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*

ARTEMIS

October 2009 NO.5 ~ ARTEMIS Autumn Event & Co-summit 2009

ARTEMIS AUTUMN EVENT & CO-SUMMIT 2009

Co-summit - Business driven innovation ~ Single European dimension ~ Vehicle Communication Eco-Systems ~ GENESYS ~ ARTEMIS-ETP SRA ~ Ecosystems driving open innovation - ARTEMIS projects - SMART Objects ~ ARTEMIS Austria ~ JU News

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ARTEMISIA is the association for R&D actors in the field of Advanced Research and Technology for EMbedded Intelligence and Systems. ARTEMISIA Association embodies the ARTEMIS European Platform in Embedded Systems and is since 2007 an association with about 180 members under Dutch law. 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.

ARTEMISIA Association is a founding member of the ARTEMIS Joint Undertaking which is a innovative funding programme that launches the ARTEMIS Calls each year until 2017.

The ARTEMIS Joint Undertaking is a Public Private Partnership with the EC and participating member states. ARTEMISIA association is the private partner in the ARTEMIS Joint Undertaking and represents its members towards the EC and member states.

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.
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FOREWORD

This issue of the ARTEMIS Magazine is dedicated to the ARTEMIS Autumn Event & Co-summit 2009 in Madrid on 29 and 30 October.

Since the last issue of this Magazine the JU has reached a new stage in welcoming Eric Schutz as its new Executive Director from 1 September and the second call of the ARTEMIS-JU closed on 3 September.

We have heard from the JU office that, on all accounts, this first "two-step" call has been very successful, with many project coordinators making good use of the feedback from the PO phase. There were many more proposals than in Call 2008, which offer a good coverage of the ARTEMIS ASPs and a mix of larger and smaller projects, nicely in line with the ARTEMIS objectives. The evaluation process is still ongoing so details are not yet available, but we look forward to hearing about the results of this Call at our autumn event during the Madrid co-summit at the end of this month.

CO-SUMMIT ~ On page 4 Klaus Grimm introduces the co-summit and explains why we are once again organising it with ITEA2. On page 5, Rudolf Haggenmüller provides some insight into the ITEA2 sub-theme of the co-summit.

There are interviews with Thierry van der Pyl (pages 6 and 7), chair of the ARTEMIS-JU Public Authorities Board, who will be giving a speech at the co-summit and Ralf Herrtwich (pages 8 and 9), who is giving a keynote speech.

The two parallel sessions organised by ARTEMISIA at the co-summit – the ARTEMIS-ETP Strategic Research Agenda updating process (extensively discussed in the previous issue of this Magazine) and ideas on Centres of Innovation Excellence – are given attention (pages 10-13).

It is a pleasure to present all 12 projects that have been selected in the first call of the ARTEMIS-JU. Most of them will have a stand at the co-summit project exhibition together with about 50 projects by ITEA2. Ad ten Berg introduces brief descriptions of these (pages 14-25) while one of the projects, SOFIA, is given more extensive coverage (pages 26-29).

STATE OF THE ART ~ In the SRA update Tatu Koljonen takes a closer look at Europe in terms of the state of the art in the rest of the world (pages 30-31) and GENESYS, a FP7 project that is a candidate for an ARTEMIS Cross-Domain Reference Architecture for Embedded Systems.

ORGANISATION NEWS ~ The new ARTEMIS Platform in Austria is described on page 35. Klaus Grimm thanks both the predecessors – Kostas Glinos and José Cotta – who served as Interim Executive Director of the ARTEMIS Joint Undertaking before Eric Schutz took up the reins. They did their work in the initial period and intermediate period, in combination with their normal jobs in the European Commission. Klaus Grimm wishes Eric Schutz every success in his new Job. The new Executive Director is interviewed on page 36 and he introduces the members of his JU office appointed in the meantime.

NEW EVENTS ~ Finally we announce that the ARTEMISIA 2010 Spring Event (for ARTEMISIA members and invited guests only) will be organised in conjunction with EMBEDDED WORLD on 1-2 March in Nuremberg, Germany.

I wish you a lot of pleasure reading this magazine.

Jan Lohstroh

CO-SUMMIT

ARTEMIS AUTUMN EVENT
& CO-SUMMIT 2009

Written by Klaus Grimm

The second ARTEMIS Autumn Event & Co-summit 2009, being organised by ARTEMISIA and ITEA2 in Madrid on 29 and 30 October is the successor to last year's event, the first, in Rotterdam. In fact this co-summit sees the ARTEMIS Autumn Event and the ITEA2 Symposium come together on a day when the ARTEMIS and ITEA community are able to mingle together. The morning of 30 October will start with a joint plenary session on a common theme while the afternoon will be devoted to parallel sessions on separate themes that can be attended by all participants, both ITEA and ARTEMIS members alike.

BOOSTING INNOVATION AND COMPETITIVENESS ~ The common theme this year is ecosystems that drive open innovation in the European embedded intelligence and software-intensive systems & services industry. The ITEA sub theme for the parallel sessions focuses on business oriented innovation that strengthens the economy and benefits society. The ARTEMISIA association has dedicated the ARTEMIS parallel sessions to its theme, namely recalibrating the ARTEMIS-ETP Strategic Research Agenda.

ARTEMISIA is continuing the work of the European Technology Platform on Embedded Intelligence and Systems whereby the members of ARTEMISIA define the ARTEMIS-ETP Strategic Research Agenda. This high level document, referred to by many European research initiatives like ITEA, identifies several key actions to stimulate innovation and competitiveness among European companies.

ARTEMISIA thinks that it is important to bring all embedded systems stakeholders, R&D actors and public authorities together in one big event to help build networks for future cooperation and achieve effective ecosystems where possible. Given the considerable overlap between ARTEMIS and ITEA2, it is only natural that they are the organising partners of this event, and we are happy that the ITEA community thinks the same .

An important part of the co-summit is an exhibition of ongoing ARTEMIS projects. While ITEA projects exclusively dominated in Rotterdam last year, this year almost all the 12 projects that have been selected in the first call of the ARTEMIS Joint Undertaking will present their projects at the exhibition as well, so we expect about 60 projects to be on show.

I wish all the participants of the co-summit a fruitful exchange of information and opportunity to meet new partners for future cooperation projects that can be supported by the public authorities for the best of Europe. ■

Klaus Grimm
President of ARTEMISIA Association

Klaus Grimm started his career with electrical/electronic company AEG, working on reliability calculations for technical equipment. In the mid 1980s, he shifted into software engineering. In 1989, AEG Research became part of Daimler Benz. Daimler concentrated the whole of its research into one department, giving Dr. Grimm the opportunity not only to work for AEG but also on defence electronics, space/aerospace and transport. "This was a really fascinating period where I got to know different application areas of embedded systems – not only AEG equipment but also trains, planes, satellites and cars." Later Klaus Grimm became head of the Daimler Software Technology Laboratory in Germany.

CO-SUMMIT

BUSINESS-DRIVEN
innovation is key

Written by Rudolf Haggenmüller

Like last year, a Co-summit will be held in Madrid, Spain on 29-30 October. It is being organised by ITEA 2 and ARTEMISIA as part of the ITEA 2 Symposium and the ARTEMIS Annual Event. This year's theme is Ecosystems driving open innovation in Embedded Intelligence and Software-intensive Systems & Services.

Like last year, a Co-summit will be held in Madrid, Spain on 29-30 October. It is being organised by ITEA 2 and ARTEMISIA as part of the ITEA 2 Symposium and the ARTEMIS Annual Event. This year's theme is Ecosystems driving open innovation in Embedded Intelligence and Software-intensive Systems & Services.

From the start of ITEA, the programme has built an open community in which business-driven innovation is key. Over the years we have seen impressive growth and development in this eco-system. The Co-summit with ARTEMISIA marks another step in expanding the eco-system and thereby helping confront the current economic and societal challenges and fulfil our ambitions.

