-service to small and medium-sized enterprises (SMEs). SMEs are the engine room of job creation. They represent such a high percentage of our businesses after all, so how can it be otherwise? The problem seems to be that everyone likes the idea of supporting start-ups and SMEs, but excuses are often found when it comes to implementation. I fully agree that it may take more effort to include these smaller or less experienced businesses in our funding processes, and to prevent misuse of SME incentives: but the price of not taking on this challenge is far greater. ARTEMIS is doing very well in this regard – I understand that a quarter of the project participants are SMEs. And all participating countries in the ARTEMIS-JU offer advantageous funding rates for SMEs. But it is also clear that those participants use a much smaller portion of the budget than their numbers warrant. So there is room for improvement, and I certainly encourage the ARTEMIS-IA SME working group to find a bigger role for SMEs in future calls. I want to see SMEs at the heart of ARTEMIS projects, and not just on the edges. We will know that these efforts are truly working when SMEs are setting up and leading ARTEMIS-JU projects.

Thank you Ms. Kroes.

The Embedded System Challenge for the Future of Europe **NO PAPER TIGERS**

The Public Authorities Board represents public partners in the ARTEMIS Joint Undertaking, Public Private Partnership, whose participating member states have nominated their board representative. You may, from a distance, get the impression of a paper tiger at work but the role of the public authorities and European Commission must not be underestimated in terms of the continuity of the ARTEMIS JU. So we are indeed delighted that this article throws a little light on the matter, its author being Aldo Covello, the first elected Chairperson of the Public Authority Board of the ARTEMIS Joint Undertaking.

research and development in the best possible way and, therefore, to maximise their impact on our continent's global competitiveness.

Many instruments have been or are being developed to achieve such a goal. The process started at the beginning of the new millennium with the European Technology Platforms, used by all the major industrial European stakeholders to define, bottom up, the research themes and the main research activities needed for Europe. At the time, the ERANET projects helped national public authorities to exchange information and best practices on national research programmes and procedures. Furthermore, the ERANETs also gave member states the possibility to cooperate on pilot activities, albeit to a very limited scale.

Nowadays, it is the new Joint Programming Initiative that is stimulating member states to individuate some key societal challenges where coordination between member states is mandatory. However JPI targets mainly public research and does not involve Community funds, apart from a limited contribution to establishing the networks. Parallel initiatives, on the Community side, are the Public Private Partnerships which are, essentially, a new way to use the existing Framework Programme's instruments.

A EUROPEAN RESEARCH AREA ~ At present, the most important challenge for research in Europe is, in my opinion, the creation of the European Research Area (ERA), which means among other things the creation

the European Research Area (ERA), which means, among other things, the creation of an environment where all the European stakeholders can coordinate their efforts to use the limited resources available for ARTEMIS AND ENIAC ~ In my opinion, ARTEMIS and ENIAC are the only two JTIs that closely approach the original goal of ERA. ARTEMIS is the only place where all the European stakeholders, public authorities, both at Community and national level, industry, research institutes and academia can coordinate their research programmes and needs for the benefit of Europe and its citizens. The other three JTIs presently running exclude, a priori, the participation of member states while the so-called article 169 focuses mainly on the definition of a programme of national programmes where Community funds are simply a top-up.

This brief digression underlines the importance of ARTEMIS as the only tool able to gather together all the European actors operating in the embedded systems field. The ARTEMIS modus operandi is one of the best candidates for the effective implementation of ERA. ARTEMIS was not born of thin air but emerged from the long experience gained running two important EUREKA cluster projects: ITEA and its successor ITEA 2. While both these clusters achieved impressive results in their field, their operational procedures showed some significant weaknesses along with many important strengths. The main weaknesses are unanimously recognised as the lack of synchronisation of funding decisions and the non-involvement of Community programmes and funds.

That's why, about five years ago, some people, and I had the honour to be part of this small group, started to think about the future of research in the embedded systems field. Initially, I must admit, our ideas about it were quite confused but one thing was very clear in our mind: we wanted to keep all the strengths of ITEA and add to them funding synchronisation and full participation of the Community programmes and funds.

NEED FOR CONVERGENCE ~ After three years of very hard work, ARTEMIS and ENIAC were born. It was a very difficult task, creating something completely new, but in the end we got the desired instruments or, at least, we were convinced we had them. It was implicit in the way ARTEMIS was created that it should have been the only European instrument to deal with embedded systems. The coexistence of another tool operating in parallel and independently in the same sector would have endangered the coordination among all the stakeholders and the potential benefits.

The last two years have shown us, on the contrary, that both ARTEMIS and ITEA2 are still running in parallel and it is now clear that both of them will continue to operate at least until their natural end in 2013. Luckily, many public authorities, enterprises and individuals are currently involved in the management of both programmes and therefore the desire for coordination is not completely lost. But the situation we are now facing is not the ideal one foreseen two years ago.

There are, in my opinion, at least two main reasons why the desired convergence between ARTEMIS and ITEA 2 did not take place: the only partial overlap in respect of technical interests and, most importantly, the different orientations of their projects. In ITEA 2, projects are essentially multi-lateral projects which, primarily, have to fit national priorities very well. In ARTEMIS, by contrast, the projects must have an European character.

These differences are quite important and if they are to be accommodated, major changes are needed to the existing tools. Therefore, in my opinion, it will not be possible to change the ARTEMIS regulations or statutes before its natural termination date. This does not mean that we must give up on our goal of overall coordination of R&D efforts in this important field. Quite the contrary, we must work even harder than three years ago to find a way to implement the idea of "one programme, different tools". One unique programme overseeing the coordination and definition of a global vision and a Strategic Research Agenda (SRA), with two, or even more, instruments to implement the SRA using procedures and methodologies that are more suited to the different needs of the various European actors.



Aldo Covello, Chairperson of the Public Authority Board of the ARTEMIS Joint Undertaking:

The most important challenge for research in Europe is the creation of the European Research Area and ARTEMIS, one of the very few places where all the European stakeholders can coordinate together their research programmes, is the best candidate for the effective implementation of ERA.

However, to fully achieve this goal, ARTEMIS should evolve, after year 2013, in accordance to the principle: "One programme, different tools".

THE IDEAL HOUSE

The Sherpas report may not have reached the Everest of its ambitions but the recommendations it has produced will certainly help to establish a base camp for a successful assault on the steep ascent to the peak of public private partnerships. Jan van den Biesen, Vice President of Public *R&D Programmes at Philips Research, has* been around since the start of European joint technology initiatives (JTIs), in particular in preparing the ARTEMIS joint undertaking established to implement the JTI in the embedded software domain. He is co-author of the Sherpas Report whose recommendations call for a fundamental shift to resolve current shortcomings and stalemates as well as create a vital balance between public and private stakeholders in future JTIs and other Public-Private Partnerships (PPPs) in the research domain.

Why the Sherpas Report? I should point out here that the report is not the opinion of the European Commission (EC) or the Joint Undertakings but constitutes the recommendations of five individuals of the existing JTIs and two individuals from PPPs in FP7 as prospective JTIs. Of course, given its stake, the European Commission was involved in the discussions and I, as a representative of ARTEMIS did discuss matters with Jan Lohstroh, Klaus Grimm and Eric Schutz.

So the Sherpas report is the result of an investigation by the seven Sherpas into the less than enthusiastic response from industry to the way of working in the current JTIs. In the first place, it had already been a painstaking process lasting three to four years to set up the JTIs, in part because it was terra incognita for everyone concerned. However, since the Joint Undertakings vested with the task of implementing the JTIs had to have the status of Community Body, this meant that they were also subject to internal EC regulations. This lopsided the balance in favour of the public part of the PPP since the EC was the one exercising all the controls and imposing its own rules on the partnership.

Industry didn't take too kindly to this I assume? No, it was not at all comfortable with the situation. Some industry sectors voiced their displeasure more emphatically than others. This standoff prompted a meeting between the respective European Commissioners and the JTIs in an effort to identify where the complications lay – mainly red tape it must be admitted – and what could be done to alleviate these problems. It was decided to initiate the Sherpas Group comprising representatives from the five JTIs (later extended to include two PPPs in FP7) look into the issue and come up with a set of recommendations. In essence, the upshot was that if future PPPs are to create value for industry and society, they need to have a special status within the EU Financial Regulation with more tailor-made, fit-for-purpose rules in a lighter regulatory regime. The need for a flexible approach was clear.

What's the current status? The report was finalised in February this year and sent to the outgoing and incoming commissioners as well as EC president Boroso. A letter from the incoming commissioners Kroes and Geoghan-Quinn contained a positive message. The report was also sent to the European Parliament and we hope to set up a meeting soon to see how we can move things along. But the best news is that the Commission has lived up to expectations. It has taken the opportunity to propose changes to the EU Financial Regulation. It put forward to the Council of Ministers and the European Parliament a proposal in which much of what we recommended in the Sherpas Report has been taken on board to enable more flexibility in the way public private partnerships are dealt with. This means that if Council and Parliament were to go along with the EC proposal, we would have a more flexible approach for PPPs by the beginning of 2012. This would represent good timing since it would be in time for the new Eight Framework Programme period, starting in 2014, and at the time new JTIs are expected to be initiated.

