ARTEMIS Magazine is published by the ARTEMISIA Office. The magazine provides information on the developments within the ARTEMIS Technology Platform, ARTEMISIA Association and ARTEMIS Joint Undertaking ~ www.artemisia-association.eu



The ARTEMIS-ETP Strategic Research Agenda ~ ARTEMIS Autumn Event 2009 ~ ARTEMIS Summer Camp 2009 ARTEMIS JU Projects and the ARTEMIS-ETP SRA ~ ARTEMIS Spring Event 2009 ~ Working Group ETP Strategic Research Agenda

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Editorial information

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ARTEMIS Magazine provides information on the developments within the ARTEMIS Technology Platform and in the ARTEMIS Joint Undertaking (JU). Its aim is to keep the ARTEMISIA community and beyond updated about the Association, ARTEMIS Joint Undertaking, programme status & progress, achievements and events.

ARTEMISIA Association is a founding member of the ARTEMIS Joint Undertaking which is a Public Private Partnership with the EC and participating member states. The association is the private partner in the ARTEMIS Joint Undertaking that issues the ARTEMIS Calls each year until 2017.

ARTEMISIA 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.

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Contributions and Copywriting for **ARTEMIS Magazine 4:**

Laila Gide, José Cotta, Rudy Lauwereins, Rudolf Haggenmüller, José Cotta, Katja Didaoui, Jerker Delsing, Christopher Martin, Sergio Bandinelli, François Bichet, Heinrich Daembkes, Josef Affenzeller, Erwin Schoitsch, Patrick Pype, Tom Bo Clausen. Special thanks to Alun Foster, DAFOS Consultant

ARTEMISIA Association: 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, Emile Aarts,.

ARTEMISIA Office: Else Embregts, Jan Lohstroh, Ad ten Berg, Yvonne van Hattum.



Published by:

ARTEMISIA Office Communications & PR High Tech Campus 69 – 3 5656 AG Eindhoven The Netherlands

Telephone	+31 88 0036 188
ax	+31 88 0036 180
mail	communications@
	artemisia-association.eu

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Subscription enquiries:

communications@artemisia-association.eu

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Foreword

Dear ARTEMIS friends,

In 2008 and the beginning of 2009, ARTEMISIA has been so focused on helping with the launch of the ARTEMIS-JU and with the preparation for the first and second JU calls that one of her primary tasks, namely to continue the activities of the ARTEMIS-ETP, could not get attention. That is changing rapidly now. At the Summer Camp, held in Brussels on June 8th and 9th 2009, a kickoff for the next version of the ARTEMIS-ETP SRA, for 2010 was organised.

At this Summer Camp it became clear that the two main responsibilities of ARTEMISIA, the continuation of the activities of the ARTEMIS-ETP and representing R&D actors in the ARTEMIS-JU, are not always well understood. So, during the meeting, we presented a glossary slide, to make sure that we all talk the same ARTEMIS-language. This was evidently well received, so I summarise the content of the slide here.

- ARTEMIS = Advanced Research & Technology for EMbedded Intelligence and Systems.
 - ARTEMIS is not an organisation!
 - ARTEMIS stands for research-, technology- and innovation-activities related to the ARTEMIS-ETP SRA;
 - ARTEMIS is a brand-name, used in the shared logo for ARTEMISIA, ARTEMIS-ETP and ARTEMIS-JU, and is a brandname for the ARTEMIS activities and community.
- ARTEMISIA = The association for R&D actors in the field of ARTEMIS.
- ARTEMIS-ETP = European Technology Platform in the field of ARTEMIS;
 - Is run by ARTEMISIA since January 2007.
- ARTEMIS-JU = Joint Undertaking in the field of ARTEMIS.
 - Is a Public-Private Partnership of the Commission, Public Authorities and ARTEMISIA;
 - Funded projects are based on the ARTEMIS-JU AWP (Annual Working Programme) that is derived from the ARTEMIS-JU MASP/RA (Multi Annual Strategic Plan / Research Agenda), all of which are proposed by ARTEMISIA via the JU Industry and Research Committee (IRC).
- ARTEMIS-ETP SRA 2006 = document by ARTEMIS-ETP, published in 2006.

- ARTEMIS-ETP SRA 2010 = document by ARTEMISIA, to be published in 2010;
 - Has to be endorsed by the ARTEMISIA General Assembly.
- ARTEMIS-JU MASP/RA (yearly) = document by ARTEMISIA via ARTEMIS-JU IRC.
 - Derived from ARTEMIS-ETP SRA;
 - Has to be endorsed by ARTEMIS-JU Governing Board.
- ARTEMIS-JU AWP (yearly) = document by ARTEMISIA via the ARTEMIS-JU IRC.
 - Derived from ARTEMIS-JU MASP/RA;
 - Has to be endorsed by the ARTEMIS-JU Public Authorities Board.

This Magazine #4 is fully dedicated to the ARTEMIS-ETP SRA 2010. It gives reflections on the ARTEMIS-ETP SRA 2006, ideas and inputs for the ARTEMIS-ETP SRA 2010, and articles by all of the ARTEMISIA Working Groups contributing to the update/recalibration process.

I'd like to thank all of the ARTEMISIA members and invited guests who took part in the Summer Camp, as well as the Working Group members and other contributors who have penned their thoughts for this edition of "ARTEMIS Magazine". Their enthusiastic and constructive contributions have certainly got the re-calibration process kicked-off.

Jan Lohstroh, Secretary General ARTEMISIA Association

Reflection on the ARTEMIS-ETP SRA

ARTEMIS Autumn Event 2009

A group of major R&D actors formed the ARTEMIS European Technology Platform (ETP) in 2004 as recommended in the report "Building Artemis" by the High-Level Group of Embedded Systems. In 2006 the ARTEMIS-ETP Strategic Research Agenda (SRA) was published, in close consultation with the European Commission and Public Authorities. This first SRA, distributed to a wide public, gives a good picture of the status of the Embedded Intelligence and Systems in Europe and it defines high level targets to be attained by 2016.

The text of the first ARTEMIS-ETP SRA contains a section with the title "Making it happen", in which a strong recommendation is made to start a Public Private Partnership (PPP) combining private sector resources with national and European public Funding. Such a PPP should be a so-called Joint Technology Initiative (JTI) with an industry-driven programme. This recommendation was taken up by the public and private stakeholders involved, and ultimately led to a Regulation by the Council of the European Union. On that basis the JTI, legally embodied by the ARTEMIS Joint Undertaking (JU), was founded in the beginning of 2008, in which the R&D actors are represented by ARTEMISIA.

With the ARTEMIS JU now fully up and running, with goals defined in the MASP/RA that have been derived from the ETP-SRA, the Steering Board of ARTEMISIA has decided that it is now time to "recalibrate" the ETP-SRA, to be published in 2010.

It is the prime task of the ARTEMISIA Working Group SRA to come up with a new text, to be endorsed by the ARTEMISIA Steering Board and the



ARTEMISIA General Assembly. However, inputs are needed from the whole ARTEMISIA community, specifically from all the other ARTEMISIA Working Groups in their specialized areas.

I wish the ARTEMISIA Working Groups and community a lot of energy, that they propose an inspiring and challenging text for the next version of the ARTEMIS-ETP SRA.

Klaus Grimm President ARTEMISIA Association, and chair of the ARTEMIS Joint Undertaking

ARTEMISIA, the association for R&D actors in the field of ARTEMIS, has announced the ARTEMIS Autumn Event 2009. The event will comprise of a large project exhibition, with parallel sessions, key note speakers, and a press event. The second ARTEMISIA General Assembly of 2009 will also take place, and the whole event is co-organised with ITEA2.

Last year, in 2008, the first ARTEMIS Autumn event was organized as part of the Cosummit with ITEA 2 in Rotterdam. The event was generally perceived as very successful, so both parties decided to continue the cosummit approach in 2009 as well. So make a note in your agenda already: 29th & 30th October 2009. This time the place to be is: MADRID.

In Madrid, the twelve running ARTEMIS projects are invited to present them selves at the exhibition for the first time. Together with the ITEA2 projects, this will yield an exhibition of some 65 European innovation projects in Information Systems and Embedded Intelligence. The organisers expect more than 600 participants from industry, public authorities, research institutes, universities and press.

The overall theme for the Co-summit will be: Ecosystems driving Open Innovation in the Embedded Intelligence and Softwareintensive Systems and Services Industry. For ARTEMIS the sub theme will be: Recalibrating the ARTEMIS ETP Strategic Research Agenda.

ARTEMIS AUTUMN EVENT2009

Recalibrating the ARTEMIS ETP Strategic Research Agenda

29 & 30 OCTOBER Auditorium Hotel, Madrid, Spain





Check the website: www.artemisia-association.eu for the programme, registration and hotel reservation.