MEETING FUTURE CHALLENGES ~ ITEA has defined a symposium theme specifically for the ITEA 2 Symposium: Business-oriented innovation that strengthens the economy and benefits society. While ITEA has produced many success stories over the past ten years, many new challenges continue to appear ahead of us and the speed of change in the business environment keeps increasing. ITEA is ready to address these new challenges and to strengthen its economic impact. The theme clearly reflects what ITEA will focus on during the decade ahead. As already outlined in ITEA's third Roadmap, in 2010 – 2020 ITEA will:

- Pave the way towards societal computing by addressing key societal issues such as health, energy, transport, knowledge and education;
- Respond to the generalisation of connectivity by addressing the challenge of massive scalability;
- Support the European industry to provide the market with end-to-end solutions including both products and services;
- Contribute ICT-based innovations to ensure the competitiveness of jobs and businesses; and
- Address greater sustainability and efficient use of scarce resources such as energy, water and frequencies.

In summary, ITEA will focus on major economic and societal challenges for People, Planet and Profit. ■

Rudolf Haggenmuller
Chairman of ITEA 2

Rudolf Haggenmüller, born in 1950, studied mathematics at the universities of Munich and Zurich. From 1974 to 1984 he held several positions at the Institute of Mathematics of the Ludwig Maximilians University in Munich. In 1995, Rudolf was appointed Professor for Informatics and Mathematics.

From 1984 to 1994 Rudolf worked at Siemens, mainly in the area of Software Engineering. In 1994, he became managing director of FAST, the "Research Institute for Applied Software Technology", jointly founded by Siemens, BMW and Bayerische Landesbank. On January 1st 2008 FAST together with 4 other IT-subsidiaries of BMW has been merged to Cirquent GmbH. Rudolf since then is a Member of Cirquent's Executive Board.

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

Brussels ~ Director Components and Systems EC, Thierry van der Pyl

CO-SUMMIT

A SINGLE EUROPEAN DIMENSION

Written by Thierry Van der Pyl

Thierry Van der Pyl provides a fascinating insight into the kinds of challenges and opportunities that are presented to the embedded systems industry in Europe, and the role that the ARTEMIS Joint Undertaking can play in creating convergence to take up these challenges and exploit the opportunities.

Thierry Van der Pyl is Director of the Components and Systems Directorate at the European Commission's Directorate General for Information Society and Media. He also has the responsibility of chairing the Public Authorities Board of the ARTEMIS Joint Undertaking (JU). In both roles he has similar ambitions: to support the interests of the European embedded software industry at large in a scenario where all the stakeholders play their own particular roles to achieve a common goal.

CONVERTING CHALLENGE INTO OPPORTUNITY ~ Thierry indicates that there are three

key challenges that the ARTEMIS JU has to take up. These can be categorised as short, medium and long term. In the short term, a matter of days, the second call for proposals will have to be implemented. In other words, the proposals must be evaluated and selected. In the more medium term, weeks, the ARTEMIS JU should eventually become autonomous (until now, during the "preparatory phase", it was operating under responsibility of the European Commission) In the longer term, there is a need in Europe to better exploit complementarities with national policies (like the Pôles de Compétitivité in France) and synergy and convergence with Eureka/ITEA in a single and very real Europe-wide strategy. Fragmentation of efforts and resources is an obstacle to the real progress that needs to be made and it must be replaced by a coherent whole, a convergence prompted and managed by the stakeholders – industry, public authorities, the European Commission – in order to turn knowledge into economic gain. 'ARTEMIS has an opportunity to exploit the whole European dimension,' Van der Pyl comments. 'As an autonomous body, the ARTEMIS JU is free to go beyond traditional confines and stimulate fresh ideas and more innovative consortia. In other words, facilitate open innovation.' Provided, of course, that all parties stick to the agreed rules of openness, fairness and transparency that make such an approach possible.

ALL FOR ONE AND ONE FOR ALL ~ The common platforms need to be based on open standards (with open source being an option), with developers bringing in added value to the systems. 'Industry has to take the lead in this process,' Van der Pyl underlines. 'It must facilitate the creativity that open innovation promotes. However, different players are only just starting to see the benefits of such an approach, like Nokia and mobile platforms or the more collaborative R&D approach taken in the automotive sector. Moreover, open innovation should allow to go beyond proof of concept, towards 'proof of usage".

FOCUS ~ 'In undertaking its coordinating role, ARTEMIS JU has to maintain a focus on the leading core sectors in Europe such as transport, energy and health' Van der Pyl explains. 'For example, in all three sectors energy management is a key issue in particular as pressure grows to reduce the carbon footprint. Energy management should be built in and not be an add-on. It should be an integral part of the system design'

While difficulties and complexities will regularly raise their heads, the European Commission is strongly committed to the success of the ARTEMIS JU and is a firm believer that all parties have a role to play.

The challenge posed to ARTEMISIA is to 'represent industry in Europe, to be the spokesperson of industry and R&D. And the EC is fully behind this,' Van der Pyl says. 'And the Member States will be challenged to maintain their funding commitment and support for this initiative.' If all the stakeholders perform their roles towards the common objective and unnecessary overlap or duplication can be trimmed through the more efficient optimisation of resources, the convergence and synergy that are essential can be attained.

PPPS ~ The emergence of -public-private partnerships (PPPs) is also regarded as a powerful instrument for implementing the EC's recovery package. In the three recently established PPPs (Green Cars, Factories of the future and Energy efficient buildings) ICT plays a key role and in particular embedded software. Industry is again considered the lead player in these PPPs and ARTEMIS will have a role to play in defining the work programmes for these PPPs, ensuring that duplication is pre-empted and that the significant funds available for ICT are used efficiently and effectively.

PPPs require a long-term horizon to be set and a proper body established that will be responsible for ensuring implementation. 'In this respect,' says Van der Pyl, 'much can be learned from the ARTEMIS and ENIAC experience. The first lesson is that it works! The first two Calls for proposals are evidence of that.'

Thierry Van der Pyl
Director Components European Commission (EC), Belgium

Thierry Van der Pyl graduated from Ecole Normale Supérieure de Cachan and is docteur d'état in Informatics from University Pierre et Marie Curie, Paris VI. He was researcher at CNRS and joined the European Commission in 1984 where he has held various management positions. He is currently the Director of the Components and Systems Directorate within the Information Society & Media Directorate-General.

TRUST ~ A major milestone for ARTEMIS JU, that will come very soon, will be autonomy. The legal framework of the ARTEMIS JU serves as a guarantee that the public funding will be well managed, even though the complexity that comes with it may be challenging at times. 'However, as with most things,' Van der Pyl reminds us, 'once you track down the problem, you set about remedying it.' A balance has to be found between the rules and the efficiency needed to deliver results. In this, as in many other aspects of collaboration trust is essential. This is ultimately the message that permeates the thrust of Van der Pyl's commentary. If there is trust - in terms of capabilities and intent - then any disadvantages of complexity can be more than compensated for by the tremendous gains to be made from a common purpose, commitment and strategy. ■

CO-SUMMIT

VEHICLE COMMUNICATION
ECO-SYSTEMS

Written by Dr. Ralf Herrtwich

Dr. Ralf Herrtwich is Daimler AG's Director of Infotainment and Telematics. At the Co-summit in Madrid, he will give a keynote speech on Friday 30 October. Dr. Herrtwich's work at Daimler focuses on next-generation multimedia, telecommunication and navigation systems for all vehicle brands of the Group. Good reason for ARTEMISIA Magazine to give Dr. Herrtwich a little bit space. The ARTEMIS Magazine Editorial Board formulated questions based on the interests of our readers. We hope that you think it interesting 'stuff' too!

Is governmental ruling to be expected for access to internet functionality, given the number of accidents due, for example, to drivers distracted by the car navigation, mobile phone, etc?
Safety is a dominant concern, not just among state authorities but also among car manufacturers themselves. More and more countries have banned the use of hand-held cell phones while driving, and we welcome this development. At Mercedes, we always take the perspective that the safety of the vehicle, its driver and passengers cannot be compromised.
We apply this to our telematics systems very strictly: no TV or moving video, for example, is displayed on the head-unit screen while the vehicle is in motion in order not to distract the driver; the steps required to operate the navigation system are reduced to the bare minimum, and we make sure that the driver can keep his hands on the wheel through the use of what probably is the most advanced speech recognition in the market today. As for internet, we will obviously not allow arbitrary browsing while the vehicle is in motion; we will block it in the same way as we do it video.