Do you foresee any pitfalls? The respective finance ministries of the member states and the Budget Control Committee of the European Parliament will have to lend support to the proposals. Somewhere along the line there must be a balance – the investors, or public partners – want to ensure that the tax payers'

" The positive news about ARTEMIS is that through the joint efforts that have been made by all the stakeholders, a new way of working has been achieved, pooling financial and R&D resources from Commission, member states, industry and public research organisations. But it has taken four years."

Jan van den Biesen

Jan van den Biesen



Jan van den Biesen, Vice President of Public R&D Programmes at Philips Research, was for ARTEMIS involved in the JTI Sherpa's Group. The JTI Sherpas' Group report has been set up at the initiative of Commissioners Potočnik

and Reding to take stock of the first experience with setting up Joint Technology Initiatives (JTIs) under the Seventh Framework Programme. The JTIs, such as ARTEMIS and ENIAC, represent the first experience with setting up public private partnerships in research at the European level. The Sherpa's report is titled: 'Designing together the 'ideal house' for public-private partnerships in European research'. The final report was published beginning 2010.

money they provide is properly spent, according to the rules. However, excessive control is one of the problems of being a Community body (or Union body in the terminology of the new EU Treaty). It compounds the complexity. Hence the need for a fundamental shift in thinking for future JTIs and other PPPs. Meanwhile we are doing what we can within the current boundaries to introduce improvements, but willingness has to be complemented by authorisation.

What is the impact of these machinations on ARTEMIS? Well, it will have major bearing on a continuation of ARTEMIS after 2013 and to a lesser extent also on the current situation. Our plea is for more member state involvement in terms of countries living up to their financial expectations.

For this to happen, a balance has to be found in the mechanism of public authorities jointly agreeing on the selection of proposals, ranking quality and accounting for the vested national interests of the member states as co-financiers. Trust is another important issue.

Some way still to go. But it seems that base camp has, at least, been

established. Indeed. What we have managed to achieve is to create a cornerstone but while some of the more detailed recommendations could be implemented in current JTIs, most will probably have to wait until the next generation.

Thank you Jan van den Biesen.

Written by Chris Horgan

ARTEMIS SUMMER CAMP 2010

F

Rome was the venue for the ARTEMIS Summer Camp 2010 on 9 and 10 June organised by the Strategic Research Agenda (SRA) Working Group of the ARTEMIS Industry Association. Two topics were central: the update of the ARTEMIS Strategic Research Agenda which is currently undergoing revision, and the preparation of the Annual Work Programme 2011 for the ARTEMIS-JU call to be launched in 2011.





The ARTEMIS Summer Camp is a strategic meeting for the research agenda in embedded systems in Europe. Why is this meeting important for your company? IKERLAN-IK4 is a research centre for the Mondragon Group, one of the leading industrial and economic groups in Spain. One of IKERLAN-IK4's six lines of research is "embedded systems", so ARTEMIS is a key platform for us when it comes to developing the centre's strategy, and that is also why IKERLAN-IK4 is on the ARTEMIS Steering Board. On the basis of our experience in embedded systems, we feel that it is important to participate in the review of the new strategic agenda, and to maintain contacts and establish new ones with other centres, companies and universities affiliated to ARTEMIS. The companies we collaborate with also require us

Antonio Pérez Berdud is Electronic Area Manager and Embedded Systems Research Line Coordinator at IKERLAN-IK4 He works as Embedded Systems Research Line Coordinator at IKERLAN-IK4, in charge of the

embedded systems research strategy.

For over 10 years, he has been accumulating experience in the research and development centre lkerlan-IK4 S. Coop, which is part of the Mondragon Group in Spain. As a project leader and a research scientist in real-time and safety-related/critical embedded systems, he is currently head of the Electronics Department and also the coordinator of the embedded systems research line. to operate as a connecting hub with a global network, and events like the ARTEMIS Summer Camp enable us to keep up and improve contacts in the European ecosystem of embedded systems.

Why did you participate in the ARTEMIS Summer Camp? Is there any specific reason why you were sent? For example: are you active in the development of your company's strategy? IKERLAN-IK4 is conducting its Strategic Plan for 2009-2012, and since it fell to me as coordinator of the embedded systems group to lead the specification of the specialisation plan for the coming four years, I was required to participate actively in drawing up the strategy for our research group. Our team is subdivided around the three priorities of our strategic agenda (Design Methods and Tools, Reference Designs and Architectures, and Seamless Connectivity and Middleware), which is reflected by the synergy with ARTEMIS. The reason why I attended was mainly to check out the alignment with the new strategic Agenda and endeavour, as far as possible, to contribute towards it with our vision on some subjects. Apart from that, the Summer Camp is, of course, a good place for meeting up with the embedded systems "family" and making contact with collaborators in the preparation of projects for ARTEMIS, FP7 and others.

What do you get out of the ARTEMIS Summer Camp? It's an excellent opportunity to obtain first-hand information on the calls and actions carried out by ARTEMIS, and this enables you to orientate yourself and appraise your own technology strategy. It is extremely difficult to influence the ARTEMIS Strategic Agenda but the comments are well received by the different working groups. At the end of the day, it's a wonderful chance to get together with potential partners and collaborators and find out about new proposals and ongoing projects.

INTECS S.P.A @ ARTEMIS SUMMER CAMP

The ARTEMIS Summer Camp is a strategic meeting for the research agenda in embedded systems

in Europe, why is this meeting important for Intecs S.p.a ? Intecs S.p.a. has been involved in managing all the phases of the lifecycle of software for embedded systems in many application domains for more than The ARTEMIS-IA Summer Camp is the discussion forum for topics that are relevant for the industrial strategy that is leading for the programme of the ARTEMIS Joint Undertaking. This annual event provides the members of ARTEMIS Industry Association with the opportunity to have their say in the annual cycle of "renewal" by proposing ideas to the ARTEMIS-IA community on strategic issues like new potential sub-programmes or other new concepts on innovation in embedded systems.

ALL ROADS LEAD TO ROME ~ The ARTEMIS Summer Camp is a membersonly event for the ARTEMIS Industry Association. About 95 members

30 years, and we made a strong commitment to ride the wave of evolving technologies and new systems in each of them. For this reason we joined the ARTEMIS Industry Association and we are strongly interested in building partnerships with European industry and research leaders, by means of the ARTEMIS JU projects, and, hence, being an active player in the market ecosystem of embedded systems.

Why did you participate in the ARTEMIS Summer Camp? Is there a specific reason to send you?

For example: are you active in the development of the strategy in your company? I have significant experience in managing research projects and establishing partner connections, especially in the scientific and technological areas relevant to ARTEMIS.

What is your finding of the ARTEMIS Summer Camp?

Summer Camp 2010 was rich in interesting and constructive discussions, concerning both the Strategic Agenda and the emerging roles of ES in everyday life. I believe the latter is of paramount importance and it has been addressed in detail, including the fusion between emerging technologies, methodologies and the needs of today's society (healthcare, ageing society, etc.).

I was delighted to find that, thanks to the synergy among industrial and academic stakeholders, ARTEMIS is actually promoting the cohesion between academic research, industrial and marketing know-how.



Luca D'Onofrio is since 2009, Automotive SW Engineer with Intecs. S.p.a. He gained a Bachelor degree in ICT Engineering and a Master's in E-Government and

E-Document Management and spent several years in SW development for scientific applications as SW analyst and designer. He acquired considerable experience in distributed parallel computing paradigms and architectures and in semantic technologies. He previously worked as a GRID Engineer at I.N.F.N. and as a SOA Engineer at the Italian National Research Council. registered this year, proof of the active contribution made by the ARTEMIS community to the Annual Work Programme and Strategic Research Agenda. Presidium member Giovanni Barontini opened the Summer Camp and welcomed the participants to Rome. After Laila Gide and Tatu Koljonen had presented the targets of this Summer Camp, Eric Schutz outlined the status of the ARTEMIS programme.

Six selected project presentations showed the audience how projects contribute to the ARTEMIS SRA high-level targets. After lunch the discussion turned to new ideas for the Research Agenda and Annual Work Programme for 2011. A number of relevant proposals was raised and presented in the following plenary session.

For the first time a social event was part of the Summer Camp agenda to continue the discussions in an informal

setting and a relaxing atmosphere. A guided walk through the ancient city of Rome and a cosy dinner created the perfect informal atmosphere.

CHALLENGE AND APPLICATION ~ The second day was dedicated to the SRA update scheduled for 2010. A keynote speech by Rolf Ernst on how to derive research problems from complex societal challenges inspired discussion among the participants. Laila Gide and Tatu Koljonen reported on the progress and status of the SRA 2010, which was followed by breaks to discuss the several views on the SRA. These were: Market & Investment in ES research, Research Priorities, Future Positioning and Innovation Eco-systems. A very lively discussion concluded this Summer Camp in the closing plenary session.