Eindhoven/Brussels ~ ARTEMIS-ETP SRA

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ARTEMIS

ETP Strategic Research Agenda

After a few internal revisions, the "ARTEMIS-ETP Strategic Research Agenda" was first released to a larger public in March 2006. This document was the result of much hard work, not only by a dedicated editing team lead by Eric Schutz (ST) and Laila Gide (Thales), but also by very many contributors from some of Europe's best enterprises – large and small – from leading universities and other research institutes. Indeed, many national authorities and representatives of existing research funding organisations in Europe also participated. The work was carried out under the umbrella of the "European Technology Platform ARTEMIS".

CHALLENGE TO OBSERVE AND MODIFY

ARTEMIS Magazine interviewed persons who represent several perspectives on the ETP-Strategic Research Agenda 2006. The main question was to reflect on the SRA under guidance of a set of (optional) questions. The answers and other comments are noted as quotes, following the order of the questions where appropriate. ARTEMIS Magazine considers and presents these interviews as reflections.

The seed for the reflections:

The ARTEMIS-ETP SRA puts forward a number of proposals that address the innovation process for embedded systems for the whole of the European RD&I community. Which of these proposals could/will have the most beneficial effect in the long term?

Are there any specific strengths or weaknesses you would like to highlight? What about opportunities, or threats?

ARTEMIS is a very European initiative, focussing on European embedded systems with the enhancement of European competitiveness as a main goal. How could the AR-TEMIS ETP (and by extension the ARTEMIS-JU participants) best benefit from international cooperation (i.e. outside Europe) without unduly compromising its leadership position in several embedded systems domains?

What specific expectations would have for the revised ARTEMIS ETP SRA?

BUILDING ARTEMIS ~ The European Technology Platform was a voluntary but organised group of participants concerned with Innovation in the Embedded Systems field. It was to pave the way towards realising the ambitions of the "Building ARTEMIS" document, published a little over a year earlier. The document "Building ARTEMIS" was merely a statement and was underwritten by 25 CEOs of leading European technology organisations. It describes in a top-down way precisely why Embedded Systems is such an important, if intangible, domain for Europe. Put briefly, social wellbeing means competitiveness, which comes from Innovation (large "I"), which increasingly comes from the use of "invisible" computing devices which we call "Embedded Systems".

MORE THAN A ROADMAP ~

The scale of the ambition put forward in "Building ARTEMIS", coupled with the complexity and potential impact that embedded systems represent, meant that the ARTEMIS-ETP SRA had to be much more than a technological roadmap to help researchers forward. It had to propose ways and means of being sure that the enormous potential benefits, to society and to industry, actually do become realised, and within reasonably short timescales. After all, Europe may have a leading position in several types of embedded systems applications and know-how, but the world at large is developing rapidly. Europe could soon be overtaken, having then to rely solely on external sources for products and technologies that will become essential for the well-being of its citizens.

For this reason, and to keep the problems at all tractable, the ARTEMIS ETP established specialist working groups to handle different parts of the complete document. These are on the one hand the technical agenda itself and on the other "how to make it happen". The latter has a section on Innovation (big "I" again) and



Application Contexts

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another on the coordination and financing of the whole ambitious project. We'll take a look at these aspects of the SRA now, while remembering that none of them can usefully exist in isolation of the others.

TECHNICAL RESEARCH

PROGRAMME ~ The technical research programme starts off by identifying applications which are felt to be particularly important for Europe, grouping them into four large clusters labelled "Application Contexts". The main criterion for grouping is the bringing together of applications or industry sectors that would seem to share a common set of requirements and problems related to embedded systems. The next step was to take the issues and requirements from each of the application contexts and group them horizontally. This way, a set of Research Domains was identified that would best benefit them. Put into a few sentences like this, it sounds so simple. In reality, a huge number of

Common Objectives:

Design Efficiency Ease of use High added value Time to market Modularity Safety/Security Robustness Competitiveness Innovation Cost reduction Interoperability

reflection by LAILA GIDE



"All parts of the SRA work together, but the R&D and the Ecosystems ideas are the most important. The JU is also important, but we should investigate other options, too, like FP7, or the EC's "Recovery Package" published as "Raising the Game", on manufacturing, automotive and energy efficiency. All three of these need embedded systems, and ARTEMIS needs to think about linking to this somehow."

"A threat to SRA is that we are not ambitious enough in setting challenging objectives. Only serving today's industrial goals may mean we miss future opportunities. To do this we really need to be very daring in setting very challenging targets for research to achieve. I don't accept 'that is not possible' a priori. There are many evolutions where ES should aim to play a leading role, including energy, climate change and the Internet of Things. Embedded systems are surfacing more and more, becoming more visible as an essential item to users." "If we don't set up a correct IPR policy, specifically on an approach to patents in a collaborative world, we may make innovation eco-systems that are rather infertile."

"From the beginning, we have had contacts with for example the NSF (USA), and we have often invited international speakers to General Assemblies. We have been too busy with operational issues to focus on this lately, but we should indeed start talking again about international cooperation."

"The revised ARTEMIS-ETP SRA must be excellent, in every way! It must have long lasting effect and be robust enough to survive the test of time. It must be a sound basis to cover 4-5 years: more than this is unrealistic, and it will need to be challenged and adapted frequently. New things will always happen to surprise us, and we aim for the SRA to be able to address the challenges which we are eager to identify."

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

reflection by JOSÉ COTTA

General remark: "We urgently need to clarify the relationship between the ARTEMIS-ETP SRA and what the ARTEMIS-JU is about. There is presently much confusion around, so the new SRA must really address this issue. The danger of this must not be underestimated - there is presently a strong impression that the ARTEMS-JU will do everything that the SRA says, which is of course incorrect. This false expectation can 'break the innovation pipeline' and hinder the generation of innovations in Europe in general, leaving us in the same position as, to take a recent example, the US automotive industry: bad times happen and there are no innovations available to make a re-start possible."

"An obvious strength of the ARTEMIS-ETP SRA is the fact that the ARTEMIS-JU, which the SRA describes as a way to make things happen, is now a reality. It is too early yet to see if the eco-systems the JU is supposed to generate will really happen. Proposals and projects have only recently been started, so there are no constellations yet, just a few stars. The JU still has the challenge of putting the puzzle together to make these constellations. The goal, though, is very positive."

"The establishment of the ARTEMIS-JU demonstrated that such partnerships are indeed possible, and we also showed that even though we are building the R&D environment and the administrative machine to support it in parallel, it is still possible to do this without compromising the quality of the programme. It is true, though, that the time it is taking us to get the JU Office started is rather long, which is a weakness." "The notion of 'Innovation Ecosystems' needs to be better detailed in the new SRA even if this is in abstract terms, which it will have to be as each ecosystem will necessarily be different in its actual implementation."

"I see two really major strengths in the ARTEMIS

SRA. Firstly, the area it covers. Embedded Systems are definitely an area where Europe plays a leading role, but we must create the right conditions for the future to capitalise on this. The second strength is the Vision it puts forward. This still holds today, 5 years later, though it will need developing in the light of new knowledge. Proof of this strength is the interest of the constituency in the JU projects: the number of project proposals doubled between the first and second Calls."

"A major weakness of the SRA, and also of the JU, is a lack of industrial leadership. In this I mean that there has been no 'Champion' as yet: someone with great charisma and vision with a 'put a man on the moon' project that can attract real commitment from the whole of the constituency, and especially from senior management in industry. Another weakness, but this concerns the JU, is the relatively low commitment of, for example, the member states in providing inputs."

"The context of the financial crisis in 2009 is a major opportunity. Embedded systems definitely offer a way out of this crisis, and there is an opportunity for the new SRA to clearly show this."



"As for threats, the most important comes from any lack of commitment, not to the SRA as such, but to actually making it happen."

On International collaboration: "International cooperation? This is a funny thing. Some see it as a threat, but we must be clear that this is not the same as international aid. Industry certainly cannot be altruistic in this: there must be clear mutual benefits for it to work."

On expectations for the new SRA: "I expect the new SRA to do much more about setting priorities, in the sense that it must be clear how the ARTEMIS-JU MASP/RA can be extracted from it. It is very important to coordinate the flow of the work through the pipeline and manage the feedback so as to drive new ideas. This makes it possible to apply the different instruments we have in Europe to these priorities, as is most appropriate."

Dr José Cotta is interim executive director of the Artemis joint undertaking, a partnership between the European Commission, member states and R&D actors. Cotta is also head of the unit for embedded systems and control in the European Commission's directorate-general for information society and media (DG Infso).

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reflection by RUDY LAUWEREINS



"Of the components of the ARTEMIS SRA, there is no single contributor that stands on its own. The main differentiator is the integral, holistic approach of the technical agenda and the supporting 'making it happen' actions."