Which technologies for carrier networks seem most obvious for connecting the car with internet? Will mobile network operators seize this market or will internet providers play the key role in connecting the car to the internet?
Cellular networks are the prime contenders for providing in-vehicle internet access. Early internet solutions for the vehicle suffered significantly from a lack of bandwidth, but with the introduction of UMTS the situation has improved much. The issues with 3G networks, however, are that at higher vehicle speeds bandwidth is reduced dramatically and that in most regions 3G footprints are somewhat sketchy. The introduction of 4G networks (or "LTE", long-term evolution networks) after 2012 will solve these issues and our first experiments with emerging LTE installations are most promising.

The actual internet access from the mobile network is likely to be provided by a gateway that vehicle manufacturers will establish for their telematics units in order to provide IT security such as virus protection. The connection between this gateway and the actual vehicles will form a Virtual Private Network or VPN, making sure that no unwarranted data exchange takes place between vehicle and network.

Which infotainment applications with internet support will, in your view, be the first to enter the car en masse?
We see a strong need in the context of navigation systems to search for points of interest ("POIs") not just in the on-board database but also in the network. The information there is obviously more diverse – and in most cases

more current. And there is a strong need for customers to do some trip planning on their computer at home and then just transfer their carefully planned route into the car at the touch of a button. When it comes to multimedia, internet radio seems to be a feature customers like but, unfortunately, today's mobile networks are not yet ideal to carry this load.

Roaming is still very expensive for internet access by mobile phone. Do you see this issue being solved for car internet access?
Carriers have realised that this issue can severely limit deployment. Some of them are now coming up with special price plans for vehicle connectivity that take care of the roaming issue by dramatically reducing roaming costs. We really welcome this development.

Will internet connectivity proliferate to other functions/applications outside the infotainment domain? Could you mention some candidate applications?
There are certainly applications beyond infotainment where communication plays a role. Technology-wise some of these applications will be IP-based, though they probably do not fit our image of a traditional web page. Vehicle software maintenance is one of these applications. Once a secure network is in place it can also carry software updates.

Vehicles can use connectivity to exchange vehicle status and position information; this forms the basis for communication-based safety applications such as hazard or traffic-jam warnings. Latency is a strong concern for such safety messages, which is the reason why a different kind of networks for Dedicated Short-Range Communication, DSRC for short, is under development for these applications. They are variations of the WiFi networks we know: fast and locally focussed.

Which additional standards are needed to realise internet connected cars? And do you foresee a role for Europe comparable, for example, to the role Europe played in GSM standardisation?
On the wide-area mobile Internet side, all required standards are in place. It is only in the area of DSRC technologies I already mentioned that standardisation is still ongoing. Europe plays a strong role in these activities and major research programmes are underway to support it. The one single white spot that remains is a standardised interface to the data content and application platform in the vehicle. But here, the jury is still out on whether such interfaces need to be standardised at all or whether it is an ideal field for differentiation and competition.

Which middleware stacks are likely to prevail? Will proprietary or open source stacks be the favoured solution?
Currently, the field is still dominated by a variety of vendor-specific solutions – the concern of automotive manufacturers and their suppliers was much more on catching up with a breathtaking expansion of infotainment and telematics functions than on designing the cleanest system architecture possible. However, the situation has reached a tipping point and most companies now see that – resource-wise – they can no longer expand new feature development unless they find a way to reuse former software. This leads to a search for longer-term platforms and middleware solutions. Whether those are open or proprietary is then almost an afterthought. Many different contenders – from Microsoft Auto to Google Android to Intel GENIVI – offer themselves as the best solution.

ARTEMIS and ITEA focus on innovation eco-systems supported by cooperative projects. Do innovation eco-systems play a role in the development of internet functionality in the car?
The beauty of more harmonised and more prominent middleware platforms is that they automatically attract application developers and an eco-system results – not just on the abstract level, but by means of technical implementation. One has to be realistic though. When we think about eco-systems, the picture in the back of our minds is usually the huge and perfectly interwoven market of iPods, iPhones and Apple apps. This eco-system obviously dwarfs the number of Internet-enabled head-units in vehicles and their possible applications. We have to live up to the fact that not all eco-systems will be vast. An interesting question is how small they can be to still work to a common advantage. This is the question currently pondered by vehicle manufacturers when it comes to internet connectivity because it heavily influences their choices of future platforms. ■

Ralf G. Herrtwich
Director Infotainment and Telematics Group Research and Advanced Engineering Daimler AG

Dr. Ralf G. Herrtwich is Director of Infotainment and Telematics Group Research and Advanced Engineering for Daimler AG. The work of his R&D teams in Böblingen, Germany, and Palo Alto, California, focuses on next-generation multimedia, telecommu¬nication and navigation systems for future vehicles of the Daimler Group. He is also Director and Honorary Professor at the Daimler¬Center for Automotive Information Technology Innovations (DCAITI) of the Technical University of Berlin. Before joining Daimler in 1998, Dr. Herrtwich worked for RWE and IBM in various R&D and product management functions. He studied computer science at the Technical University of Berlin and was a research fellow at the International Computer Science Institute at the University of California in Berkeley.

AUTUMN EVENT'09

INTRODUCTION TO THE PARALLEL SESSION on the ARTEMIS-ETP SRA

Written by Klaus Grimm

As extensively explained in the previous issue of this ARTEMIS Magazine (July 2009, No.4), ARTEMISIA has taken over the activities of the ARTEMIS European Technology Platform (ETP) and has decided to update the ARTEMIS-ETP Strategic Research Agenda, the first version of which was issued in 2006.

The update action was termed: "Recalibrating the ARTEMIS ETP". Many views by ARTEMISIA members on this update were presented in the previous issue of this Magazine, developed in part during the ARTEMISIA Summer Camp that was held earlier this year.

OPPORTUNITY TO HAVE A SAY ~ As the SRA is a pan-European guideline for all relevant ongoing R&D activities in Europe, whether or not funded by Public Authorities in programmes like FP7, ARTEMIS-JU, Eureka (ITEA2 and CATRENE), and national funding programmes, we would like to give all the participants of the co-summit the opportunity to learn what the current ARTEMIS-SRA stands for and to provide input for the next version.

In the SRA parallel session at the co-summit I will be chairing a small panel that will make some statements to trigger the discussion with the floor. Panel members are Laila Gide (co-chair SRA), Tatu Koljonen (co-chair SRA), Professor Luca Benini (University of Bologna) and Professor Jaenichen (Fraunhofer).

We hope you will be there to give your valuable input. ■

ECOSYSTEMS DRIVING OPEN INNOVATION:

Co-Summit "Centres of Innovation and Excellence"

Written by Heinrich Daembkes, Chairman ARTEMIS WG on CoIE

It is the ARTEMIS ambition to establish collaborative innovation ecosystems by stimulating the emergence of self-sustaining European groups of all actors involved in embedded systems innovation. In the framework of the ITEA-ARTEMIS co-summit, a special session on CoIEs approaches the specific problems and benefits, using three different representative activities. First, Professor Jerker Delsing, member of the Working Group CoIE, will talk about the proposed specification and obligations of becoming a CoIE. Then Dr. Fabrice Derepas explains what is involved in running a CoIE and, finally, Dr. Rafael De Andres-Medina considers the 'Ambient Assisted Living' stance.

Ottobrun ~ Heinrich Daembkes, Chair WG CoIE

Prof. Delsing of the ARTEMISIA Working Group Centres of Innovation Excellence responds to the question: What are the proposed obligations to become and then to maintain the status of ARTEMISIA Centres of Innovation Excellence?

The proposed obligations of an ARTEMIS CoIE ride on its ability to improve European competitiveness within a specific field of embedded systems. Let me use process automation as an example.

Process automation is of significant economic interest according to numerous forecasts, with growth rates of nearly 7% projected according to RPA [1]. Europe has a strong position from both a corporate and academic excellence perspective.

A kernel for process automation CoIE, called ProcessIT Innovation, is found in northern Scandinavia, i.e. Finland and Sweden. Here more than 15 large process industries (e.g. LKAB, Boliden , SSAB, Outokumpo, SCA, Billerud) actively cooperate with large automation suppliers (e.g. ABB, Schnieder, Metso, Midroc), numerous SMEs (e.g. Optimation, Eurocon, Abelko, Electrotech, Electrobit) and four universities (Lulea University of Technology, Umea University, Oulu University and Kemi Tornio University).