STATUS ARTEMIS STRATEGIC RESEARCH AGENDA ~ One of the main extensions in the new SRA is societal challenges like smart cities, energy and ageing population. The SRA 2006 is based on a matrix of application and R&D topics. The new SRA 2010 takes this a significant step further by making the link between societal challenges and the application and R&D topics in this matrix more visible and highlighting the connections that describe scenarios of potential future solutions for today's real-life issues.

Some of the emerging new important research topics in the domain of embedded systems are mixed criticality issues, safety critical systems and

On summer camp members of ARTEMIS Industry Association give their highly valued input to the ARTEMIS Strategic Research Agenda for Europe.



web services. Mixed criticality is the integration of different safety critical levels in one system without causing interference to each other. Other topics raised during the discussions are actuating in health care (e.g., embedded artificial organs, robotics), models of biological systems (e.g., brain models) and interfaces to biological systems. Higher visibility

for multi-core systems and hierarchies of embedded

systems were also identified as important elements in updating the industrial priorities in the SRA.

A NEXT STEP ~ Other discussions identified are that embedded system technologies will become more and more cross-domain and face an increase

in the interoperability requirements. This development will create new options for economic growth and progress while data security and privacy of information in individual and industrial space will become major issues in interoperating embedded systems interconnected through internet.

In summary, the main focus of the ARTEMIS SRA is the "system" aspect of embedded systems whereby "system" includes HW and SW integrating physical and "virtual" environments. The ARTEMIS SRA builds on a new crossdomain approach to support a variety of applications, services and solutions for societal challenges.

INFINEON @ ARTEMIS SUMMER CAMP

The ARTEMIS Summer Camp is a strategic meeting for the research agenda in embedded systems in Europe, why is this meeting important for Infineon UK? Infineon UK designs microcontroller and multi-core technology for real-time embedded systems, principally for automotive applications. We see close alignment between the aims of ARTEMIS and our R&D activities: the Summer Camp is a great opportunity to inform and shape both the future of ARTEMIS and our own strategic thinking. Collaborative R&D is quite new for Infineon UK so we are keen to learn and to get more involved. This collaborative approach also helps to raise our profile.

Why did you participate in the ARTEMIS Summer Camp? Is there a specific reason to send you? For example: are you active in the development of the strategy in your company? Eighteen months ago Infineon UK decided to get more involved in collaborative R&D. Since then I have been responsible for.all of Infineon. UK's collaborations.... and funded projects. I coordinated our participation in three ARTEMIS 2009 proposals, two of which were successful. Both projects, POLLUX and RECOMP kicked off beginning this year. More information can be found on the ARTEMIS website.

Encouraged by this success, we're looking for greater involvement in future.

What is your finding of the ARTEMIS

Summer Camp? I see ARTEMIS as a community of projects, all contributing to common goals. I found a strong sense of community and cooperative spirit at the Summer Camp which reinforced this view.

I valued the opportunity to participate in discussions on the 2011 AWP and feel that I now have greater insight into its structure and content.

The Working Groups were new to me; I found the 'Centres of Innovation Excellence' particularly interesting given the level of innovation in microelectronics concentrated in Bristol and the South West of England.

This was Infineon UK's first involvement in ARTEMIS-IA and I don't think it will be the last.



Dr. Helen Finch is R&D Funding

& Collaborations Manager at

Infineon UK. She is responsible

development and coordination

of collaborative R&D projects.

for the identification,

She has worked in the semiconductor industry

for more than 20 years and has been with

Infineon since it started in the UK in 1999.

SRA 2010 - THE NEW ORDER

The Strategic Research Agenda (SRA) 2006 generated an overall perspective of the embedded systems evolution in which ARTEMIS as the first Joint Technology Initiative (JTI) would bring European leadership in this area. The JTIs are an industry driven form of the PPP (public-private partnership). As part of this initiative, opportunity is given to the stakeholders to allocate major public and private resources to address the major challenges and define new rules of business in the sector.

IMPACT AND PARADIGM CHANGE ~ "The revolutionary impact and paradigm change in the ARTEMIS programme have to do with implementing and spreading embedded systems to seed the ambient intelligence of the future," explains Tatu Koljonen, co-chair of SRA WG. In the past few years, ARTEMIS has made good progress in implementing the main goals and objectives the SRA and is now attracting new and significanty interest in many fields and applications. Therefore, growing importance for including the grand societal challenges has prompted the new version of the SRA.

An expert group comprising best European minds from academia and industry and coordinated by Laila Gide and Tatu Koljonen has engaged in recalibrating the SRA, as it were, to provide scientific and technical input that will depict how embedded systems can help to solve grand societal challenges. This will strengthen the interplay between ARTEMIS and the other initiatives, and so foster the intellectual prominence of Europe in posing the relevant questions for embedded systems in this new world order.

CENTRALITY OF EMBEDDED SYSTEMS

~ Embedded systems are essential to the

digitisation of everyday life - more and more they permeate all aspects of life, from personalised healthcare to increasingly burning and important issues such as citizen empowerment and the affordability of various services. They boost technical capability, mobility, quality of life as well as business and added-value creation. It is vital to link the grand societal challenges to the technical challenges faced by embedded systems, such as energy awareness and limited power consumption for systems, ease of use, the 'always connected' mode and safety and security (the very essential aspect of 'trust'). Europe has to build on its leading position, for example in the field of automotive and machinery equipment, and invest in more and better embedded systems in areas in which it is lagging behind. If Europe is investing in more in embedded systems, it will better answer application needs. Embedded systems form the interface between physical and virtual world and give competitive advantages that can be gained by introducing them to other technical areas and business domains.

REFOCUSING ~ Laila Gide points out that the ARTEMIS SRA describes the strategic baseline of ARTEMIS. The strategic direction of European R&D is aligned with the needs of our society. As one major advancement in comparison to the SRA 2006, the new SRA 2010 will make stronger links between societal challenges, applications areas and R&D topics more visible and point out their connection.

The SRA 2006 Strategy matrix contained 'horizontal' components (Reference Design and Architecture, Seamless Connectivity and Interoperability, and Design Methods and Tools) and 'vertical' application contexts. Given the regulatory, research and industrial evolutions that are occurring with overlapping agendas, a redefinition of the ARTEMIS agenda is essential. While the matrix approach of the SRA (2006) is still generally valid, the explicit addition of the grand societal challenges dimension (fig. 2) does mean that the agenda requires redefinition the role and position of ARTEMIS and Europe.

Tatu Koljonen adds: "Key points of reference in the redefinition process are: FP7, Eureka and national programmes as well as the ENIAC JTI, the new emerging PPPs – Factory of the Future, Energy-efficient Buildings, Green Cars and Future Internet – as well as other ETPs, such as EPOSS, and also the EIT ICT labs. "A JTI aims to evoke a systemic, comprehensive change involving a number of sectors whereas the ITEA projects are complementary to improving the existing value chain and FP7 is more research oriented. The EIT ICT Labs are needed to incorporate the changed paradigm into the curricula of students."

FIVE KEY CHALLENGES ~ In brief, the new version of the SRA identifies five key challenges as candidates in the pursuit of the right questions. The main focus on a 'system of systems' (already adopted by the European Commission for the coming calls) sees a shift from syntax (form and structure) to semantics (meaning) in which ontology engineering can offer a direction towards solving the interoperability of devices, systems, and services. With different systems for systems comes the need to cope with mixed criticalities in order to provide the required level of dependability and security, for example. This prompts the question of certification - how can this be done in a modular, incremental way? These systems will have to be adaptive or self-organising since the system lifecycles will differ. The final callenge lies in data management.

MAIN MESSAGE ~ Laila Gide: "The big advantage of ARTEMIS is the opportunity it gives for building a consistent SRA.



Laila Gide and Tatu Koljonen, Co-chairs of the Working Group ARTEMIS Strategic Research Agenda and members of the Steering Board of ARTEMIS Industry Association.

ARTEMIS provides the means to involve all key stakeholders of the embedded systems domain and to combine their power. This includes large industries, SMEs, research institutes and universities as well as public institutions. In addition, the ARTEMIS SRA not only identifies relevant research topics but also outline the way to implement and foster innovation." This implementation includes establishing innovation environments and tool platforms, as well as facilitating cooperation with Centers of Innovation Excellence (CoIE), education and training. It also deals with questions of standardization, the involvement of SMEs and investigating new business models. ARTEMIS touches those essential elements that are essential in creating balanced eco-systems that favor excellence and nurture innovation.

Tatu Koljonen concludes that "Better communication and dissemination to a global audience are two of the essential tools that will help to underline the opportunities and societal relevance of embedded systems solutions. By refining the questions the ARTEMIS strategy should ask in the light of the knowledge and insight that has been gained and in respect of current and future trends, ARTEMIS will be able to build on a new cross-domain approach to support a variety of applications, services and solutions for the grand societal challenges (bubbles) and to achieve a paradigm change, with big impact and quick to market."