"Not the SRA as such, but Europe is demonstrating a big weakness in executing it – we are too slow! Many of our international colleague-competitors have read and assimilated the ARTEMIS-ETP SRA (which is excellent), but are already ahead of us in acting on it. This is a generic problem in Europe, not related specifically to ARTEMIS. Research in the US is governed by quarterly cycles, linked to financial reporting, which makes it difficult to set up longer-term collaborations there, but in Asia, where they have no history of publicly subsidised research, companies and institutes have looked at the SRA and acted immediately. Europe is more formalistic in its approach, but this is slow and we are already falling behind in some areas."

On international collaboration. "Europe, and by extension ARTEMIS, cannot avoid collaborating internationally in today's global markets for embedded systems. Many of the companies and institutes in Europe are global anyway, and will move ahead regardless of the European funding schemes."

Regarding the implementation of the JU. "The ARTEMIS-JU is behaving as a collection of countries and not as a unified entity. The funding rules in many countries link participation of research organisations to R&D in industrial companies in their own country. Many areas, as is the case here in Belgium and in eastern European countries, have excellent research organisations but it is very difficult, if not impossible, for them to participate in nationally funded innovation schemes like ARTEMIS-JU as there are too few companies in their country active on embedded systems research. Their collaboration with industry in other countries is hindered by the lack of true cross-border funding. Some fine-tuning of the JU policies would be needed to allow, for example, the EC's contribution to the budget to subsidise cross-border participation of research institutes."

Rudy Lauwereins is vice-president of IMEC, Belgium's Interuniversity Micro-Electronic Centre, which performs research and development, ahead of industrial needs by 3 to 10 years, in microelectronics, nano-technology, enabling design methods and technologies for ICT systems. IMEC is ARTEMISIA member since April, 2007.

"A number of times above, I've written "Innovation" with a large "I"."

man-hours was spent in many discussions before a list could be put together that covered pretty well all the bases. The diversity of existing, preferred and envisioned solutions, coupled with an equally diverse set of standard approaches made this a rather delicate operation. So why not take an easier route? Well, the leading idea behind what became called "the ARTEMIS approach" is to research new solutions which can be of re-used as much as possible, both within industry sectors and across the different ones. This will go a long way to allowing different industries to compete on their differentiating characteristics while making use of a set of ready-made technological solutions. This in turn will lead to a dramatic improvement

in product design cycles and competitiveness. In addition to "Foundational science" which is necessary to fuel more serendipitous innovations, the set of three Research Domains feeding more downstream innovation.

The three Research Domains were defined as Reference Designs and Architectures, Seamless Connectivity and Middleware and System Design Methods and Tools. These are detailed in their own documents, including prioritisation of the topics to be handled. Since then, the resulting "matrix" diagram has served as inspiration for many pan-European research initiatives, as well as world-wide. It does, however, represent the partitioning and prioritisation seen at that time, by the subset of industrial and academic partners involved in its creation. It is certainly now time to recalibrate the model and refine it, based on today's knowledge.

INNOVATION ENVIRONMENT

~ A number of times above, I've written "Innovation" with a large "I". This was done not only to emphasise its importance to industries and companies, but also to stress that it means more than technical novelty alone. Without viable markets in which to sell the results, and the means to manufacture and deliver them to end customers, innovation as such will not contribute much to our general well-being. Embedded systems do not really exist in isolation - the products and services they enable are very diverse and often complex (despite the relative simplicity in use). In increasingly de-verticalised industries, they are the result of

several integration steps along the supply chain. Left to its own devices, natural entropy would lead to many uncoordinated and inefficiently developed products – a recipe for unsuccessful business. The ARTEMIS-ETP SRA addresses this by promoting the concept of the "Innovation Environment".

This includes large-scale collaboration through Centres of (Innovation) Excellence, Standardisation (itself a major market enabler), Education and Training and the often difficult position of high-tech SMEs. The ARTEMIS-JU has taken up much of this in its strategy for creating "Self Sustaining Innovation Ecosystems", though much work is still needed to make it happen. The funding of research provided through the JU goes a long way in promoting collaboration among the various R&D actors, which is a "sine-qua-non" for seeding such eco-systems. However, the rules of the ARTEMIS-JU do not allow for funding non-R&D actions, so the funding streams needed to support these eco-systems longterm must come from elsewhere and, while they are generally known about, they still need to be pressed into action.

COORDINATION AND MAKING

IT HAPPEN ~ he ARTEMIS-ETP SRA has, as a key goal, the ambition to fight the fragmentation and resulting lack of efficiency that is often seen in complex technological developments, and technologies involving embedded systems are a case in point. The technical part of the SRA tries to group the technologies in a way that should help mitigate this

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tendency at the implementation level, and the document goes further. It proposes an additional and novel model for public financing of collaborative R&D that should greatly increase cohesion between actions undertaken across Europe. While public funding schemes already exist at national and transnational levels (the Framework Programme of the EC and EUREKA are most relevant for embedded systems), the ARTEMIS-ETP SRA puts forward an approach that aims to put their best features together. This makes for a very compelling scheme that will attract participation of all the actors in the field. After extensive study of the complexities of European law, a fine-tuned version has been agreed by the European Council and accepted by the European Parliament and it now lies at the heart of the ARTEMIS-JU. With the JU now up and running, the experience of executing this operation can be an inspiration for future versions of the SRA that look beyond the life-span of the existing ARTEMIS-JU, remembering that the Research Agenda of the JU has a smaller scope and sub-goals with respect to the ARTEMIS SRA.

INSPIRATION ~ The ARTEMIS-ETP SRA has provided inspiration and guidance to a broad spectrum of people directly or indirectly involved in innovation. The world of today is already a different place than it was in 2006, when the SRA was first published. The experience of setting up the ARTEMIS-JU as an additional programme and new knowledge about the world, specifically on embedded systems, can serve well in keeping this important document fresh and up-to-date.

reflection by RUDOLF HAGGENMÜLLER



ITEA 2 and the ARTEMIS-ETP have a long history together. They address for the bigger part similar topics, though the scope of their agenda's is indeed different. One of ITEA 2's key focus areas is what we call "societal computing". Computing devices of all sorts are now so ubiquitous in our society that they already have a major impact on the way we live and work. However, the potential benefits they bring are far from being fully exploited, and this is where ITEA 2 and the ARTEMIS-ETP share a common goal. While ARTEMIS focuses on the problems and challenges of embedded intelligence in devices (both soft- and hard-ware), ITEA 2 takes the broader view, also addressing the large-scale services which can bring better quality and enjoyment of life to a large part of society that these intelligent devices enable. To achieve this, we need to respond to the generalization of connectivity this implies by addressing the challenge of massive scalability. We need to support European industry by providing end-toend solutions, including both products and services. This is something that the ARTEMIS-ETP SRA could maybe consider highlighting also. Of course, we share the common goal of improving industrial competitiveness while staying "sustainably responsible" in our use of valuable resources (including the frequency spectrum!).

Towards the future, ITEA 2, like the ARTEMIS-ETP, supports the creation of "ecosystems" at

European level, where we see Open Source as a clear example of business-model-driven evolution. In this context, we see the need to support the deployment of R&D results into the market, for example through full scale trials and experimentation, with full end user involvement. Also, we know that Europe is not alone in the world and we see a future expansion of the geographic scope, but where European business objectives can really justify this, of course.

ITEA 2 made some important contributions to the ARTEMIS-ETP SRA when it was first released in 2006. It was an excellent document at the time, which drew the support of many important actors in Europe, ITEA 2 included. But things have moved on since, and we look forward to the new release of the SRA which we hope will continue to embrace ITEA 2's vision for the embedded systems part. After all, working together for the benefit of society at large is surely a noble endeavour!

Since 14 October 2005 Rudolf Haggenmüller is Chairman of ITEA 2. He is a member of Cirquent's Executive Board and ISTAG, the IST Advisory Group to the European Commission and of the Board of Directors of the Development Gateway Foundation, Washington, USA.

ARTEMIS JU Projects and the ARTEMIS-ETP SRA

With 12 projects from the ARTEMIS-JU Call 2008 now up and running, and with the ARTEMIS-JU MASP/RA and the ARTEMIS-ETP SRA fully in the spotlight, it's a good time to take a first look at how these projects are translating into concrete realisations of the goals set out in the MASP/RA as a subset of the goals of the ARTEMIS-ETP SRA.

A first step in doing this is to produce a picture like that shown in the figure - a 'simple' mapping of the projects (in as much as this is possible in a 2-dimentional space) onto the ARTEMIS-ETP SRA Matrix. In the figure on page 15, the size of the 'blobs' gives a rough idea of the budget allocated to the project. As most projects address many different technologies and applications, the blobs are positioned where the "centre of gravity" of the project lies. This implies that the coverage of the whole ARTEMIS-ETP SRA field would in theory be larger. However, we're looking at the main impact the project promises here, which of course cannot always be in all areas the project looks at.