Key to the networking efforts is building trust among all partners. Trust encourages the confidence to critically identify end-user needs that are vital to their business success. These needs are then paired with the suitable academic competence and a potential product owner. Joint projects are then initiated based on the development model shown in Figure 2.

Based on the results obtained in this northern Scandinavian CoIE, ProcessIT Innovation, the basis could be laid for expanding ProcessIT Europe. The challenge is to extend the concept to a European level. Since a number of the very large end users and large automation suppliers are global players, a first extension to a European scale seems feasible.

To grow to a European scale, it will be critical to contribute to the ARTEMIS arena in terms of both project participation and further development of the research agenda. Here the closer cooperation between the partners of a ProcessIT Europe will be key to enhancing European competitiveness in the field of embedded system and process automation particularly.

Dr. Fabrice Derepas of EICOSE considers a number of questions posed to him: EICOSE, a potential role model ?

First of all what is EICOSE?

EICOSE is the European Institute for Complex Safety Critical Systems Engineering. It is a 'virtual' institute, in the sense that it relies on existing bodies. It leverages three recognised national initiatives onto a European dimension, namely two French pôles de compétitivités – Aerospace Valley and System@tic Paris-Region – and the German competence cluster SafeTRANS.

What is the use of EICOSE in the ARTEMIS eco-system?

ARTEMIS projects are large. Their goal is to "cluster" European actors. This is the meaning of the tool and platform group in ARTEMIS: actors involved in ARTEMIS will be able to structure and coordinate their work around platforms. To build such platforms which leverage European competitiveness you cannot start from zero. On a local scale this work has

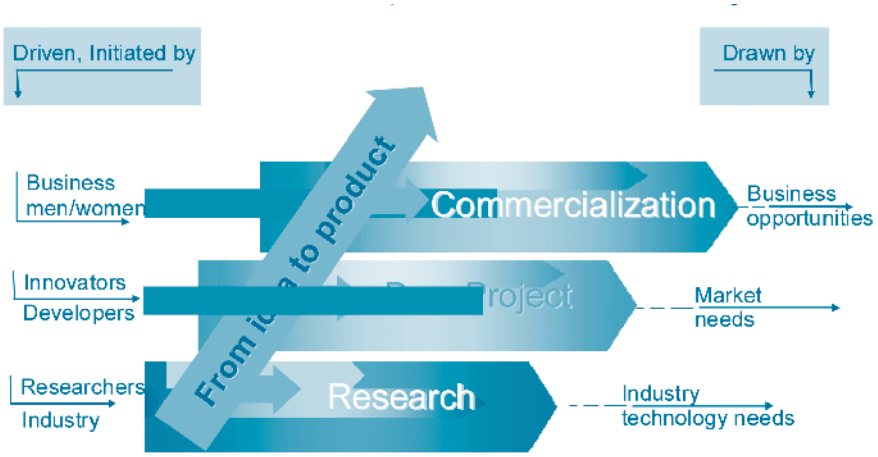


Figure 1 *A technology development model based on end-user needs, new technology and product owners' business prospects.*

Jerker Delsing
Scientific head of EISLAB

Prof. Jerker Delsing was born 1957 in Umeå Sweden. He received the M.Sc. in Engineering Physics at Lund Institute of Technology, Sweden 1982. In 1985 he received the degree of Licentiate in Technology and in 1988 the PhD. degree, both in Electrical Measurement at the Lund Institute of Technology. Early 1995 he was appointed professor in Industrial Electronics at Luleå University of Technology where he currently is working as the scientific head of EISLAB. His present research profile can be entitled "Embedded Internet Systems", EIS, with applications both to industrial, medical and sport.

already been achieved, for instance, in France with the Poles de Compétitivité as well as in Germany with competence clusters. There are two roles. The first role, in a bottom up way, I would say, is to enable the constitution of strong and reliable consortia as in the Cesar project. In this case the local competitiveness clusters enabled coherent sets of competencies to be achieved for an ambitious goal. The second role, in a more top down way, is to act as a relay of ARTEMIS on a local scale. This is important especially for SMEs that generally cannot afford to spend too much time in establishing proposals.

How is EICOSE structured?
EICOSE is structured around working groups, currently three, but this is an evolving structure and the creation and dismantling of working groups occurs regularly. EICOSE also has regular expert group meetings as well as a steering board. Roles change every year to ensure a good balance between all involved clusters.

What is the work carried out in EICOSE?
Several annual events generate momentum for ongoing actions in EICOSE, the most visible being the meeting held in the working groups once a year. Such a WG meeting is the opportunity for direct exchange among experts, projects leaders or any member of one of the competitiveness cluster involved in EICOSE. These meetings gather the main trends and priorities of the EICOSE members and help to define the EICOSE roadmap. Throughout the year this roadmap is regularly updated by expert group meetings. The most active companies involved in EICOSE also attend the Steering Board. All of these meetings provide the opportunity to keep in touch with ongoing project initiatives and actively prepare events of the ARTEMIS community like the brokerage or the spring event.

Why was EICOSE the first innovation cluster awarded by ARTEMIS?
I believe it is due to its local structure in the competitiveness clusters. EICOSE was extremely fast to gather structure and propose coherent sets of actors to achieve complex and ambitious proposals for the first call. But EICOSE was also able to constantly update its vision with regular meetings between experts and project leaders.

Can I join EICOSE?
Sure! All the information is on http://eicose.eu. EICOSE is keen to welcome new clusters already recognised in the field of transportation as well as experts from research institute and industrial companies

Ambient Assisted Living (AAL) – Dr. Rafael De Andres-Medina reveals the state of play

What are the objectives of the Ambient Assisted Living Joint Programme?
The objective of the AAL Joint Programme is to enhance the quality of life of older people and strengthen the industrial base in Europe through the use of Information and Communication Technologies (ICT). The motivation of the new funding activity is in the demographic change and ageing in Europe, which implies not only challenges but also opportunities for its citizens, the social and healthcare systems as well as industry and the European market.

Can you pin this objective down to specifics?
The concept of Ambient Assisted Living focuses on extending the time people can live in their preferred environment by increasing their autonomy, self-confidence and mobility. It also looks to provide support to maintain the health and functional capability of elderly individuals as well as promote a better and healthier lifestyle for individuals at risk. In this user-centric world, it is very important to enhance security, to prevent social isolation and to support the maintenance of the multifunctional network around the individual, like carers, families and care organisations. Finally, our aim is to increase the efficiency and productivity of the resources used in ageing societies.

What are the organisation's main activities
The main activity under the AAL Joint Programme is to fund R&D projects in the AAL domain that result from regularly published calls for proposals. The funding activity is commonly implemented by the AAL Association and its members that are national funding organisations in the 23 European member states and 4 associated states. While the European Commission is not part of the implementation structures, it does contribute with substantial financial support that is granted on the basis of article 169 of the EC treaty.

How does this funding work?
The AAL Joint Programme is implemented by the funding authorities of several European countries, which makes it a member-state driven R&D programme and not part of the European Framework programmes for RTD or Integrated Projects. It lies somewhere in between, stimulating networking among academia, SMEs and end users with its short-term aim to get products and services faster to market

The AAL member organisations - all national funding authorities in their countries - have agreed on two principles: that nationally committed funding is reserved for project partners of their respective national funding authority and that national funding rules apply. For instance, a Spanish partner will be administratively managed by the Spanish funding agency and a Dutch partner by its respective agency, and so on.

Dr. Fabrice Derepas

After graduating from Ecole Polytechnique in France, Fabrice Derepas earned a PhD in computer Science from the University of Denis Diderot Paris7. He worked four years as a system architect for a telecom manufacturer before having several jobs as a Chief Technical Officer in technology oriented start-up companies. He joined the Commissariat`al''Energie Atomique (CEA LIST) in 2003 as a software engineer, became head of laboratory in 2006 and has been the embedded systems programme manager since 2008.

Only a minimum set of rules are set on the central level and these will be published with each call. Among them is the criterion that at minimum organisations from three AAL partner states must be involved in one proposal. The subsidy that is finally allocated to project partners consists partially of national funds and partially European funds. The administration of the latter, the European co-funding, is the one of the most important tasks of the AAL Association. The association pays the European co-funding on request by the national funding authorities that forward the amounts to the project partners administered by them. The funds are never directly transferred to the accounts of project partners.