Thank you Laila Gide and Tatu Koljonen 🛛 🔳



ARTEMIS – DERIVING RESEARCH PROBLEMS FROM COMPLEX SOCIETAL CHALLENGES

The ARTEMIS Summer Camp 2010 included a keynote talk by Rolf Ernst, Technische Universität Braunschweig, Germany. The keynote was motivated by the 2010 Update of the SRA, the ARTEMIS Strategic Research Agenda.

The huge success and omnipresence of embedded systems have effectively made it the central nervous system of society.



2006: RESHAPING EMBEDDED SYSTEMS

~ In creating the first SRA in 2006, the focus was individual application contexts: Industrial (including automotive and aerospace), Nomadic Environment, Private Space and Public Infrastructure. Across these applications, three research domains that form a second dimension of major research challenges were identified: Reference Designs and Architectures, Seamless Connectivity and Middleware, and System Design Methods and Tools. Furthermore, networked embedded systems were regarded as a key future trend in reshaping the world of embedded systems from a collection of independent or locally connected computers to large interconnected systems. 2010: REVIEWING THE CURRENT SITUATION

~ While this prediction has proven correct, its impact goes far beyond the SRA 2006. If we look at the current situation, we see that several important changes have taken place. Many emerging embedded applications share the same networks and components. The networks form hierarchies, which do often not correspond to the respective application structures (examples are given below). Open networks of embedded systems combine multiple application domains giving rise to another level of system complexity. The emerging use of the Internet for embedded system networking provides new opportunities. Not only can embedded systems exploit the emerging ubiquitous network topology for communication, they also gain access to the knowledge of Internet-based information systems. In turn, information systems can utilise embedded systems as source of information enabling an Internet of Things.

SOCIETY'S CENTRAL NERVOUS SYSTEM ~

Therefore, embedded systems technology should no longer be considered in isolated application contexts only but also in relation to larger societal challenges. This is even more appropriate as, today, dealing with societal challenges depends largely on technological support which, in turn, depends on embedded systems technology. The huge success and omnipresence of embedded systems have effectively made it the central nervous system of society.

So, the SRA 2010 introduces societal challenges as an overarching concept with several applications and research domains. A few key challenges were selected: Smart Buildings and Cities of the Future, Green, safe and supportive transportation, Personal Healthcare and Energy in a Sustainable Environment.

DERIVING TECHNOLOGICAL CHALLENGES

~ A three-step approach helps to derive technological challenges. First, the stage is set by identifying the embedded systems and their networks are that are expected to play a role in the context of the respective societal challenge. This step reveals an enormous global system complexity with numerous component and application dependencies that are in dire need of structure to identify common technical goals. For that purpose, the second step draws the connection to the societal challenges using scenarios that serve as concrete aspects of an abstract societal challenge. The scenarios are selected such that they 1) are visionary and reflect societal trends such as ageing society or the need for a sustainable environment, 2) show the importance of embedded systems even to a layman and 3) can serve to motivate and derive novel embedded systems research challenges that are not obvious in an individual application context. The third step, then, formulates the new research challenges as a basis for future programmes.

STEP 1: IDENTIFYING EMBEDDED SYSTEMS

~ To illustrate step 1, we will start with two examples that show how networked embedded systems are about to outgrow individual application contexts. Cars today contain sophisticated on-board networks including different bus protocols and up to 100 embedded processors. In the future wireless car-to-car and car-to-infrastructure communication will create another network layer that will be open rather than controlled by an individual automotive OEM. That layer will improve automotive functions, e.g. enable advanced driver assistance systems (ADAS) that use other cars' sensors as well as connect the car to the traffic control system, a typically public infrastructure application. This connection will enable feedback for adaptive vehicle speed and traffic control to optimise traffic flow or reduced energy consumption as well as catering to individual needs, for example by giving senior citizens or children more time and space, or adapting the speed. This shift becomes even more evident if we change perspective and look at the role of a future networked car. Besides being connected to the traffic infrastructure, the vehicle will have access to information systems, personal communication and entertainment - all nomadic environment applications - and thus be able to run an online networked diagnosis of its performance (industrial) and the driver (private space application) and, if it has electric drive, can be connected to the smart grid. So, effectively, a single car becomes part of all SRA 2006 application contexts combining many services with different providers and responsibilities.

Smart buildings and smart cities are a second example of step 1 (see figure). Home networks, currently associated with controlling appliances and entertainment, will support more functions, one of which will be ambulant healthcare. While currently not interoperable, home networks will most likely be connected to facility management, building security and office networks as well as the local smart energy grid. Smart buildings will be connected to the smart city infrastructure that includes public services like the police and healthcare, traffic and mobility management, industry, and the utilities supply network (like water and energy). In turn, cities are part of a global network of communication and energy or water supply. Many of the network components in the figure already exist; the novelty lies in the quality of the connection of different networks, enabled by the future Internet

STEP 2: CONNECTING TO SOCIETAL CHALLENGES USING SCENARIOS ~ The introduction of societal challenges in step 2 is a major extension over the SRA 2006. Personalised Healthcare is a challenge that comes with the dramatic shift in demographics towards an ageing population. As a consequence, there will be an increased number of patients with age-specific, chronic and degenerative diseases, such as cancer, diabetes, cardiac, Alzheimer's or Parkinson's diseases. OECD data suggest an increase in spending on health related services from 9% to 15% of the GDP in developed countries while acute care in hospitals has dropped by 30% in the last 15 years. There is an emerging trend towards ambulant care, but keeping and surveying the patient at home can only be the first step.

Scenario 1 "Care Everywhere" assumes that diagnosis and treatment will be extended seamlessly to wherever the patient goes, enabled by wireless multi-parametric biosensors which are attached to telemonitoring networks. New "e-health" hospitals will cut healthcare costs and, at the same ... embedded systems technology should no longer be considered in isolated application contexts only but also in relation to larger societal challenges.



Figure Smart Building and Cities - Embedded Network Interdependencies

time, increase a patient's mobility and comfort.

Scenario 2, "Early Diagnosis and Prevention" addresses one of the main goals of public healthcare, which is to reduce the impact and cost of diseases by early diagnosis and prevention. Networked embedded systems controlling "in vivo" monitoring of biological samples ("the doctor in your pocket") and improved imaging systems using embedded system technology will support that goal.

These two scenarios have a significant impact on embedded systems with the shift in (safety critical) healthcare from the hospital to the embedded systems network. More precisely, ambulant care at home must be connected to the healthcare services and thus to a safety critical communication path (figure) from the home all the way to the "e-health" public service. Patient monitoring must be maintained not only when the patient is in the car but the car itself might need to adapt to the driver's health condition and age, thereby defining new safety-enhancing needs for autonomous driver functions.

SOCIETAL CHALLENGE ~ Smart Buildings and Cities of the Future is an overarching societal challenge combining many infrastructure service aspects. Only some of the potential benefits of the platform (figure) have been sketched.

Scenario 1, Mobility for Everyone, addresses an important individual need. Today, many people suffer from limited mobility due to navigational and traffic participation challenges, exceptional health circumstances or handicap. Here, the embedded systems networks can assist, adapting elevators and doors, supporting navigation and preventing injury by -adapting traffic, alerting others and increasing security. As in the case of personal healthcare, the application must follow the person, from home to work, through the building, in traffic, at work or recreation. This requires seamless interaction within safety and real-time constraints. Again,

WHAT THE **FUTURE** HOLDS ...

the adapted car or public transportation must be hooked up to databases and future mobility assistance services.

Scenario 2, City Energy Control, shifts the focus from the individual to public economics. Today, more than 40% of the total energy consumption is spent on buildings, with a further large amount on traffic. Unconnected building control systems, private devices and transportation systems limit the potential optimisation. Widely distributed local energy production (solar panels, thermal power stations) and local energy storage (e.g. car batteries) challenge power grid control. New capabilities are required, such as decentralised control, the use of integrated home, office and facility networks, integrated buildings and traffic energy management along with new billing schemes. Unfortunately, the technologies developed for facilities and industry do not easily scale down to small units such as family homes, neither by cost nor energy consumption.

Scenario 3, Security, is of both individual and public interest. Depending on the definition, security is a concern in many contexts. Personal security, prevention of terrorism and crime, health emergencies or catastrophic situations (earthquake, fire) all require robust, real-time functions with fast and seamless interaction that integrate sensors, information systems and embedded networks affecting almost the whole network illustrated in the figure. On the other hand, open networks also challenge information security as embedded networks collect large amounts of sensitive personal and public data. Controlling information access will become one of the key challenges.