Taking the three largest projects (CESAR, SCALOPES and SOFIA), we can already see that many of the key areas of the SRA matrix are covered. With CESAR firmly in the Industrial context, SCALOPES covering Private Spaces and SOIFA taking care of Nomadic, the coverage of a very large part of the application contexts is already under way. If we believe that the ARTEMIS-JU strategy of forming major pan-European "Innovation Eco-systems" around core competencies is a strong one, we can conclude that these three projects, because they cover all major bases in the ARTEMIS SRA, can produce the seeds for several such eco-systems which are also complementary. And because they all have a strong application focus in markets that are already there or developing, these ecosystems can be expected to grow fairly quickly.

But ARTEMIS is not only about very large scale initiatives. Without the backup of smaller, more focused projects designed to provide specialist solutions, the eco-system scheme could soon collapse. Call 2008 provides a nice selection of such supporting projects. INDEX-YS is a good example of a project conceived specifically to move theoretical developments from the FP7 "GENESYS" project (set up to put concrete ideas into the ARTEMIS-ETP SRA RD&A domain) forward to become real Innovations. SYSMODEL is also an interesting case, being run by and for SMEs covering a wide range of end applications, assuring at the same time a high degree of re-usability of the results. CHESS is a particular example of a cross-domain project, much in keeping with the ARTEMIS charter. It is centred on modeldriven engineering methods and techniques, with the participation of an interesting mix of SMEs and academic institutions.

During the creation of the ARTEMIS-ETP SRA, there seemed to be a relatively low level of interest in "Public Infrastructures" and in improving human-machine interfaces: the former usually being grouped into the ubiquitous "Industrial" context. Given the recent focus on environmental issues and on safety, these are two areas which should be high on the agenda. And indeed, true to form, the ARTEMIS community has put forward projects that get the ball rolling on these areas. eDIANA seeks to define and demonstrate a platform approach that will allow proper interoperability between the plethora of building energy management solutions around, and CAMMI will use embedded systems to help (rather than to confuse) equipment operators, particularly in the transport sector (drivers, pilots). At the same time as making the operator's life more enjoyable, they will improve safety by taking over less urgent functions when the operator has more important things to concentrate on, yet without removing his or her sense of being in control. EMMON too has high ambitions in deploying very large networks of wireless sensors to support large infrastructure decisions and operations. In has not been possible to address all of the projects' ambitions in this article, but - as

ETP Strategic Research Agenda



the diagram shows – the ARTEMIS-JU already has a fine collection of projects that have made good inroads to fulfilling what the ARTEMIS-JU MASP/RA sets out to achieve, that will contribute to the general goals of the ARTEMIS-ETP SRA. At the time of writing, the evaluation of outline proposals from the second ARTEMIS-JU call is well under way. Based on these, Call 2009 is already looking good in size and we can look forward to reading all about it in a future ARTEMIS Magazine.

ARTEMIS *Summer Camp 2009*

Each year, the ARTEMISIA Office organises the "ARTEMIS Summer Camp" at a hot spot in Europe. This event is a strategic meeting about setting the research agenda for embedded intelligence in Europe. ARTEMISIA members, public authorities and other guests are invited to give their views on strategic issues and feedback on research priorities. The Summer Camp 2009 took place on June 8th & 9th and had a special mission this year. This time it was to be the kick-off of the new edition of the Strategic Research Agenda for 2010. The first ARTEMIS Strategic Research Agenda was published in 2006 by the European Technology Platform (ETP), and it is now time to recalibrate it for the next ten years. Shaping the future of embedded intelligence in Europe is an exciting action which attracted a balanced mix of 95 representatives of SMEs, large enterprises, knowledge centres and public authorities, who all enthusiastically participated.

WHY ~ The European Technology Platform decided, in 2007, to establish ARTEMISIA Association as legal embodiment. By doing this, the association of actors in the field of ARTEMIS ensured the identity of the European Platform and took over the responsibility for the Strategic Research Agenda. The ARTEMISIA Steering Board decided that the next version of the Strategic Research Agenda (SRA) was to be published in 2010. This is an important task, since this new SRA will provide the future direction for the European research in Embedded Systems for all R&D actors, not just for the ARTEMIS Joint Undertaking. The SRA has to take account of the recent evolutions in the embedded intelligence systems domain and aims to make Europe stronger in the face of increasing global competition. ARTEMISIA therefore gave the Summer Camp 2009 a special mission that leads to the ARTEMIS-ETP SRA 2010, to be handshaked with the European Commission and the Public Authorities.

SWOT - WHAT ? ~ The first day of this Summer Camp started with a SWOT analysis of the current SRA; looking at the Strengths, Weaknesses, Opportunities and Threats. This analysis is designed to help reveal the challenges that Europe will encounter in future research and innovation in Embedded Systems. The SWOT was set up along the three major themes of the SRA: Strategy, Research and Innovation. The second day, the consolidated SWOT outcome was mapped onto the existing ARTEMISIA Working Groups and the SRA Experts Groups.

In the morning of the second day, the Research update of the Research Agenda of ARTEMIS JU 2010 was presented, followed by a discussion in several of the ARTEMISIA working groups on the impact of the SWOT results on their plans and ideas. The results of these very fruitful discussions were presented in the plenary meeting at the last and closing session of the Summer Camp. The Research Agenda (RA) is the annex of the Multi Annual Strategic Plan (MASP) of the Joint Undertaking. The MASP/RA is the basis for the innovation programme of the next Call of the ARTEMIS Joint Undertaking. For more information about the research agenda we refer to the article about the ARTEMISIA Working Group SRA on page 18.

NEXT STEPS TO MAKE ~ The kick off has been made with this ARTEMIS Summer Camp 2009. The next step now is a further consolidation which leads to the roadmaps and plans to establish the SRA2010. The ARTEMISIA Working Group on SRA has a big task to be the platform where feedback, contributions and input from several angles will be the basis for the challenges in the Embedded Systems domain for the 10 years ahead.

ETP Strategic Research Agenda

What is our opinion *about the Summer Camp 2009?*



ARTICLE

Eindhoven ~ Call 2009

Jerker Delsing, Lulea University of Technology, Sweden

"Summer Camp 2009 shows that ARTEMIS is maturing. The industry is backing it in a very positive way. We have very constructive discussions. I believe this is a corner stone in making Europe competitive with the rest of the world, for now and into the future.



Christopher Martin Robert Bosch GmbH, Germany

"The ARTEMIS Summer Camp is an excellent opportunity for industrial and academic stakeholders to come together and share their ideas and recommendations. Thus, the event offers not only possibilities for networking and information exchange, but a chance to define the future of key technologies for Europe"



Katia Didaoui, Commissariat á l'Energie Atomique, France

" The Summer Camp 2009 proves to be THE valuable strategic meeting for the ARTEMIS Community. I hope it will really launch the recalibration process towards the SRA 2010".

Working Group ETP Strategic Research Agenda

The ARTEMIS Strategic Research Agenda was created by the ARTEMIS European Technology Platform (ETP) in 2006, in a concerted effort undertaken by numerous representatives from industry, research institutes and public authorities. When the ARTEMISIA Association was launched in 2007 all ETP activities were taken over by the Association. In ARTEMISIA the SRA Working Group was established to embody and continue the development of the Strategic Research Agenda and all its related documents.

The mission of the SRA Working Group is to maintain the ARTEMIS ETP Strategic Research Agenda (SRA) and further develop the AR-TEMIS-JU Multi-Annual Strategic Plan (MASP) and its associated Research Agenda (RA). Each year an Annual Working Plan (AWP) is derived from the Research Agenda. This AWP is annex to the Annual Implementation Plan of the ARTEMIS Joint Undertaking.

For approval the MASP and the RA are submitted yearly to the ARTEMIS JU by the International Research Committee or IRC, for acceptance by the Governing Board of the ARTEMIS JU. The AWP is submitted yearly to the ARTEMIS JU by the IRC, for acceptance by the Public Authorities Board.

The time-horizons of the documents are quite different:

- the SRA has a time horizon of 10-15 years ahead
- the MASP and Research Agenda have a horizon of 5 year ahead
- the AWP has of course a time-span of only one year.

The SRA working group applies a process principle that is built from a top-down approach backed by a bottom-up buy-in and contribution to involve the whole ARTEMISIA R&D community. The top-down strategy is defined at the ARTEMISIA Steering Board level, while the bottom-up buy-in is realized through the wide contribution and involvement of experts from ARTEMISIA Members in the many expertand working groups of the association.

In this, the two-day annual Summer Camp of ARTEMISIA is an important element in acquiring the buy-in of the ARTEMISIA community. This Summer Camp is organised by the SRA Working Group with support from the ARTEMISIA Office.