What do you think of the Artemis notion of Centres of Innovation Excellence?

Innovation is critical. We need new products and services that are in tune with economic growth, demographic patterns of change and standards of living. This kind of innovation cannot be done alone. It needs collaboration and joint effort, alignment and coordination. We have to think in a global perspective and act on a local level. A Centre of Innovation Excellence will enhance this pursuit. ■

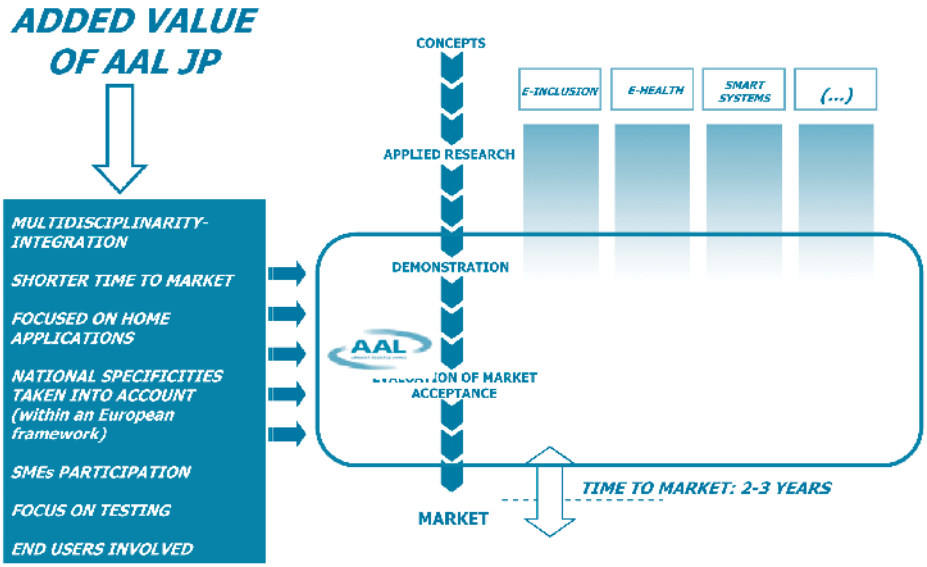


Figure 2 *Impact of AAL JP on innovation cycle and time to market.*

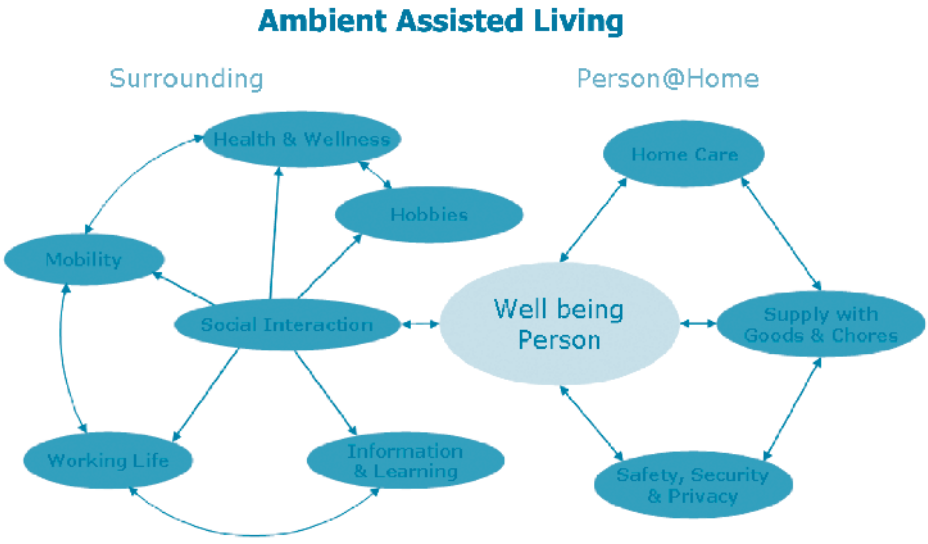


Figure 3 *Ambient Assisted Living eco-system*

Dr. Rafael De Andres-Medina
Scientific head of EISLAB

Madrid born Dr. Rafael De Andres-Medina graduated as a biochemist and later gained his PhD as a biologist. After research positions in Valencia (biomedical) and at the Pasteur Institute in France on a Council of Europe fellowship, Dr Andres-Medina took up his current position as scientific manager at the Instituto de Salud Carlos III (ISCIII) where he heads the Documentation and Technical department at the Fund for Health Research. The other hat he wears is as treasurer of the Executive Board of the AAL International Association and Joint Programme in Brussels. He refers to himself as a 'positive European, an optimist.'

Eindhoven ~ ARTEMISIA Programme Coordinator, Ad ten Berg

AUTUMN EVENT'09

THE FIRST EVER ARTEMIS-JU PROJECT EXHIBITION!

Written by ARTEMISIA Programme Coordinator. Ad ten Berg

ARTEMISIA is proud to present the first ever project exhibition of the ARTEMIS-JU programme and this article gives you a taster of this first occasion at the co-summit in Madrid on 28 and 29 October.

The first ever ARTEMIS call for projects in this new and industry-driven R&D programme in the embedded systems domain was closed on 3 September 2008. The first ARTEMIS-JU projects emanating from its first call for projects in 2008 already started in December 2008 and January 2009. This exhibition at our co-summit enables these projects to premiere their plans and first achievements to the whole ARTEMIS community.
Many enthusiastic project members will be doing their utmost to convince you of the value of their project achievements.

As in previous years ARTEMIS is co-organising the event with ITEA2. However, in 2008 in Rotterdam ARTEMIS was unable to hold a project exhibition. But this year in Madrid is different. ARTEMIS will be presenting its projects next to the ITEA2 projects! Together with the ITEA2 projects the ARTEMIS exhibition shows the world what R&D is cooking in Europe for software intensive systems, services and embedded systems, all concentrated in one big exhibition.

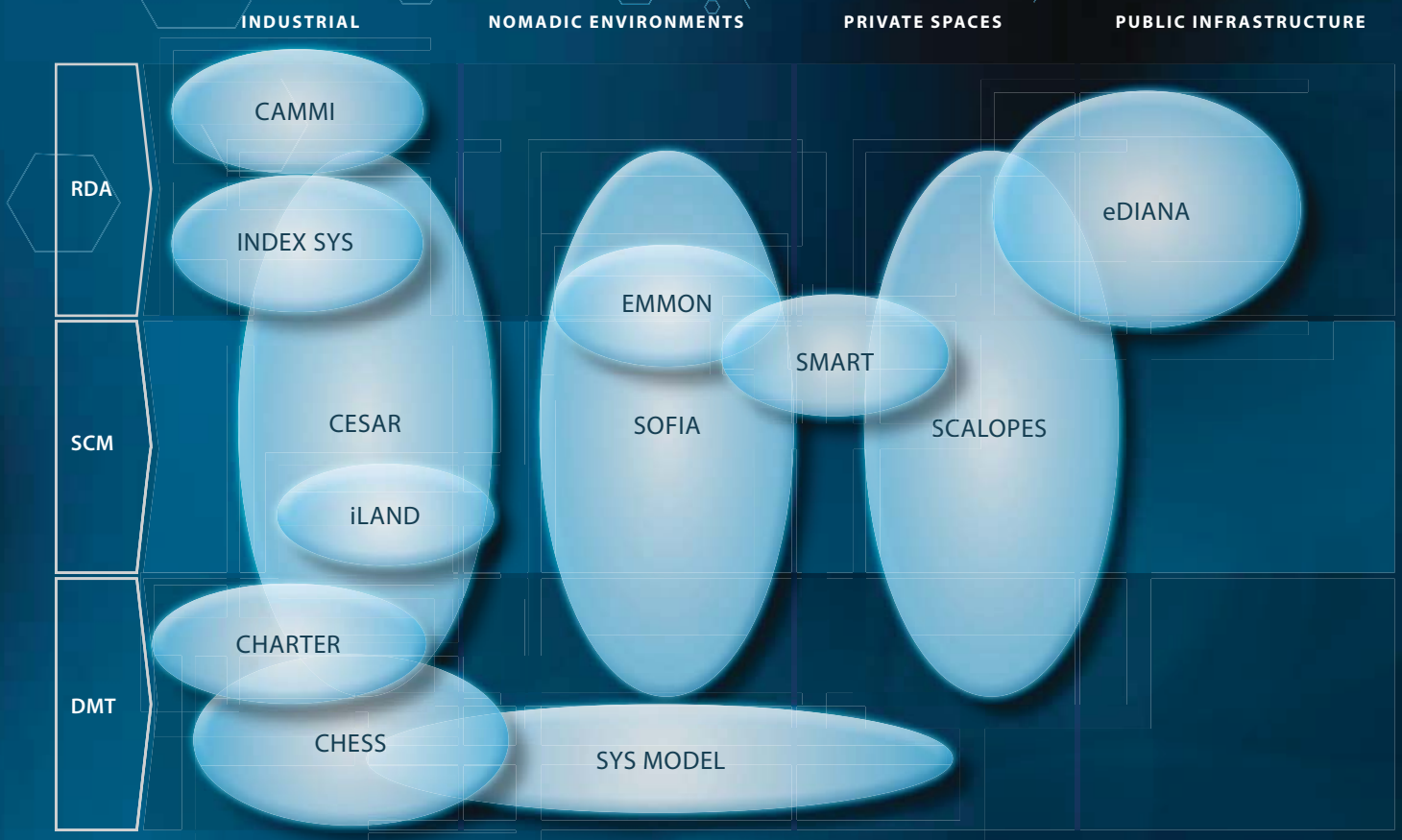
Whereas this first ARTEMIS project exhibition is still modest in size, with only the twelve projects of the 2008 call, we are already looking forward to 2010 when the number of projects is expected to double after the second call projects are up and running and can join the exhibition. This year our projects are all located close to the ARTEMISIA/ ARTEMIS-JU stand at the entrance of the exhibition area.