STEP 3:... DERIVE NOVEL EMBEDDED SYSTEMS RESEARCH CHALLENGES ~

The societal challenges outlined here are sufficient for the third step, the derivation of

research challenges. Several consequences for embedded systems research can be identified. The change from local networks with local designer responsibility to open networks of embedded systems sees single system ownership shift to multiple design processes and responsibilities involving many parties with conflicting objectives. There is a change from static networked embedded systems to systems-of-systems, which are highly dynamic, evolving and are never down. The convergence of applications on open networks introduces component and network safety requirements, availability and real-time behaviour in areas where such requirements have not been an issue, such as in home networks and car-to-infrastructure communication. This has been demonstrated in several of the scenarios.

The Future Internet will extend its role from a backbone of information society to a communication and integration vehicle for a rapidly growing world of embedded systems, soon far outnumbering the people using the Internet. The Internet will become part of the seamless integration challenge already found in the SRA2006 and, therefore, must be enabled to safely and reliably handle many different embedded applications. The Internet will not replace the current embedded system networks but will connect such networks, as shown in the figure. Because Internet communication cannot be expected to reach the same quality as provided by current embedded system networks, embedded systems must be made robust to compensate for lower real-time and reliability guarantees, and must be able to operate in the event of temporary network failures. These conflicting quality requirements are addressed by the new Cyber Physical Systems research area.

Many new scientific challenges require collaborative research as well as robust

networked systems that can handle high system dynamics and limited reliability. The individual embedded system must be able to adapt to changing application contexts and network environments without having to test every possible configuration in the lab. This requires (partially) autonomous systems that should have self-optimisation, self-healing and self-protection capabilities to work in unreliable network environments. New design processes are needed for such systems whereby part of the design process is moved from the lab to the field.

Last but not least, mixed criticality networks and components are needed to efficiently support several levels of safety, real-time and energy requirements as well as the mobility of critical embedded system functions as outlined in the personal healthcare scenarios. While this list is incomplete, it does highlight some of the urgent research needs requiring collaborative research across several application contexts and industries.

In conclusion, open networks have added a new level of complexity to embedded systems. The new area of embedded systemsof-systems is driven by comprehensive societal challenges rather than by individual application domains. The Future Internet will become a key embedded systems communication backbone and must meet the corresponding requirements. Embedded system robustness, mixed criticality networks and components, and autonomous systems requiring new design processes have been identified as resulting scientific challenges.

ARCADIA -ALIGNING EUROPEAN NATIONAL AND REGIONAL RESEARCH AGENDAS

At A Glance: ARCADIA

Aligning ResearCh AgenDas In ARTEMIS

Project Coordinator Name: Sergio bandinnelli Institution: ESI-Tecnalia Email: Sergio.Bandinelli@esi.es

Project Technical Manager Name: Inaki Eguia Institution: ESI-Tecnalia Email: Inaki.eguia@esi.es

Project website: www.arcadia-project.eu

Partners:

ESI-Tecnalia (Spain) Thales (France) SafeTrans (Germany) NKTH (Hungary) TU Vienna (Austria) UJF Filiale (France) Siemens (Germany) Eutema (Austria) ST-Microelectronics (Italy)

 Duration:
 24 months

 Start:
 2010.11.01

 Total Cost:
 750.000€

 EC Contribution:
 750.000€

One of the main original ambitions of the ARTEMIS European Technology Platform (Advanced Research and Technology in the Embedded Intelligent Systems) in 2004 was to overcome the prevailing fragmentation in the embedded systems industry by dismantling the barriers between the application sectors. This 'de-verticalisation' of the industry involves sharing the tools and technology that are currently quite separate across sectors and so establish a new embedded systems industry that supplies tools and technology that are applicable to a wide range of application sectors.





Sergio Bandinelli

Sergio Bandinelli is the Director of the Software Unit at the European Software Institute ESI-Tecnalia. He has an extensive experience in international R&D projects, technology transfer and R&D management. He holds a PhD in Software Engineering from Politecnico di Milano (Italy) and has been recently elected as vice-chair of ARTEMIS Industry Association, where he also leads the working group on SME involvement.



Joseba Laka

Joseba Laka is the manager of Embedded Software Systems at the R&D department of ESI-Tecnalia. He joined ESI-Tecnalia in 2006, after eleven years in a variety of roles in the European telco industry (mainly in Spain, UK, Germany and Italy). He is actively involved in several R&D projects. He obtained his MSc in Computer Science from the University of Deusto (Spain) and Lund (Sweden) and holds a MBA from the EOI (Spain).



lñaki Eguia

Iñaki Eguia is the technical leader of ARCADIA. He belongs to the R&D Area at ESI-Tecnalia. He is a project leader and has participated in several European projects related to security and networks heterogeneity. He is member of INES and PROMETEO, counterparts of NESSI and ARTEMIS in Spain. He is also the responsible of the International Innovation Unit of PROMETEO which aims to promote international R&D activities among industrial players. Iñaki obtained his MSc in Computer Science and Industrial Engineering from the University of Deusto (Spain) and Lund (Sweden).

ACHIEVEMENTS ~ ARTEMIS has set a high standard by building a public-private partnership (PPP), the ARTEMIS Joint Undertaking, on solid foundations. Since its creation remarkable progress has been made in a relatively short time. Major achievements include:

- Publication of the Vision Document: Building ARTEMIS
- Publication of the ARTEMIS Strategic Research Agenda
- Constitution of ARTEMIS-IA, ARTEMIS Industry Association
- Launch of ARTEMIS JU, a joint undertaking involving European Commission, Member States and ARTEMISIA
- Launch of the first calls for projects within ARTEMIS JU,
- Start of the first projects in the context of ARTEMIS JU.

In the past few years, a series of other regional and national initiatives that have grown in parallel have contributed to enabling significant progress to be made in selected application sectors and technical areas of embedded systems.

BUT THERE IS A CHALLENGING ROAD

AHEAD... ~ However, Europe is not yet achieving the full benefits of the effort being made in embedded systems. The multiplicity of research initiatives makes it difficult to effectively coordinate and focus the efforts towards a common goal. Therefore, the need is strong to align research efforts in embedded systems in the same direction and work towards a common vision and common goals. These needs are threefold: First, to overcome a high level of fragmentation. At the moment, the efforts are scattered in many different programmes. In some cases, embedded systems constitute a research domain by itself while in many other cases embedded systems research is part of other more sector-centric initiatives. Second, targeted investment to achieve ambitious goals by complementing initiatives and avoiding re-inventing wheels so as to make

efficient use of the resources available. **Third**, **compete in a fierce global market**. In the context of fast emerging economies and the global crisis, there is no time to be lost.

COMMON VISION AND STRATEGY ~ The main objective of the ARCADIA project is to have better and more effective coordination of the efforts to optimise the resources and to contribute to the advance of an ERA for the Embedded Systems field, thereby enhancing Europe's future growth, competitiveness and sustainable development

ARCADIA aims specifically to boost the harmonisation and alignment of R&D strategies at national, regional and EU levels to form major significant input to the development of the ARTEMIS SRA.

The term "alignment", as it is used in ARCADIA, means an *agreement on a common vision and strategy*. It is important to emphasise that alignment does not necessarily mean uniformity. On the contrary, it must allow for specificities to be addressed at the relevant level. The agreement process involves not only governments (policymakers and programme managers) but also the R&D agents in embedded systems, including industry and research institutions.

ALIGNMENT MATURITY MODEL ~ To be effective, alignment requires a bottomup process with progressive *commitment from all parties.* This convergence must be documented in a common research agenda that is then implemented through different instruments and entities at regional, national and European levels.

The first results of ARCADIA have seen more than 30 embedded systems research activities being performed (worldwide). The extended TRM (Technology Roadmapping) methodology used in the analysis applied the following perspectives:

ARCADIA KEY SUCCESS FACTORS ~ From these results the following key success factors (KSFs) have been identified:

- Vision **led by industry** and connecting with societal concerns.
- Result-oriented programmes and projects.
- Cross-programme and cross-project results combining the activities and results of several synergetic projects and programmes



Alignment Maturity Model

- Specific instruments to amplify **market impact** that targets their profitable use
- Common research strategy as a reference to design specific national or regional programmes
- Long-term funding commitment on agreed common agenda with commitment from all stakeholders (including public authorities) to the necessary resources
- Relevance of cluster initiatives as a strategic tool for the definition and deployment of research policy in embedded systems in Europe

- **Durable** strategic alliances among R&D actors using cluster as the main tool
- Risk-taking allowing scope for "out-of-thebox" experimentation

ARCADIA results are used to feed ARTEMIS SRA 2010 and, beyond that, it will continue analysing European and international initiatives to update the map of initiatives and develop a wider shared vision across Europe and the world.

	e-TRM	Dimension of the analysis	Description
Perspectives	Methodology	Roadmapping	Use of roadmap to structure the programme
	Sociel Market	Social and market impact	Identification of motivation for the programme in terms of market developments and social needs
	Technology	Technical coverage	Establishment of the technical scope of the programmes
	Resources	Size	Assessment of the size in terms of resources committed
		Туре	Classification according to relevance embedded systems with respect to application sectors
		International cooperation	Specific support for R&D internationalisation activities
		Clusters and involvement of SMEs	Promotion of cluster initiatives with specific emphasis on SMEs

FIRST ARTEMIS TECHNOLOGY CONFERENCE organised by the SCALOPES project

Budapest, Hungary, was the venue for the first ARTEMIS Technology Conference from 29 to 30 June 2010. This public, open event, organised by the ARTEMIS-JU Call 2008 SCALOPES project, was hosted by the Budapest University of Technology and Economics (BME) and AITIA International Inc.