The Strategic Research Agenda is structured along two axes; that of the research domains and that of the application contexts. Each of the research domains is covered by a separate subgroup or expert group. For the MASP and RA of the ARTEMIS Joint Undertaking, which is derived from the ARTEMIS-ETP SRA and that describe the programme along a "subprogramme" axis, a subgroup is formed for each sub-programme. This complex of subgroups and expert groups is then managed by the Working Group SRA. And you can imagine that the Summer Camp activity really is required to align so many activities into one coherent ARTEMIS programme, for the ARTEMIS-ETP as well as its sub-set for the ARTEMIS-JU, describing the future of Embedded Systems design and deployment in Europe.

For support and commitment of the ARTEMIS-ETP top-level, the ARTEMISIA Steering Board is involved throughout the process to assure a broad acceptance base in the association. In support of the ARTEMIS JU, before the IRC submits the MASP/RA, it is approved by the Steering Board. For the Strategic Research Agenda, approval of the General Assembly of ARTEMI-SIA is required, since this Strategic Research Agenda spans a much broader scope than the programme executed by the ARTEMIS-JU.

For the remainder of 2009 and the year 2010, not only the yearly updates for MASP and RA are planned, but also a recalibration of the SRA is foreseen. The current ARTEMIS-ETP SRA originates from 2006 and the Steering Board has decided for an update in 2010.

While there is a yearly process in place to update the MASP and RA, which is kicked-off during or close to the ARTEMIS Spring event

Working Groups



Ad ten Berg, ARTEMISIA Programme Coordinator



Laila Gide, Co-chair Working Group SRA

and in finished in November, the SRA recalibration follows a different timeline and runs over the year border as is shown in the picture.

As the timeframe explains, the ARTEMIS-JU MASP and RA for 2010 (as well as the AWP derived from them) will still be based on the original SRA of 2006. The first MASP/RA that will be based on the new ARTEMIS-SRA of 2010 is the 2011 edition.

The recalibration action of the ARTEMIS-ETP SRA was kicked-off at the Summer Camp 2009, implemented by a SWOT analysis of the current SRA to generate inputs for the working group. To allow for approval in the ARTEMISIA General Assembly, the SRA recalibration needs to be ready in early March 2010. At the ITEA 2-ARTEMIS Co-summit in October 2009, a parallel session will be run to update the interested audience with the progress made to date.

In parallel to this, the action to update the ARTEMIS-JU MASP/RA for 2010 in a separate RA working group was kicked-off in a workshop on April 22, where the update plans for all sub-programmes were discussed. These plans were also presented in the Summer Camp to gather feedback from the ARTEMISIA community. The first draft update of the RA was finished just before the Summer Camp and is now in revision in the working group. It needs to be finalised in September.

Since the SRA Working Group is such a complex one, it has always been co-chaired to manage the workload. Until June this year it was co-chaired by Laila Gide from Thales and Eric Schutz from STMicrolectronics. But, since Eric Schutz was elected as the Executive Director of the ARTEMIS-JU, he has stepped aside from all his ARTEMISIA activities, including the SRA Working Group. Since June 1st, Emile Aarts, as Steering Board member for Philips, has taken over the co-chair from Eric Schutz.

Standardisation - a Challenge for ARTEMIS

ARTEMIS established a standardisation working group very early on, as such activities have a high priority for increasing the effectiveness of embedded systems for European innovation. In particular, ARTEMIS is looking for interdisciplinary, multi-domain applications, next to single domain applications of embedded systems, which can only survive when good standards are in place.

Standardisation is driven by the market and is governed by a complex network of standardisation organisations and bodies. The essential impacts of standards on the market are that it enables competition, enlarges markets and accelerates technology take-up. It serves the public, too, by providing dependable products and assuring their interoperability.

Standardisation issues require a long-term perspective, as it is impossible to see the success of such activities initially. For this reason, academic researchers are not predominantly leading on such a topic, yet the European Commission and the public authorities have indicated that standardisation is a high priority. It stimulates business activities, and therefore is a basis for creating more jobs in Europe. Based on this situation, ARTEMIS started to draft a document in 2007, describing the mission and planned activities. At the same time, a project proposal for a supporting action in FP 7 called "ProSE" was prepared, aiming to push forward the activities needed to support ARTEMIS.

For ICT activities alone, more than 300 worldwide bodies are active. Standardisation is completed after official ratification by an organisation and the contents of the standard are used in practice. They are most often initiated by informal "special interest groups" of companies or organisations, working much like the ARTEMIS "ecosystems" are supposed to. This kind of cross-domain synergy is the outstanding goal of ARTEMIS and therefore of high priority. So, it is important for ARTEMIS to establish links with other technology platforms which deal with topics which are related to embedded systems. In this, the thinking of researchers in view of standardisation and the raising of their awareness for standardisation is another important aspect.

The support action ProSE, which began work in 2008, provides the baseline for such activities in ARTEMIS. Since its inception, ProSE's tasks include the drafting of the landscape for embedded systems middleware and application areas and to identify existing and potential (evolving) R&D results. These could be used as a first list of applicants for adaptation of existing standards and influencing evolving standards, as well as defining requirements for new standardization areas. This task has been completed.

From among the existing and evolving R&D results, the partners will identify those that could claim to be a good standardisation



Josef Affenzeller Coordinator Working Group Standardisation

Josef Affenzeller is Director, Research Coordinator of AVL is the world's largest privately owned and independent company for the development of power train systems. Josef Affenzeller was member of the ARTEMISIA Steering Board and is Coordinator of the Working Group Standardisation.



candidate in any of the addressed types of standards, as if they are applying to be accepted as a standardisation candidate. The list of applicants will be filtered according to agreed evaluation criteria. This task is in its final stage.

Stakeholders and the public are asked, by invitation, to provide their opinion and inputs. The stakeholders include industry (manufacturers, suppliers and "users"), standardisation bodies, EU (and national) officials, other European Technology Platforms and related platforms/ organisations, public authorities, professional trade or industrial associations, regulators (as far as needed), certification/licensing agencies and assessors, and various interest or user groups (e.g. consumer associations). This is a very large group, so a "WIKI" has been set up to gather and concentrate their inputs.

ARTEMISIA *Working Group SMEs*

SMEs are an important link in the value chain for high-tech systems and solutions. In the same way that larger industries do, they can benefit from the embedded intelligence movement not only by developing such innovative products and services (if that is their core business) but also through using them to improve their manufacturing and/or logistics systems. Collaborating with other members of the value chain has many benefits, and the ARTEMIS-ETP SRA recognises this. It goes further by setting a target for SME involvement: "50% more European SMEs in the aegis of ARTEMIS engaged in the embedded systems supply chain, from concept through design and manufacture, delivery and support, than there were in 2005". An aggressive and very useful target, yet it remains difficult for SMEs to participate in collaborative, pre-competitive research and innovation initiatives, which aim to bring together the various pieces of the value-chain for mutual benefit. The reasons for this reticence are several and varied. They can range from a simple "it's too expensive to set up" to more complex concerns about, for example, IPR.

All members of the ARTEMIS-JU, and therefore also ARTEMISIA, are concerned about the enrolment of SMEs in collaborative projects and want to see more of it. To that end, the ARTEMIS-JU Multi-Annual Strategic Plan, which addresses the ARTEMIS-ETP's SRA, puts SME involvement as one of its seven essential components of Innovation Ecosystems. The first ARTEMIS-JU call for projects yielded an encourage number of SME participations, with 27% of the number of participants in the selected projects being SMEs. However, the portion of the budget used by SMEs in these projects is very much lower than their numerical strength would imply, even when considering that all participating countries in the ARTEMIS-JU offer advantageous funding rates for SMEs. The conclusion then is that SMEs are involved only superficially in these projects. Something still needs to be done to improve not only the number of participating SMEs, but also their level of engagement in the projects.

However, previous initiatives that attempt to enlarge SME participation seem to have had only nominal impact. The problems are thus more complex, and it is unlikely that a "one size fits all" solution will be found. Therefore, ARTEMISIA has set up a working group to study the issues and make proposals on how the ARTEMIS-JU strategy can best be fine-tuned to make life easier for SMEs in collaborative projects, and lower the threshold for participation.

The WG SMEs was set up by ARTEMISIA in January 2009, under the leadership of Sergio Bandinelli. Building on existing SME support ideas within ARTEMISIA, such as the web-based Partner Search Tools, the group has already defined some key issues and boundary conditions. Notably, the group insists that participation by non-SME entities is vital in its working, to avoid forming an ineffectual kind of "SME ghetto". Particularly, the input of large industries is very important. Also, SME associations can be used to alleviate the problems of SME representation at meetings, and the group is developing proposals for other "off-line" forms of participation. A major and ambitious goal of the group is to see ARTEMIS-JU projects being set-up and led by SMEs. Key to this is the roll-out of some activities to get more SMEs to become members of ARTEMISIA, as this is the best way for them to become visible in the ARTEMIS-JU world of collaborative innovation and reap its benefits.

There is still a lot to do in defining and executing some of their ideas. The group is open to participation by other ARTEMISIA members – just contact them via the "Working Groups" page on the ARTEMISIA web-site.