PROJECT SUMMARIES ~ This magazine introduces all the projects with a short description of their focus and their concrete impact on industry, society and European technology. Each project describes its key messages explaining its contribution to the ARTEMIS programme. We encourage you to visit the project stands at the exhibition for more information and an in-depth discussion on the project specifics. For this magazine, we have selected the SOFIA project that present its value proposition to European society in a more in-depth article.

This matrix shows at a glance that the projects from call 1 only provide a quite good basic coverage of the ARTEMIS-ETP SRA. All projects are positioned with their focus concentrating on the research domains and the application areas, all of which are described in detail in the ARTEMIS-ETP SRA.

More information and a link to each ARTEMIS-JU project can be found the on the ARTEMISIA website at https://www.artemisia-association.org/artemis_project_calls . Here is a description of each project and a link to the website of the project.

The ARTEMIS project members look forward to welcoming you to their stands! ■



RDA= Reference Designs and Architectures

SCM= Seamless Connectivity and Middleware

DMT= Design Methods and Tools

ARTEMIS projects mapping SRA

R&D – THE ARTEMIS SUB-PROGRAMMES

The ARTEMIS-ETP SRA classifies technological research for Embedded Systems into three Research Domains:

- Reference Designs and Architectures
- Seamless Connectivity and Middleware
- (System) Design Methods and Tools

These Domains, which are described in detail in the ARTEMIS-ETP Strategic Research Agenda documents (see www.artemisia-association-eu) are highly transversal, with impact on all applications of Embedded Systems. They form the core of technological research for the ARTEMIS-JU. They are, however, so generic that, without establishing a link to specific areas of innovation, research results risk becoming fragmented collections of single-application-specific technology. To fight this tendency, a set of "ARTEMIS Sub-Programmes" is identified.

The content of the ARTEMIS sub-programmes is proposed annually to the ARTEMIS-JU by ARTEMISIA. This ensures the programme's continuing industrial relevance. The sub-programmes are also the seed of potential "innovation eco-systems": groups of complementary players who establish long-lasting collaboration from which their respective businesses derive mutual benefits.

ARTEMIS SUB PROGRAMMES:

ASP1. Methods and processes for safety-relevant embedded systems
ASP2. Person-centric health management
ASP3. Smart environments
ASP4. Efficient manufacturing and logistics
ASP5. Computing environments for embedded systems
ASP6. Security, privacy and dependability in embedded systems
ASP7. Embedded technology for sustainable urban life
ASP8. Human-centric design of embedded systems

CESAR

ASP1 100016

Cost-efficient methods and processes for safety relevant embedded systems

CESAR targets the significant reduction of overall development time and effort by up to 50%, using a Reference Technology Platform (RTP). The aim is, within five years, to double the number of European technology providers and SMEs joining the CESAR ecosystem and reduce by up to 50% the cost of integration, configuration, deployment and maintenance of tool chains (depending on the domain).

MARKET INNOVATION & IMPACT

To maintain the competitive edge that Europe holds over the US and Far East in the transportation and automation markets, CESAR aims to substantially boost the cost efficiency of embedded systems development and safety and certification processes. CESAR addresses the industrial needs for embedded system development for safety related applications by developing ultra-reliable embedded components for use in an extremely competitive global market that requires drastic cost reductions.

CESAR will contribute to safe mobility in respect of the environment, for which embedded systems are key enabling solutions, while maintaining strong European competitiveness in this key industrial domain by improving the cost efficiency of processes. CESAR will also increase the productivity and profitability of industrial products while keeping failure risk below acceptable limits. The consortium covers the whole product lifecycle and targets industrial objectives.

The strong commitment from a wide community of major end-users, tool vendors and technical experts from academia and industry makes CESAR ideally positioned to create an innovation eco-system around the CESAR Reference Technology Platform, RTP for short.

START	*March 2009*
DURATION	*36 months*
TOTAL COST	*€ 58,5 m*
CONTACTS	*Gerhard Griessnig* *Ingrid Kundner*
EMAIL	*info@cesarproject.eu*
WEBSITE	*www.cesarproject.eu*

CHESS

ASP1 100022

CHESS aims to build languages for modelling of extra-functional properties, and develop tools to evaluate these properties as component contracts. It will adapt component infrastructures for the integration of real-time and dependable patterns, and validate the approach through multi-domain case studies.

The development of real-time embedded systems increasingly leans towards the adoption of component-based development and model-driven engineering approaches. The combination of these two approaches promises better mastery of complexity, increased reuse, improved robustness and quality as well as easier maintenance, thus reducing the costs and risks of development and deployment. That very combination however also creates unique challenges for the development of high-integrity software. Two such challenges especially stand out:

1 developing components that can be certified or qualified individually for guaranteed delivery of the required level of service in operation;
2 preserving those guarantees in an assembly of heterogeneous software components on a given target execution platform.

Current component-based software development infrastructures (modelling languages, model transformation engines, and code generators) and their associated run-time environments address the functional dimension of components, but do not satisfactorily address their extra-functional characteristics

(i.e. safety, reliability, performance). The developer should not only consider the functional behaviour and the internal structure of components, but also their extra-functional requirements (e.g. timing, input and output accuracy, robustness).

MATURE INDUSTRIAL QUALITY RESEARCH SOLUTIONS ~ In keeping with the general approach of treating construction concerns and correctness separately, the CHESS project aims to capture those extra-functional concerns and extend model-driven engineering industrial practices and technology to specifically address the architectural structure, the interactions and the behaviour of system components while guaranteeing their correctness and the level of service at run time.

CHESS seeks mature industrial quality research solutions to problems of property-preserving component assembly in real-time and dependable embedded systems, and supports the description, verification and preservation of extra-functional properties of software components at the abstract level of component design as well as at run time. CHESS develops model-driven solutions, integrates them in component-based execution frameworks, assesses their applicability from the perspective of the telecommunications, space, railways and automotive domains, and verifies their performance through the elaboration of representative use cases from industry.