PUBLIC VISIBILITY ~ The aim of the event was to increase public visibility for the technical aspects raised and solved by ARTEMIS partners in the field of embedded computing systems. The exchange of ideas will boost the effectiveness of R&D results and empower the impact on industry and on society at large.

The conference gave four running 2008 call projects - SCALOPES, INDEXYS, SYSMODEL and CESAR - the opportunity to present their work to an international audience of colleagues working in the same field, to get critical feedback on the ideas and to network with people who share similar interests. The event was attended by 96 people from 16 European countries. The organisers hope that this kind of interaction will give rise to further discussion outside the symposium and will initiate future collaboration.

The two-day conference included 28 presentations on embedded systems. This know-how lies at the heart of European industry competitiveness and is a vital element in ensuring future economic growth and stability to the benefit of European citizens. Participant interaction was encouraged by the presentation of 9 demos and 24 posters during the informal lunch. As always, poster sessions combined with demos maximise the opportunities for those who have something important to say, to stimulate debate and to make contacts.

RATIONALE ~ Embedded computing systems are all around us. Over 98 per cent of all computing chips today are actually hidden, or "embedded", in everyday devices that do not resemble computers. It will come as no surprise there are multiple embedded computing systems in your mobile phone, and in consumer electronic devices such as your television, your digital camera and your portable media player. But embedded computing systems are also in your coffee maker, your washing machine, your refrigerator and your child's speaking toy. They operate hundreds of functions in cars, buses, trains and planes as well as perform critical tasks in industrial machinery, medical equipment, satellites and nuclear power plants.

FOCUS ~ The focus of the four reporting ARTEMIS projects was on cross-domain technology and tool development for next generation architectures. These developments are driven by and proven for various application domains relating to ARTEMIS-JU industrial priorities such as communication infrastructure, surveillance systems, smart mobile terminals, stationary video systems & entertainment, automotive, aerospace and railway sectors. The technology developments for these application domains, centred in key institutes in specific countries, are being built around key competencies in European top research centres.

TOPICS ~ On the first day the SCALOPES project presented 14 lectures covering topics like power efficiency, next generation networking and mobile/wireless technology. On the second day the focus shifted to low-power design of MPSoC, performance analysis, power savings in LCD panels and resource management.

The seven presentations by INDEXYS covered topics like introducing the INDEXYS embedded platform approach based on the GENESYS reference architecture and services, implementation in the automotive and railway domains, the semantic models applied, the error propagation approach as



well as developments conducted in the area of deterministic network technologies using TTEthernet.

SYSMODEL covered the progress made on the development of open-source based modelling tools. The system level modelling tools target the design and implementation of time and power critical, heterogeneous systems. This is geared to the development of modelling concepts, methods and tools that master system complexity by allowing cost-efficient mapping of applications and product variants onto an embedded platform while respecting constraints in terms of resources (time, energy, memory, etc.), safety, security and quality of service. The initial focus is on applications, i.e. RFID, wireless systems, telecom, VoIP and audiology applications, mastered by the SMEs directly involved in the project.

CESAR was strongly represented at the technology conference with four presentations about the CESAR approach and corresponding technical selections, including a top-level presentation that revealed the progress that had been made in terms of the project's objectives. Furthermore, one of first results of the CESAR project, a real demonstrator of an automotive scenario, was shown. The technical selections of the CESAR project are the engineering requirements, a multiple approach for component based architecture design and the development of a Reference Technology Platform (RTP).

The first ARTEMIS Technology 2010 was a very successful event with attendees from Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Latvia, the Netherlands, Portugal, Spain and the UK. The organisers would like to thank all the participants that attended and hope they enjoyed the conference.

An overview of the posters, presentations and pictures can be found at: www.artemisia-association.org/technology_ conference_2010_home











CALL 2009 PROJECTS UP AND RUNNING

The 13 projects selected for funding at the end of the Call 2009 are now all up and running. Even though the usual administrative delays may have held up some of the paperwork, all projects have started work and held their "Kick-Off meetings". You can read about some of them on the new "Project News" page of the ARTEMIS-JU web-site. To get a picture of the ARTEMIS programme, we've selected three projects and asked them to provide a brief summary of their work. "Selected" here is in no way based on "quality". Rather, we've picked three that highlight some of the interesting aspects of the ARTEMIS programme.



POLLUX is about making Green Cars possible. Making an energy-efficient, non-polluting electric car involves more than just sticking an electric motor on wheels: the electronics systems must operate like a carefully orchestrated symphony to squeeze every last mile out of the battery. And it must be safe. POLLUX will define a design platform to meet these challenges, but it is also interesting from another viewpoint: POLLUX is not a standalone initiative but interacts closely with two other projects to form a coordinated whole - one way of achieving the "critical mass" and seeding the innovation eco-systems talked about in the ARTEMIS strategy.



CHIRON is the first ARTEMIS project addressing the pressing social concern of rising health-care costs. Healthcare means data, and medical data are vital to effective healthcare but are the most critical data in terms of privacy. By starting from the needs of individual patients and medical professionals in the total care cycle, CHIRON will develop platform that will allow the state-of-the-art to be used to full effect. Prevention, as well as cure, forms a core idea in their approach. CHIRON will pave the way to more cost effective yet personalised health-care tools.



R3-COP; Popular ideas of robots range from automated factory machines to the humanoid robots of sci-fi (that usually go wrong and attack humans). The future will be somewhere between: mobile, automated machines that are capable of independently executing complex tasks, and are so reliable and aware that they can work together with people and not hurt them. Sensor technology requires a huge amount of interpretation to render a machine capable of this, and reliable computing platforms are mandatory to let them work flawlessly. R3-COP will demonstrate land-based, flying and submarine autonomous robots, including a domestic service robot - surely something that must be ultimately trustworthy?

POLLUX

Pollux is a consortium of 35 partners from 10 different European countries. Each partner has developed state-of-art embedded systems technology in automotive and other sectors and eleven partners are part of the ENIAC E3Car project. The multidisciplinarity of the consortium with its clustering of knowledge and innovation gives Pollux a unique platform to develop a distributed real-time embedded systems platform for next generation electric vehicles (EVs).

The vertical integration and horizontal cooperation between OEMs and suppliers (of hardware, software and silicon) is a focal area in building a solid, embedded-systems European industry and establishing standard designs and distributed real-time embeddedsystems platforms for EVs.

KEY AIMS ~ Pollux addresses the reference designs and embedded systems architectures for high efficiency, innovative mechatronic systems for electric vehicles, aiming at the creation of a common architecture and design platform for advanced multi-core hardware and middleware solutions. This will enable the flexible and evolvable interoperation of systems (including sensors, actuators, energy storage and conversion devices, information systems and control systems across multiple domains) plus the deployment of advanced vehicle and powertrain management algorithms and strategies.

Architectures for embedded systems networking will be tailored for specific EV issues and needs (i.e electromagnetic compatibility, protection from low-frequency magnetic fields) and for enhanced features in terms of reliability, dependability, maintainability, security and durability. Safety critical and harsh environment domains requiring novel safety and security schemes will be addressed as a first priority. Finally, new approaches to standardisation, certification and qualification will be fostered to accommodate the new embedded system technologies for EVs.

NEXT GENERATION EVS: THE CAR BRAIN

~ Next generation EVs will show a first level of convergence between computer and automotive architectures: future cars will be mechatronic systems comprising a multitude of plug-and-play and self-configurable peripherals (i.e. multifunctional embedded systems). Future car architectures will be based on distributed energy and propulsion systems adopting radically new control concepts (multi-power, smart differential, e-ABS). Sensing, actuation, signal processing and computing devices will be embedded in the e-motors, power converters, energy storage and grid connection devices, onboard PV panels/range extenders. The chassis and powertrain control systems will form the "basal brain" and "autonomic nervous system" of the car that automating lower-level tasks during vehicle use (driver assistance, terrain evaluation, proactive energy management) thus enabling future "cortex" functionalities (e.g. auto pilot) by means of novel humanmachine interfaces.

Pollux makes use of synergy with the ENIAC E3Car project that focuses on developing power nanoelectronics technologies, devices, circuits and modules for EVs in preparation for the launch of a massive European EV market by 2015-2020. The new electric vehicle architectures based on distributed embedded computing and electronics system will allow significant energy saving and enhanced drive experience combined with more safety and comfort as well as less overall vehicle complexity. The spin-offs for society include primary energy saving, lower cost and, in view of the growing shortage of strategic raw materials (i.e. lightweight metals, copper, rare earths), more sustainable production.