Written by Alun Foster with input of Sergio Bandinelly

Sergio Bandinelly, *Chair of Chamber A*

Sergio Bandinelli is R&D Director in European Software Institute, Tecnalia in Zamudio, Spain. He bas over 50 publications in international conferences and journals. According to Sergio, SMEs are a fundamental ingredient in ARTEMISIA. They not only represent the most significant part of European economy, but they are also an enormous source of innovation coming from an agile and creative approach to address real problems. Sergio is ARTEMISIA Steering Board member, Chair of Chamber A and together with Joseba Laka the driving force behind the Working Group SME.

ARTEMISIA *Working Group Tool Platforms*

The ARTEMIS-ETP SRA recognises the importance of design tools in the embedded intelligence world, and puts forward some aggressive targets for what it calls the "ARTEMIS engineering discipline", and that there will be "integrated chains of European-sourced tools based on ARTEMIS results".

Francois Bichet

Francois Bichet joined in 1991 Dassault Systems strategy, where he has been driving various R&D projects and corporate acquisitions, contributing to the definition of Dassault Systemes vision and its rapid expansion of the toward world leadership on the PLM software market (Product Life Management). He obtained the Dassault Systemes Innovation Award in 2004 and 2006.

He is member of the IT prospective committee of the French National Research Agency (ANR). For ARTEMISIA Association, he is member of the Steering Board and Coorsinator of the Working Group Tools & Platforms.



At present, large-scale development environments come almost exclusively from a small number of non-European sources, while Europe has a large number of excellent developers and suppliers of tools for specific purposes (mostly SMEs). This situation has created on the one hand a strong dependence on external suppliers of the necessary tool frameworks and on the other a highly fragmented supply chain within Europe for often critical, specialised development tools. These tools, due to the fragmentation, are sometimes limited in their addressable market because they "don't fit in" with existing frameworks.

To provide answers to these issues, the ARTEMIS-JU Multi-Annual Strategic Plan proposes to establish "Tool Platforms". Expressed most simply, the Tool Platforms will identify a common set of interfaces and practices that will allow tool vendors to integrate their products into tool chains adapted to the specific needs of this or that part of the embedded intelligence applications market (see the sketch). If it were only that easy! The complexity of embedded applications is already marching ahead of the ability to design them, so new tools and methods must develop even faster if they are to meet the targets set out in the ARTEMIS-ETP SRA. This can only be achieved if the present excellence Europe has is brought to bear in a coordinated way, and this is where the true power of the ARTEMIS Tool Platforms concept will come from.

Because of the importance of design methods and tools to achieving the targets of the ARTEMIS-ETP SRA (and therefore those of the ARTEMIS-JU too), ARTEMISIA has set up a specific "Working Group for Processes and Tools". Led by François Bichet, this WG has the charter to basically make the idea of Tool Platforms work – in fact, quite a monumental task. Since its inception in the summer of 2008, the WG has already produced a detailed strategy and roadmap document that described how a collection of Tool Platforms will be built. After giving some criteria which will determine the eligibility of an initiative to be called an ARTEMIS Tool Platform, the

Platform Convergence Process





strategy uses a "divide and conquer" approach to make implementation at all practicable. Candidate or ab-initio platforms are classified into one of eight categories, on the basis of common concerns. As progress is made, new technologies developed in ARTEMIS projects (or existing tools, where available) can be interconnected using a set of "plug-ins". These plug-ins will allow the gradual and piece-wise integration of tools between different categories, ultimately yielding the fully integrated supply chain of tools within a platform (see the diagram). As with any strategy, this will need to be monitored and updated frequently, especially as standards for interchange between tools are involved. This may not be simple, but – as it will have a major impact on the way the tools market in Europe will function in the future - it is surely a highly rewarding task for the ARTEMISIA members who participate in the running of this Working Group

ARTEMISIA *Working Group CoIE*

"A key concept of innovation is the combination of invention and marketing: New technological ideas can only be regarded as innovative if they can result in market-able results (products, services, ...)." This key statement appears in the ARTEMIS-ETP SRA of 2006. It is still valid today. The focus of the ARTEMIS-JU on promoting downstream research, being closer to the market, already embodies this, but how do we go about setting up the "self-sustaining eco-systems" that the ARTEMIS-JU puts forward as a means of achieving real impact?

In January 2009, the ARTEMISIA steering board, in its role of proposing the Multi-Annual Strategic Plan (MASP) for the ARTEMIS-JU, decided to start a new working group on "Centres of Innovation Excellence" (CoIE). The aim is to better address the real issues of innovation. This initiative is sponsored by Giovanni Barontini, as member of the ARTEMISIA presidium, and is chaired by Heinrich Daembkes.

The ambition of this working group is to promote Centres of Innovation Excellence in the domain of embedded systems as "seeds" or kernels of the self-sustaining ecosystems that the ARTEMIS-JU wants to see set up. This should be done by taking advantage of existing achievements in the member states, building on them to form pan-European structures that can integrate the best of their innovation capabilities. This embraces regional clusters, technical infrastructures and related organisations that are dedicated to the world of embedded system technologies and applications. Also, the grouping of ARTEMIS-JU projects around the "ARTEMIS Sub Programmes" is intended to focus technology developments towards specific applications or markets, so as to feed the ecosystem with their results.

What do we mean by an "Innovation ecosystem" anyway? In the ARTEMIS-JU MASP, we read "An Innovation ecosystem is a group of multi-country, multi-organization, interconnected R&D actors and businesses, that by efficient planning, acting, and cooperation achieve significant advantage in innovation success in a specific market." Furthermore, it states that they exist mainly to create new, self-sustaining business, which in return drives employment, social responsiveness, and contributes to the well-being of citizens: they are expected to enhance productivity and to improve competitiveness. To be successful, they must comprise a range of actors along the value chain, and must nurture a culture of cooperation across boundaries. This is possible in various forms of partnership. Innovation ecosystems typically start as regional clusters of interconnected R&D actors, such as Centres of Excellence (CoE) in a relevant domain, and businesses not belonging to the same organization. By stimulating co-operation, the different capabilities and resources can be combined to create considerable added value.

This WG CoIE is intended to propose instruments that will organize and reinforce existing strengths in a more consistent way and allow new strength to be developed in areas where Europe is lagging. To that end, the instruments



Heinrich Daembkes

Heinrich Daembkes started his career at Telefunken Radio and TV Systems. Then he took a position at Duisburg University. After this he started a research career at AEG research center in Ulm. Until 1996 he was VP for Higb Frequency Electronics at Daimler. Since 1995 in parallel he is professor at the university Ulm, Germany. In 1996 he became a cofounder and CEO of United Monolithic Semiconductors (UMS) which he turned into a successful commercial enterprise. Since 2003 he is with EADS Defence Electronics, where he presently is VP System- and Software Engineering. Heinrich Daembkes is active in several organizations like IEEE and EuMA. In ARTEMISIA Association he is active as Steering Board member an as coordinator of the Working Groups Centres of Innovation Excellence (CoIE).



will support the efficient execution of the ARTEMIS SRA, allowing these ecosystems to rapidly turn research achievements into innovating products, processes, and services for the global market. They must also ensure that the critical mass of resources needed is made available to convert technological ideas into marketable products by addressing the commercial context ("business model"), and overcoming fragmentation. For this purpose, the WG CoIE will start by identifying existing strengths and weaknesses in the present landscape and propose measures and initiatives to ARTEMISIA for updating the next release of the SRA.

The working group is a body of ARTEMISIA, reporting to the Steering Board (SB). It works out proposals and delivers status reports to the SB, who will check the appropriateness of the proposals according to the common objectives, so that actions then be initiated by ARTEMISIA in both its roles: maintain the ARTEMIS-ETP SRA on behalf of the ARTEMIS-ETP, and propose updates to the MASP for the ARTEMIS-JU.

The content and the results of the WG are created in working group sessions, the first of which was held on June 5th, 2009. To be efficient, only a few meetings will be face-to-face, while other discussions can be done by net or phone conferences. The task of the present WG is planned to be finished in 2010. The initial set-up of the WG constitutes a small number of experts, so we are very open for more members and associated contributors!

Several ideas have already been identified and are presently under investigation. For example, an ARTEMIS Label and Register for CoIEs. Centres that want to receive an official label, providing benefits to such organisations, must satisfy the "ARTEMIS" criteria. These could comprise, for example, competence in a defined domain, a clear cross domain contribution, contribution to innovation with industrial relevance, openness to other partners, etc... The benefits for such participating organisations could be being part of ARTEMISIA structure, with representation in organization and access to directly influence content and definition of priorities in SRA and annual work programs. They would enjoy visibility through one of the ARTEMIS web-sites, with reference to capabilities, publications and achievements. Possible support from a CoIE Office for members is being investigates, as is priority access to supporting actions of member states and EC. Membership should actively be requested and may also be terminated actively: there will be some obligations to maintain the status of ARTEMISIA ColE. Ideas discussed are, for example, providing and updating strategic plans, periodic publication of activities, report on achievements, participation in annual event of CoIE or similar.