START	*February 2009*
DURATION	*36 months*
TOTAL COST	*€ 11.9 m*
CONTACT	*Silvia Mazzini*
EMAIL	*silvia.mazzini@intecs.it*
WEBSITE	*www.artemisia-association.org/chess*

CHARTER

ASP1 100039

CHARTER will develop concepts, methods, and tools for embedded system design and deployment that master the complexity and substantially improve the development, verification and certification of critical embedded systems. . Critical embedded software systems are commonly found in cars, aircraft, medical instruments and major industrial and utility plants. They assist, accelerate, and control various aspects of European society and. are since they are critical to human life, they must comply with the highest standards of performance through formal certification procedures.

MARKET INNOVATION AND IMPACT ~ CHARTER will ease, accelerate and reduce the cost of the certification of critical embedded systems by merging real-time Java, Model Driven Development, rule-based compilation, and formal verification. This approach, Quality-Embedded Development (QED), will drive software certification to a new level and contribute significantly to safety and security in the impending age of an embedded software society.

EMBEDDED IN SOCIETY ~ Future generations will experience software pervasiveness that can hardly be imagined today. Embedded systems will literally be found everywhere and will control many devices and infrastructures we rely upon every day. Human life will depend on embedded software. To protect our society from any resulting severe risks, software will be increasingly subjected to governmental regulations and require verification. The costly and time-consuming procedures employed today to verify new software, for example in the aviation industry, will not be capable of meeting formal verification demands of this scale.

START	*April 2009*
DURATION	*36 months*
TOTAL COST	*€ 2,55 m*
CONTACT	*Scott Hansen*
EMAIL	*s.hansen@opengroup.org*
WEBSITE	*www.charter-project.org*

SOFIA

Smart Objects For Intelligent Applications

ASP3 100039

The SOFIA project makes "information" in the physical world available for smart services in embedded and ubiquitous systems. With the SOFIA Open Innovation Platform (OIP) architecture and Application Development Kit (ADK), it is easy to develop devices and services that can interact across vendor and industry domain boundaries. This complements and enhances the inherent functionality and value of the stand-alone device, service or system, while letting the individual vendors and owners determine the degree of openness and sharing according to their business needs.

SMART ENVIRONMENTS ~ The common SOFIA technologies developed by the horizontal WPs are being applied to industry and domain specific technologies by the vertical WPs.

Examples of envisioned smart environments:

- In a car, where the car's purpose-built interfaces can be used to conveniently and safely access the content, services and information available in personal mobile devices. The car can also present its information via mobile devices or help them to adapt to the proper context. New interoperable devices and their services can improve the car's features throughout its lifetime.
- In an office, where equipment performing access control, lighting, heating and ventilation will provide information to a shared repository without being developed as an integrated system. Augmented by individuals carrying personal devices, developers can use the rich information to quickly tune the operation of any facilities according to the current usage.
- In a train station, where surveillance and sensor equipment will provide current status information to operations management and public safety related systems. Personal devices can access derivative information such as navigating past slowly moving crowds. In an emergency, both public and personal devices can relay instructions adapted to the progressing situation.

START	*January 2009*
DURATION	*36 months*
TOTAL COST	*€ 36,5 m*
CONTACT	*Petri Liuha (Nokia Oyj)*
EMAIL	*petri.liuha@nokia.com*
WEBSITE	*www.sofia-project.eu*

ASP3 100036

EMMON

EMbedded MONitoring

EMBEDDED MONITORING

The vision of smart locations and ambient intelligent environments is of significant societal interest today (smart cities, smart homes, smart public spaces, smart forests, etc). However, such a societal vision requires huge geographical tracts to be monitored in real time. EMMON will research, develop and test a functional prototype for large-scale wireless sensor networks with the aim of increasing tenfold the number of devices possible today and developing simulation tools for networks a hundred times greater than at present. The goal is to create technologies that allow effective monitoring with 10,000 to 100,000 devices, in an area of 50 square km in a real world scenario.

MARKET INNOVATION & IMPACT

MMON will tackle the challenge of using thousands of embedded networking devices in large-scale distributed application scenarios by covering the technology chain from OS to middleware and from protocols to system integration in a large geographical area.

The potential market impact is to enable several robust, scalable, energy-efficient and reliable environmental monitoring applications at lower cost and higher performance, providing un-

precedented situation analysis and awareness, to better help decision makers, organisations and authorities reduce and optimise costs and provide better services to citizens.

Delio Almeida

START	*March 2009*
DURATION	*36 months*
TOTAL COST	*€ 2,57 m*
CONTACT	*Mr. Delio Almeida* *dalmeida@criticalsoftware.com* *Mr. Pedro Braga* *plbraga@criticalsoftware.com*
WEBSITE	*www.artemis-emmon.eu*

SMART

ASP3 100032

A new low-power video-capable wireless sensor network infrastructure

The SMART *(Secure, Mobile visual sensor networks ARchiTecture)* project will create an innovative low-power Wireless Video-Capable Sensor Network infrastructure, based on off-the shelf reconfigurable devices (FPGAs) and specially designed Reconfigurable Application Specific Instruction Set Processors (RASIPs). This infrastructure will support video and data compression as well as high levels of security with lower power consumption than existing solutions.

MARKET INNOVATION & IMPACT

The SMART project will achieve world leadership in the emerging field of Wireless Sensor Networks by bridging the gap between off-the-shelf reconfigurable devices, low cost and a novel reconfigurable processor (called RASIP) with a high degree of adaptability and low power. This know-how will give excellent advantages to the corporate partners of the project and to the European Union in the emerging markets of globally networked, interoperable embedded systems.

SMART will have significant impact in the areas of sensors, smart systems integration, middleware development and wireless networking, by specifying and implementing miniaturised, very powerful and ultra low-power pioneering wireless sensor nodes. The development of a low-cost, low-power reconfigurable processor means that the developers will be able to build and customise new WSN applications in new areas with very low research and development costs.

At the same time, the inclusion of data and video compression algorithms in the WSN and the high levels of reconfiguration of the SMART infrastructure will substantially improve the flexibility and functionality of the new nodes. Based on the unique characteristics of the proposed infrastructure, SMART aims at an increased market share for numerous European companies across different industrial sectors.

Ioannis Papaefstathiou

START	*March 2009*
DURATION	*36 months*
TOTAL COST	*€ 4,5 m*
CONTACT	*Evangelos Ladis* *egladis@haicorp.com* *Ioannis Papaefstathiou* *ygp@mhl.tuc.gr*
WEBSITE	*www.artemis-smart.eu*

SCALOPES

SCalable LOw Power Embedded platformS

ASP5 100029

The main objective of SCALOPES is to enable an industrially sustainable path for the evolution of low-power, multi-core computing platforms for application domains with strategic value for European competitiveness.

The project focuses on cross-domain technology and tool developments for multi-core architectures. These developments are driven by and proven for four different application domains: communication infrastructure, surveillance systems, smart mobile terminals and stationary video systems.

INDUSTRIAL INNOVATION AND IMPACT ~

The success of the SCALOPES project will be defined by the following measures after completion:

- Reduction in power consumption by 30 % and increase in performance by 20 % for multi-core embedded systems in all the application domains of SCALOPES.
- Compared to reference Home TV's from 2008, power savings of >35% in 2010, and >50% at the end of the project.
- Design tools that allow the design time to be reduced by 20% for the typical embedded system architecture designs for the SCALOPES application areas.
- The resource management framework for the display controller should allow 50% increase in resource usage with 50% decrease in form factor.

The main technology focus in SCALOPES is on energy & resources management solutions, low-energy design methods & associated runtime methods, standard interfaces (API) between hardware and low-level software. The development of these technologies is consistent with existing and emerging standards and is based on existing state-of-the-art tools available in industry and among the key research institutes in Europe involved in this area, who are all partners in SCALOPES.

Anne-Marie Fouillart
Eugenio Villar
Luca Benini



START	*January 2009*
DURATION	*24 months*
TOTAL COST	*€ 36,06 m*
CONTACTS	*Dennis Alders*
EMAIL	*dennis.alders@nxp.com*
WEBSITE	*www.scalopes.eu*

INDEXYS

ASP5 100021

INDustrial EXploitation of the genesYS cross-domain architecture

INDEXYS will develop a cross-domain instantiation of the GENESYS embedded system architecture for industrial-grade exploitation on real-world platforms in the railway, aerospace, automotive and industrial control domains. This will boost European excellence in computing architectures.