Project duration:36 monthsStart date:01/03/2010Total Costs:33.3 M€35 partners from 10 countriesContact person:Marco Ottella



R3-COP

Project duration:36 monthsStart date:01/03/2010Total Costs:18.1 M€30 partners from 11 countries

Contact person: Mladen Berekovic berekovic@ida.ing.tu-bs.de



Essentially the project, which involves 30 partners from eleven countries, aims to overcome fragmentation of the robotic sector by creating a cross-domain platform of methods and tools for the design, development and validation of resilient and usable real world autonomous systems. These systems will be able to reason, learn and cooperate in different application domains such as surveillance (indoor, land, air, sea) and rescue, agriculture (field and greenhouse), people care, home environments and transport.

DEPENDABILITY ~ Safe and robust autonomous systems will be one of the key tangible manifestations of embedded R3-Cop, or Resilient Reasoning Robotic Cooperative Systems, will establish an environment for design and development of resilient autonomous co-operating systems with the goal to facilitate faster, more cost-effective development of new safe robotic and autonomous systems applications.

systems in mid-term future, simply because the application domains are so diverse, from rescue to entertainment. However, with the variety of approaches and platforms that exist today, it is unrealistic to expect such systems to be economically feasible (except in the manufacturing domain, where robots are used already on an industrial scale). At the same time, as such systems increasingly share space, and even closely cooperate, with humans, there is an urgent need to provide every possible means and measures to assert and guarantee their dependability, especially in terms of safety and robustness.

To develop a methodology-based framework for the efficient and economic development of safe, robust, sustainable (mobile, cooperating) autonomous systems, a reference architecture will be developed along with means for tailoring it for specific applications. This architecture will be substantiated in a number of domain-specific platforms and demonstrators.

The development of new methods to thoroughly test cooperative, learning, autonomous systems with complex sensors such as vision will serve as a foundation for future certification of such systems. Research will target resilient cooperation models and protocols, robust computer navigation and vision algorithms, semantic reasoning methods, methods and tools for efficient testing and validating of dependable adaptive autonomous systems with learning and reasoning abilities.

TWIN FOCUS ~ R3-Cop will advance autonomous systems in two directions: technology and methodology. In terms of technology, R3-Cop will develop a faulttolerant high-performance processing platform, based on a multi-core architecture, as well as innovative system components for robust perception of the environment including sensor fusion, and for reasoning and reliable action control. In addition, a methodology-based design and development framework will enable the economic realisation of dedicated solutions while a tool platform will allow for cautious application of the design methodology, including new test strategies and tools. The outcomes will be applied in a series of demonstrators from ground-based (industrial and domestic), airborne and underwater domains.

The expected outcome is an industry-level computing environment and platform for resilient autonomous systems targeting various application domains. Within ARTEMIS, R3-COP is the first project addressing robotic autonomous systems.

CHIRON

Present day healthcare is under pressure: demographic and socio-economic challenges from an ageing population and a constant rise in the numbers of people suffering from chronic and cardiovascular diseases and various handicaps to the need for affordable 'global' healthcare provided by fewer and fewer professionals and medical infrastructures that can respond to the demands of critical, often mobile, patients.

Chiron, an ARTEMIS JU project, intends to combine state-of-the art technologies and innovative solutions into an integrated framework for effective and person-centric health management throughout the complete (health)care cycle.

FROM TREATMENT TO PREVENTION \sim

An effective response to these challenges requires major changes in the delivery and management of care, with a shift from 'health care' to 'health management'. In other words, from 'how to treat patients' to 'how to keep people healthy'. The Chiron project involves 26 partners (large corporates, SMEs, universities, research centres and two hospitals) from eight different countries. Its aim is to exploit the enormous potential of ICT to realise radical change in healthcare by developing an overall, integrated system architecture to produce a "continuum of care" or an integrated health management approach in which health is patient-centric both in the home, the hospital and nomadic environments.

The reference architecture will ensure interoperability between heterogeneous devices and services, reliable and secure patient data management and a seamless integration with the clinical workflow. This person-centric approach puts the needs of the citizens, the medical professionals and the whole community at the core of the design while a knowledge-based system that integrates past and current patient data and community related statistical data in a large, distributed repository that is secure, easily interpretable and accessible by authorised persons. Finally, proactive computing will see embedded systems that anticipate the needs of people and are self-adapting, thereby enriching the quality of life and fostering patient empowerment.

PERSONALISATION ~ In line with its objectives Chiron intends to develop a number of personalised solutions such as the continuous multi-parametric monitoring of physiological and psycho-emotional state, environmental parameters, patient activity and lifestyle related factors. Furthermore, an evolving patient profile will include all the relevant health aspects of the user and a personalised risk assessment model based on the medical history of the patient will be constantly updated. Personalisation will also be contained in a coaching system to help the patient to reduce immediate risk and improve long-term recovery. New, advanced tools will facilitate real-time processing, computeraided analysis and accurate visualisation of medical images.

IMPLEMENTATION ~ The Chiron project will specify these new solutions, implement them with a focus on issues such as data security, privacy, trust and information, validation of the research results along with the technical and clinical assessment of the proposed solutions as well as the socio-economic impact.

Project duration: 36 months Start date: 01/03/2010 Total Costs: 18.1 M€ 26 partners from 8 countries

Contact person: Silvio Bonfiglio silvio.bonfiglio@barco.com



CO-SUMMIT 2010

Mobile and cloud power enabling massive scalability and opportunities for growth

On 26-27 OCTOBER 2010, the Co-summit 2010 will take place in the International Convention Centre in Ghent, Belgium.

The Co-summit is a project exhibition and conference being organised jointly by ARTEMIS and ITEA for the third time. The first Co-summit was in Rotterdam in 2008 but since the first ARTEMIS Call had just closed and no tangible projects were yet off the ground, no ARTEMIS exhibition was possible. Last year's Co-summit organised in Madrid proudly exhibited the 12 ARTEMIS Call 2008 projects. The 13 Call 2009 projects all kicked off at the beginning of this year, which means that we are proud to be able to present 25 ARTEMIS projects during the Co-summit 2010. Combined with the ITEA projects, this is an exhibition featuring 70 funded high-end R&D projects. So it is with some justification that we can state that this is Europe's largest R&D project exhibition in the field of embedded intelligence and software-intensive systems.

Based on the Madrid evaluation, the focus of this co-summit will be on the exhibition. This means that there will be more time in the programme to visit the stands this year. However, this does not detract from the very high level of the keynotes and parallel sessions taking place around the central theme. For all the programme details and the definite line-up of speakers we refer to the ARTEMIS-IA website. **CO-SUMMIT THEME** ~ This year's theme is "Mobile and cloud power enabling massive scalability and opportunities for growth" and is related to the vision that:

- The next billion users are mobile, especially in third world countries and will need service access
- The second billion users will be physical objects connected by services
- Services can/will be delivered by cloud power

We are in the process of confirm key-note speakers to highlight this theme for us.

NOTIFICATION FOR EXHIBITORS ~ New elements in the Co-summit 2010 programme are the ARTEMIS Community session on the second day and cooperation with the Belgian IBBT. In cooperation with SIRRS/ Pictor, IMEC, DSP Valley, Alcatel-Lucent Bell Labs, IBBT is organising a Flemish Nocturne on the evening of 25 October 2010 (build-up day of the ITEA and ARTEMIS exhibitions). This event will also take place in the ICC Ghent and is free of charge and open for all Co-summit participants. We look forward to seeing the Co-summit exhibitors at the Nocturne.

Another new feature this year is the organisation of a students day for Belgian students of embedded

intelligence and software-intensive systems. ARTEMIS and ITEA are cooperating with the University of Ghent and HIPEAC; the network of excellence on High Performance and Embedded Architecture and Compilation. We expect the exhibition in particular to attract many students.

Make a note in your agenda and register via de website!

Co-summit 2010 26 & 27 October ICC Ghent, Belgium

Register via: www.artemis-ia.eu More info: cosummit@itea2-artemisia.org

Mobile and cloud power enabling massive scalability and opportunities for growth



Σ!

26 & 27 October ICC Ghent, Belgium





INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT

CPS WEEK 2010 IN STOCKHOLM

Cyber Physical Systems (CPS) integrate computation, communication and storage capabilities with monitoring and/or control of the physical and engineering systems. CPS Week 2010 took place in Stockholm last April and brought together five leading conferences - HSCC, ICCPS, IPSN, LCTES and RTAS - as well as several workshops and tutorials on various aspects of the research and development of cyber-physical systems: Embedded Systems, Hybrid Systems, Real-Time and Sensor Networks. MRTC, Mälardalen Real-Time Research Centre, at Mälardalen University in Västerås, Sweden, arranged a table-top exhibition and an industrial workshop with the title Sensor networks and safety-critical embedded systems challenges and possibilities for industry.