The idea of CoIEs and of innovation ecosystems is a core issue of ARTEMISIA and of real importance for the achievement of progress in Europe - CoIEs are considered as the key and seeding elements for innovation in the domain of embedded systems. Parties and institutions Interested contribute to the WG CoIE are invited to become a member of the ARTEMISIA CoIE network.

For further information contact:

Chairman of WG CoIE: Prof. Dr. Heinrich DAEMBKES, heinrich.daembkes@eads.com

> Vice Chairman of WG CoIE: Prof. Dr. Werner DAMM damm@offis.de

ARTEMISIA Working Group E&T

The Working Group Education & Training was founded during the General Assembly meeting in Athens, in June 2008. Erwin Schoitsch (Austrian Institute of Technology) was elected chairperson, with Martin Danek (Academy of Science, Czech Republic) as his deputy. However, as Erwin pointed out, strong involvement of industry and SMEs as well as of the research institutes are required to meet ARTEMIS's objectives.

Education and Training is a crucial factor in maintaining leadership and competitiveness in such a dynamically evolving domain as embedded systems: it builds the foundations for sustainable evolution. The ARTEMIS Programme, whose mid-term goal is the creation of a self-sustaining innovation eco-system, has to make a significant contribution to this.

In the ARTEMIS-JU Multi-Annual Strategic Plan, Education and Training is identified as one of the 7 pillars of the "European Innovation Ecosystems". The WG E&T mission is therefore to be an enabling factor for the long-term sustainability of these innovation eco-systems. The strategy to fulfil this is:

- To build an infrastructure for E&T that facilitates the introduction of new content and curricula.
- To strengthen links between industry and academia,
- To build on and integrate the results of recent and ongoing European activities, networks and projects by co-operation (e.g. COSINE2, AMSD-DES, Artist2, ReSIST, DECOS, ERCIM, EWICS TC7, to name just a few)

 To raise business awareness, and to perform short-term exchange and training in both directions (industry and academia), complimentary to long-term basic research.

The important role of Education and Training in the context of European Technology Platforms and research is underpinned by the conclusions of an independent report on ETPs to the EC stating "... platforms which are more advanced and have already developed their SRAs have "underachieved" regarding the identification of future education and training needs", thus recommending the introduction of more initiatives (reference: ftp://ftp.cordis.europa.eu/pub/ technology-platforms/docs/evaluation-etps.pdf).

The first task to be fulfilled was to provide inputs on E&T for the ARTEMIS-JU MASP 2009. This contribution describes the goals of the WG in more detail, addressing not only academic/university issues, but professional training of people in the active workforce as well.

This includes training of entrepreneurs, covering SME and recruitment issues, thus meeting



Erwin Schoitsch chairperson of the WG

Erwin Schoitsch Works at Austrian Research Centres, Seibersdorf, in Austria for more than 35 years as Information Technology specialist. Since 2004, he his member of the managing team of the Integrated Project DECOS, where ARC is the coordinator. He is designated Austrian expert in standardization groups (IEC 61508 (SC65A, MT12/13), ISO WD 26262 (ISO TC22 SC3 WG 16) on functional safety of E/E/PE Systems. In ARTEMISIA Association be active as Coordinator of the Working Group Education & Training, together with Martin Danek.

immediate industrial needs. Additionally, public awareness and policy directed issues are addressed. Complementary to and in collaboration with initiatives like EIT's "KICs", a platform of excellence should be supported by ARTEMIS and the E&T WG. (More details in the MASP 2009).

Cooperation with other initiatives and groups working on E&T related topics has already been initiated (EWICS TC7, ARTIST 2 and ARTIST Design, ReSIST, COSINE2 and others). The results achieved and the work to be done during the upcoming year was presented at the ARTEMISIA Spring event in Nice (April 23-24, 2009). A strategic meeting with COSINE2, with representatives of national public authorities, was held in Salzburg on May 25th 2009 to clarify possibilities to create ARTEMIS related E&T programmes and projects. The meeting resulted in recommendations which will guide further approaches of the WG to meet its goals, mainly to propose items for the ARTEMIS-JU Working Plan for 2010. These cover the inclusion of an E&T section in each ARTEMIS project proposal as a mandatory requirement, and of "Contribution to E&T objectives" as separate point in the evaluation criteria. Also, for the ARTEMIS SRA, it recommends to provide a section (elaborated on MASP 2009) requesting E&T related projects, strongly backed by industry, as a long-term goal.

At the ARTEMIS Summer Camp in Brussels, June 8-9, the working group took these recommendations, supported and enhanced by further inputs from the WG sessions on strategy, research and innovation, and formulated concrete proposals for the Work Programme. These include a chapter on E&T in the "Requirements Section", a paragraph on E&T in the Innovation, and an extension of the evaluation criteria to cover E&T requirements (tool platforms to provide training sets as a result, E&T action plans etc...).

The contribution of the E&T WG to the SRA addresses academic educational issues as well as professional training of people that form the existing workforce. This is needed in order to meet the current industrial needs, support and train "innovators" and creative entrepreneurs, and improve recruitment and motivation of the public for engagement in technological areas.

The ideas from the summer camp will be elaborated further, and involvement of other stakeholders in ARTEMISIA is a major aim. WG meetings are planned at least at the next AR-TEMISIA events, to include as many members as possible, and to review existing work and finalize the contributions to SRA and WP. The WG is open to members of groups with whom we want to co-operate to meet our goals and avoid duplication of work (COSINE, Artist2, Artist Design, ReSIST, EWICS TC7, ERCIM etc.)

Guiding and being guided by intelligent metrics

One of the measures of success of the ARTEMIS JU Programme will be its technological and economic impact within the European Union. Our key stakeholders are mainly interested to see what impact ARTEMIS has on the competitiveness of the European embedded industry, the employment in the sector and the new business creation. In addition, what the results of the ARTEMIS JU Programme mean in terms of employment and comfort for the European citizen have to become more visible.

In order to monitor all this, it has been decided to define a number of "Success Criteria & Metrics" at programme level, to see how big an impact it has in Europe. Everybody knows that it is not easy to come up with clear metrics for measuring the true impact of specific research projects on the economy, as the main result is often a combination of different actions and based on an accumulated body of knowledge from multiple sources. The Working Group therefore proposes both a bottom-up approach, as well as a top-down one. Sometimes this is called the "microeconomic" and the "macro-economic" view of the ARTEMIS JU Program.

The bottom-up approach takes into account the success criteria as defined by the different projects and looks at a combination of these criteria as a high-level "Key Performance Indicator", or KPI. One example is the speed and size of results of projects taken up by third parties, who were not member of the original consortium. Another example is the acknowledgment of key results in world-class conferences such as the IEEE . As an example, a very specific KPI within one project is to come up with "a 30 % reduction in power consumption while getting a 20 % increase in performance for future multi-core embedded systems. This could result in a more than 75 % reduction in energy consumption for TV's and displays. If we take into account an install base of 500 million TV's, and we assume a 2 Watt saving per TV, this will result in a total saving of 1000 MWatt, which is equivalent to a nuclear power plant".

The top-down approach will start from defined challenges and conditions for successful business and market success. A number of target criteria have been defined, which have been reformulated and divided into three different domains, as given below:

- Competitiveness Challenges
 - Impact on Embedded Systems Market
 - SME's, Primary Sector, Service Sector Enhancement
 - System Design & Implementation Productivity



Patrick Pype was born in Roeselare, Belgium. He studied Electronics Engineering and Master of Business Administration at the K.U.Leuven (Catholic University Leuven). Cur rently he is Director European Affairs at NXP Semiconductors. Previously, he was Manager Business Development of the strategic IP-development partner ship between Philips, ST and Freescale. Before this, he has been working at the start-up EDA-company CoWare, of which he is a co-founder, and at the international research institute IMEC. Since 2004, he is Chairman of the Alumni Engineering Society of the K.U.Leuven. He is also an expert re viewer at the European Commission for several ICT-projects. Patrick is in ARTEMISIA active as proxy for NXP in the Steering Board and he is Coordinator of the Working Group Success Criteria and Metrics.

- Technological Challenges & Conditions for Successful Business Environment
 - Seamless Technology, Interoperability within and between Ambient Environments
 - Successful Design Tool Strategy
 - What can be expected as / from radical innovations ?
 - Cross Sectoral Technology Development & Re-use
- Building a Friendly Innovation Environment
 - Education, Training, Workforce for Embedded Systems

More detail on what is behind these different topics is available, but it would lead us too far to describe all of them here.

Further work is still needed, including the following:

- come to a final agreement on what will be monitored : do we take all of these or do we make a selection ? How far in detail do we go ?
- define the starting reference point : against what do we compare the results and measure the success ?