The workshop gathered leading developers and researchers to discuss the industrial deployment and development of sensor networks and safety critical embedded systems. The primary aim of the CPS week industrial workshop was to present and discuss scientific and technical developments of key industrial interest. This was also the reason for ARTEMIS to be one of the exhibitors.

The Industrial Deployment of Sensor Network Technology is a key industrial theme as stressed by Dr. Adam Dunkels of the Swedish Institute of Computer Science in his tutorial about IP-based wireless sensor networks. Presentations by representatives from ABB, Scania, CRL Sweden and TNT Elektronik followed, ranging from research and development to customer and market requirements. Tony Sandberg, Head of Advanced Engineering, Electrical Systems, Scania CV AB, spoke about the safe and



About 200 persons attended the first day of CPS week; Karl Henrik Johansson, professor at KTH, is pictured here.



A Scania truck, showing the use of sensors, was part of the industrial exhibition.



Paul Pettersson, professor of real-time systems at Mälardalen University.

Dr Adam Dunkels was talking about industrial deployment of sensor network technology

efficient operation of heavy trucks through sensors and communication. He discussed future trends that include an increased use of sensors and digital maps to avoid accidents, save fuel and reduce emissions. He also explained how higher bandwidth communication technologies would enable sensor and information sharing between vehicles and with the infrastructure, with the vehicle no longer standalone but an integrated part of the transport system. Paul Pettersson, professor of real-time systems at Mälardalen University and board member of ARTEMIS Industry Association- was the moderator for the industrial workshop at CPS week 2010: Mälardalen Real-Time Research Centre has extensive cooperation with industry partners both in Sweden and in Europe. Bringing academia and industry together is always on the agenda for us. When arranging universal events, like this workshop, it is crucial to keep the benefits for the participating industry partners in mind.

The CPS exhibition and industrial workshop were organised by MRTC, Mälardalen Real-Time Research Centre, at Mälardalen University in Västerås, Sweden.

For more information, contact Malin Rosqvist, Research Coordinator at MRTC. e-mail: malin. rosqvist@mdh.se, tel: +46 21 10 31 12, www.mrtc.mdh.se www.cpsweek2010.se

Calendar

5-10 SEPTEMBER 2010 GRENOBLE, FRANCE ARTIST SUMMER SCHOOL ON EMBEDDED SYSTEMS DESIGN.

Information: www.artist-embedded.org

7 - 9 SEPTEMBER 2010 BRUSSELS, BELGIUM EUROPEAN INDUSTRIAL TECHNOLOGIES CONFERENCE

RTEMIS Technology Roadmap presentation on 8 September afternoon More information: www.industrial-technologies2010.eu

27 - 29 SEPTEMBER 2010 BRUSSELS, BELGIUM ICT 2010

This biennial event has become a unique gathering point for researchers, business people, investors, and high level policy makers in the field of digital innovation. ICT 2010 will focus on policy priorities such as Europe's Digital Agenda and the next financial programme of the European Union for funding research and innovation in ICT. ARTEMIS will be present at the exhibition with a stand. In cooperation with ENIAC a Networking Session takes place on: 28 September from 9:00-10.30 hrs. A special ARTEMIS WP session (Eric Schutz, Alun Foster, Jan Lohstroh, Eric Covello) scheduled on 29 September from 9:00-10:00 hrs.

More information: ec.europa.eu/information_society/events/ict/2010/index_en.htm

19 - 21 OCTOBER 2010 LONDON, UNITED KINGDOM EMBEDDED LIVE

Continuing 17 years of continuous service in the UK market as the Embedded Systems Show, and the Embedded Systems Conference UK (ESC UK). A fullyintegrated, component to system showcase for electronic engineers, system designers, software engineers and embedded application developers. More information: embedded-live.com

26 - 27 OCTOBER 2010 GHENT, BELGIUM

CO-SUMMIT 2010

The third Co-summit, jointly organised with ITEA, takes place in Ghent. The event comprises a large project exhibition with parallel sessions, key note speakers, a press event and the second ARTEMISIA General Assembly of 2010. The 25 running ARTEMIS projects are invited to present themselves at the exhibition. Together with the ITEA2 projects, this will yield an exhibition of some 70 European innovation projects. More than 600 participants from industry, public authorities, research institutes, universities and press are expected.

More information: www.artemisia-association.eu/cosummit_2010

18 - 19 NOVEMBER 2010 VELDHOVEN, THE NETHERLANDS STW.ICT CONFERENCE

More information: www.stwplatform.nl/en/stw.ict-conference

14 - 15 DECEMBER BARCELONA, SPAIN ARTEMIS BROKERAGE EVENT CALL 2011

Prepare yourself for the ARTEMIS JU Call 2011. Meet and match project proposals and partners on the Brokerage Event 2011. ARTEMIS organises the ARTEMIS Brokerage Event for the ARTEMIS Call 2011, in Barcelona Spain. Build your project consortium on the ARTEMIS Brokerage floor! Note it.

More information: www.artemisia-association.org

Editorial information

ARTEMIS Magazine is published 3 times a year by ARTEMIS Industry Association and ARTEMIS Joint Undertaking.

ARTEMIS Industry Association (ARTEMIS-IA) is the association for R&D actors in Advanced Research and Technology for EMbedded Intelligence and Systems. ARTEMIS-IA continues the work of the European Platform in Embedded Systems and is since 2007 an association with about 205 members around Europe. ARTEMIS-IA creates the meeting place where key industry players and other R&D actors 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. ARTEMIS-IA is a founding member of the ARTEMIS Joint Undertaking.

The ARTEMIS Joint Undertaking (ARTEMIS-JU) was established in 2008. The objective of the ARTEMIS-JU is to define and implement a Research Agenda for Embedded Computing Systems. It aims to help European industry consolidate and reinforce its world leadership in embedded computing technologies. ARTEMIS-JU is a Public Private Partnership with the EC and participating Member States. ARTEMISIA association is the private partner in the ARTEMIS-JU and represents its members towards the EC and member states. 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. The members of ARTEMIS-IA influence the research compass for the calls and update yearly the down stream character of the ARTEMIS-JU funding programme.

ARTEMIS Magazine provides information on the developments within the ARTEMIS Technology Platform (ARTEMIS-IA) and in the ARTEMIS-JU. 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 Magazine Editorial Board: Claude Le Pape, Tatu Koljonen, Sergio Bandinelli, Laila Gide, Josef Affenzeller, Francois Bichet, Heinrich Daembkes, Martin Danek, Erwin Schoitsch, Patrick Pype, Ad ten Berg, Alun Foster, Eric Schutz, Jan Lohstroh, Else Embregts.

Contributions and Copywriting for ARTEMIS Magazine 7: Jan Lohstroh, Eric Schutz, Neelie Kroes, Aldo Covello, Jan van



den Biesen, Antonio Pérez Berdud ,Luca D'Onofrio, Ad ten Berg, Helen Finch, Laila Gide, Tatu Koljonen, Rolf Ernst, Inaki Egula, Sergio Bandinelli, Joseba Laka, Dennis Alders, Marco Ottella, Erwin Schoitsch, Silvio Bonfiglio, Malin Rosqvist, Franziska Boede, Yvonne van Hattum, Alun Foster, Chris Horgan, Else Embregts.

Editorial address:

ARTEMIS Magazine High Tech Campus 69 – 3 5656 AG Eindhoven the Netherlands Telephone +31 88 0036 188 Fax +31 88 0036 180 Email: communications@artemisiaassociation.eu

Design and Creative lay-out:

Studio Kraft – Veldhoven, the Netherlands

Text & copy:

CPLS – Goirle, the Netherlands

Printed by:

Verhagen Grafische Media - Veldhoven, the Netherlands

Photography:

With thanks to ARTEMIS involved persons for any assistance and material provided in the production of this issue. Special thanks to Alun Foster.

Advertisement:

Make your company or product visible for a targeted audience through ARTEMIS Magazine. Technical and commercial information: communications@artemisia-association.eu

Submissions:

ARTEMIS news or events linked to the ARTEMIS programme, its projects or general ARTEMIS related subjects. Please submit your information to: communications@artemisia-association.eu

©2010 ARTEMIS-IA & ARTEMIS-JU Permission to reproduce individual articles from ARTEMIS Magazine for non-commercial purposes is granted, provided that ARTEMIS Magazine is credited as the source.



ARTEMIS Joint Undertaking

Visiting Address: "Covent Garden" building Place Charles Rogier / Karel Rogierplein, 16 1000 Brussels Belgium

Postal Address: COV2 14/060 1049 Brussels Belgium

enquiry@artemis-ju.europa.eu www.artemis-ju.eu

ARTEMIS Industry Association

High Tech Campus 69 5656 AG Eindhoven The Netherlands

Tel: +31 88 0036 188 Fax: +31 88 0036 180 communications@artemisia-association.eu

www.artemisia-association.eu