- define the way to monitor the data : who and how to measure ?
- come to alignment with other instances working in this field, as e.g. the European Commission and Public Authorities in different Member States.

For this, it is important to work together with universities and/or research institutes who are experienced in this domain and who have already put considerable effort into this area.

As our "Metrics Working Group" is currently rather small, we would like to open up a call for additional participants who are interested in joining the team in order to further refine and consolidate the existing findings.

ARTEMISIA members who have any input or wish to participate in the working group can get in touch with Patrick.pype@nxp.com."

ARTEMIS Spring Event 2009



The ARTEMIS Spring Event 2009 is a networking event 'pur sang' for the ARTEMISIA members, public authorities and guests. In spite of the many travel restrictions, ARTEMISIA was happy to welcome more than hundred members. An enthusiastic and interested audience participated in the ARTEMIS Grand Dinner and enjoyed the ARTEMIS Orchestra Contest on the first day, and the ARTEMIS Focus sessions and General Assembly on the second.

ARTEMIS ORCHESTRA CONTEST 2009 ~ The ARTEMIS Orchestra contest was held on the 23rd, followed by the ARTEMIS Grand Dinner. For the ones who are not yet familiar with the concept of the ARTEMIS Orchestra Contest: The contest challenges young people to build devices that play standard, unmodified musical instruments to demonstrate the creative potential of embedded systems. The competition is aimed at higher Education, universities and young researchers. The contestants who took up the challenge to perform were three groups, of which two had already participated in the contest of 2008.

The contestants were: teamDARE from the Netherlands with their robotic guitar from last year and their new instrument, the drums. University of Adelaide, Australia, came with a concertina, and HAMK, Finland, with a flute and a piano. TeamDARE, impressed the jury and the audience and earned the 1st Prize. Adelaide gave a very nice performance as well and earned the 2nd Prize. HAMK unfortunately encountered technical problems and weren't able to show their instruments playing at the crucial performance moment. This was a huge disappointment for the young contestants, but they did at least still earn the 3rd prize.

ARTEMIS FOCUS SESSION ~ The ARTEMIS Focus Sessions took place on the 2nd day, prior to the General Assembly. One of the sessions was organised and presented by Erich Prem of the COSINE2 initiative. This is a strategic initiative run mostly by a group of European Member States' agencies to advance the European environment for research and development in embedded systems. The presence of COSINE2 underlined the importance of the ARTEMIS programme for the Public Authorities of the participating member states.





ARTEMISIA WORKING GROUPS ~ The Focus Sessions addressed the activities of various ARTEMISIA Working Groups in establishing concrete steps in implementing the ARTEMIS Multi-Annual Strategic Plan (MASP). Central to this were the R&D themes to be addressed in future annual Calls, which is the responsibility of the WG-SRA. Here, the plans for revision of the ARTEMIS-ETP Strategic Research Agenda.

The Ecosystems strategy defined in the MASP requires several other constituents, and separate ARTEMIS Working Groups are responsible for these. Each group presented their status and plans for the coming year. It shows that the ARTEMISIA community is very active and highly motivated to make a success of the ARTEMIS programme.

Second call attracts *56 proposals for a total cost of nearly* €600 *million*

56 proposals were received for the second ARTEMIS call for proposals, corresponding to a total amount of 583 M€ in research planned by many different consortia. The total requested public funding is around 318 M€ (from both the involved Member States and from the ARTEMIS Joint Undertaking). Around 820 participants from 23 different European countries are involved in the proposals. All the major European players in Embedded Systems Research are included in this call; around 32% of the participations are SMEs.

Tom Bo Clausen

Project Officer in the unit "Embedded Systems & Control" Information Society and Media Directorate-General The ARTEMIS second Call has been very successful: it has doubled the number of proposals compared to the first Call. This shows the increased interest in the ARTEMIS Programme from all the research actors in Embedded Systems research in Europe. For its second Call, ARTEMIS has allocated a total public budget of 105 M€, and with a requested public funding of 318 M€ this leads to a very healthy oversubscription ratio of 1:3, securing high quality proposals without overburdening the research constituency.

The ARTEMIS second Call has been successful in attracting proposals that cover all 8 Sub-programmes of the ARTEMIS Annual Work programme. Sub-programmes 1-4 have attracted 70% of the proposals and sub-programmes 5-8 the remaining 30%. Topics addressed include platforms, architectures, tools, safety-driven design, test and integration of sensor based applications, wireless sensor/actuator networks, technologies for monitoring of people and smart locations.

The ARTEMIS second Call is organised, for the first time, in a two step procedure. Proposers are first asked to submit a Proposal Outline (PO); as a second step, proposers have to submit a Full Project Proposal (FPP). This scheme is put in place in order to increase the quality of the proposals and to give the ARTEMIS JU and the funding authorities an early overview of the expected proposals leading to an optimised selection process.

The assessment of the Project Outlines has already been completed and feedback has been received by the proposers. The next step is for proposers to work on the Full Project Proposals taking into account this feedback and submit the FPP before 3 September 2009. Hereafter the ARTEMIS JU can start the evaluation of the FPPs. This evaluation will be conducted with the help of independent experts. On the basis of this evaluation, the Public Authorities Board of the ARTEMIS Joint Undertaking will select the proposals with the highest potential to generate successful projects with large industrial, economic and societal impact. The results of this selection are expected by the end of October 2009.

Calendar

22 - 25 SEPTEMBER 2009

SMART UNIVERSITY "BUILDING THE INTERNET OF THINGS: FROM VISION TO BUSINESS OPPORTUNITIES"

SOPHIA-ANTIPOLIS, FRANCE

This module has been designed and coordinated by Calo Maria Medaglia professor at University of Rome "Sapienza" (Italy), an ARTEMISIA Member. Smart University completes the agenda of Smart Event 2009, The Innovation Forum for Mobility & Trusted Technologies & Services. Its co-location with world class e-Smart, Smart Mobility and World e-ID conferences facilitates networking and exchanges with 800+ expected delegates.

www.strategiestm.com/conferences/smart-event/09/smart-university/program_internet_of_things.htm

More information:

18TH OF NOVEMBER 2009, FACULTY CLUB, LEUVEN, BELGIUM

12TH OF NOVEMBER 2009, EINDHOVEN, THE NETHERLANDS

BITS&CHIPS 2009 EMBEDDED SYSTEMS

This fall, Bits&Chips will organize Bits&Chips 2009 Embedded Systemen, the eighth edition of its annual conference on embedded systems and software. The programme is organized in cooperation with the Embedded Systems Institute. It will offer parallel tracks with contributions from the academic world as well as from the industry. The ARTEMISIA team will be present at the exhibition of this event in Eindhoven, the Netherlands.

More information: www.embedded-systemen.nl/

17 - 18 NOVEMBER 2009

EUROPEAN NANOELECTRONICS

NOORDWIJK, THE NETHERLANDS

The event is commonly organised and hosted by CATRENE, the EUREKA cluster programme and the ENIAC Joint Undertaking. Both public-private partnerships are working in close synergy for European leadership in nanoelectronics. ARTEMISIA is expected to be present at this event. Please note that participation in the European Nanoelectronics Forum 2009 is by invitation only.

More information: www.nanoelectronicsforum2009.org

29 - 30 OCTOBER 2009

ARTEMIS AUTUMN EVENT/ CO-SUMMIT MADRID, SPAIN

This second edition of a Co-Summit event with ITEA 2 will be held on October 29th and 30th in Madrid, Spain. The event comprises a conference with key note speakers, parallel sessions, a project exhibition and the second ARTEMISIA General Assembly of 2009. The first day will include the ARTEMISIA Steering Board Meeting and ARTEMISIA General Assembly take place. The second day of the Co-summit will have a more open character with a co-organised programme with ITEA2.

Last year at the event in Rotterdam the First Call for ARTEMIS projects was still in its selection phase, therefore the ARTEMIS projects could not present themselves at the exhibition. This year twelve ARTEMIS projects will be asked to present their projects at the exhibition in Madrid. Together with the ITEA2 projects, this will entail an exhibition of some 65 European innovative projects in Embedded Intelligence & Software Intensive Systems and Services.

More information: www.artemisia-association.eu

JANUARY 2010 EXPECTED

ARTEMIS BROKERAGE EVENT





ARTEMISIA Association, or shortly ARTEMISIA, is the association for R&D actors in the field of ARTEMIS: Advanced Research & Technology for EMbedded Intelligence and Systems.

ARTEMISIA is responsible for the ARTEMIS ETP Strategic Research Agenda, and is a founding member of the ARTEMIS Joint Undertaking.

ARTEMIS Magazine is published by the Artemisia Office, and provides information on the developments within the ARTEMIS Technology Platform, ARTEMISIA Association and ARTEMIS Joint Undertaking.

ARTEMISIA 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 www.artemis-ju.eu