MARKET INNOVATION & IMPACT ~ INDEXYS is helping to master new computing architectures and enabling European industries in a range of application domains to maintain and even improve their technological leadership. Both OEMs and European suppliers are likely to feel the benefits of this. INDEXYS' instantiations of selected architectural services of the GENESYS generic reference architecture template are helping to create the "establishment of a common multi-domain architecture, APIs, and design tool platform for advanced multi-core hardware and middleware solutions" (ARTEMIS-JU work programme) and thereby support European suppliers in targeting larger markets.

CUTTING COSTS BUT NOT CORNERS ~ OEMs will benefit from lower cost, mature cross-domain technology at lower cost as well as reduced development cost and accelerated time-to-market. This cross-domain architecture with generic architectural services cuts expenditure considerably because the substantial cost of developing the basic services and tools along with design and verification processes will be shared rather than borne by each domain separately.

In contrast to the approach of many present platform solutions tailored to a specific domain, INDEXYS aims to develop reusable architectural services that can be exploited across the platforms of different domains. While INDEXYS is not expected to instantly replace existing architectural solutions, its architectural service implementations will support a gradual shift towards greater reusability of services across different domains (particularly the automotive, aerospace and railway domains). This will be effected through the availability of existing solutions, thus reducing costs, and through utilising the experience the engineering community already has with such solutions.

OEMs and European suppliers are likely to feel the benefits

START	*April 2009*
DURATION	*30 months*
TOTAL COST	*€ 7,3 m*
CONTACTS	*Martin Schlager* *(Technical Matters)* *martin.schlager@tttech.com* *Martina SEBASTIAN* *(Financial Matters)* *martina.sebastian@tttech.com*
WEBSITE	*www.indexys.eu*

SYSMODEL

ASP5 100035

System Level Modeling Environment for SMEs

The vision behind SYSMODEL is to give SMEs the confidence to build cost-efficient ambient intelligence systems with optimum performance, reduced time-to-market and faster deployment. SYSMODEL will develop supportive modelling tools for the design and implementation of heterogeneous systems where time and power are critical factors. The focus is on the reuse of existing models and integrating them into a heterogeneous system.

MARKET INNOVATION & IMPACT ~ SYSMODEL's potential impact is high since even a small improvement in the methodology SMEs use for embedded systems design could result in a considerable improvement of their competitiveness and effectiveness.

The SYSMODEL deliverables offered to SMEs include:

- A modelling methodology described in a "How to do system level performance modelling" manual
- Open source point tool prototypes for use in performance modelling and analysis
- A number of SME verification case studies that illustrate this methodology
- A comprehensive training programme taking the SMEs from awareness level through in-depth training to on-line tutorials

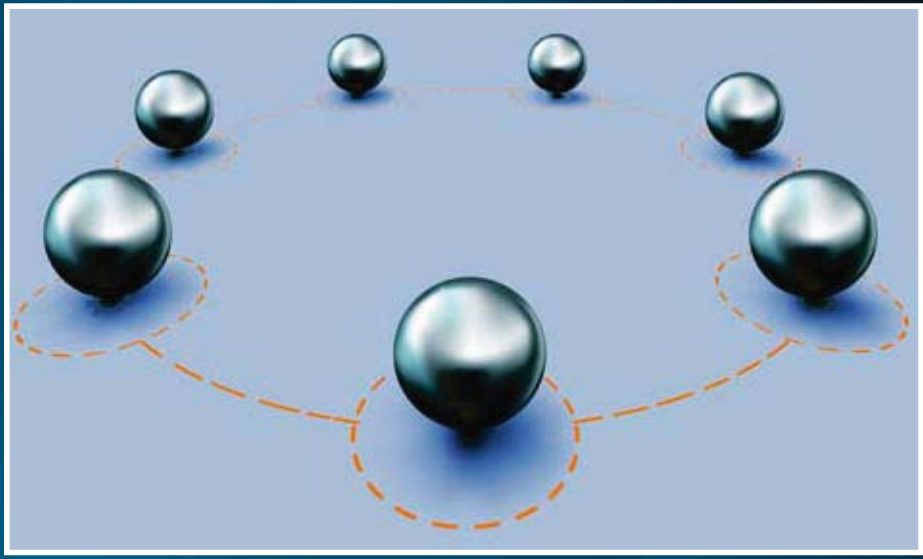
The SystemC-based modelling framework will define rules for expressing four different Models of Computation (MoC) and rules for composing these MoCs into a system with well defined behaviour.

START	*January 2009*
DURATION	*36 months*
TOTAL COST	*€ 5,4 m*
CONTACTS	*Ivan Ring Nielsen (Technoconsult)*
EMAIL	*info@sysmodel.eu irn@technoconsult.dk*
WEBSITE	*www.sysmodel.eu*

iLAND

ASP5 100026

mIddLewAre for deterministic dynamically reconfigurable NetworkeD embedded systems



ILAND will develop enabling technologies for modular, component-based middleware for networked systems that demand deterministic, dynamic functional composition and reconfiguration. Its results embrace a lightweight middleware architecture offering deterministic services and QoS-based resource management, and an approach for modelling deterministic, dynamic reconfiguration and composition of applications, with validation through three application demonstrators.

R&D INNOVATION & TECHNICAL EXCELLENCE ~ The project will address two types of networked embedded systems:

- Ad-hoc networked embedded systems with high dynamic structure featuring an open architecture with devices that might appear and disappear spontaneously. These systems are represented by the wireless transport application and the home care application.
- Infrastructured networked embedded systems made of heterogeneous devices with an appropriate degree of functional flexibility and nodes in active or passive state. These systems are represented by the video monitoring and surveillance application.

WHAT IS THE MARKET INNOVATION AND IMPACT? ~ The technologies developed in ILAND will have an immediate impact in the embedded products that could reach the market in the forthcoming years in the applications addressed by the project and other domains featuring similar requirements and constraints.

Some examples of new products and systems enabled by ILAND will be as follows.

- new products and services composed by existing distributed services, e.g. a highly available distributed digital video recorder for security installations or an intelligent video system to estimate customer's gender in a shop
- highly dynamic systems in various domains, e.g. remote monitoring in areas with no communication infrastructure; infrastructure-less email service for poor regions; highly efficient remote meter reading for water or gas meters
- new products and applications based on wireless sensor networks such as an ambient assisted living monitoring system at home or a system for environmental monitoring

START	*March 2009*
DURATION	*36 months*
TOTAL COST	*€ 3,9 m*
CONTACTS	*Francisco Gómez-Molinero (Technical Director)*
EMAIL	*fgomez@visual-tools.com*
WEBSITE	*www.iland-artemis.org*

eDIANA

Embedded Systems for Energy Efficient Buildings

ASP7 100012

eDIANA addresses the need to achieve energy efficiency in buildings through innovative solutions based on embedded systems. To enable sustainable urban life, eDIANA targets the rationalisation of resource utilisation while increasing comfort by means of embedded systems technologies in residential and commercial buildings. To achieve greater efficiency in the use of resources, it aims to prioritise energy use, more flexibility in the provision of resources and better situation awareness for the citizen as well as service and infrastructure owners.

Comfort will be improved, making the user aware of and enabling user-controlled policies.

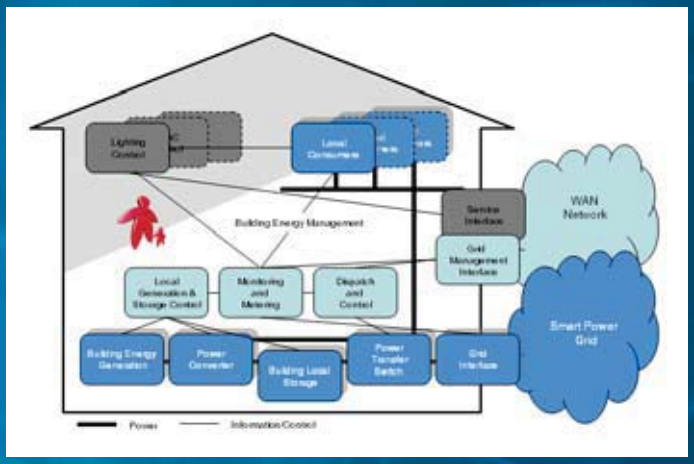


Figure 1 *eDIANA Target Macro-Cell Diagram*

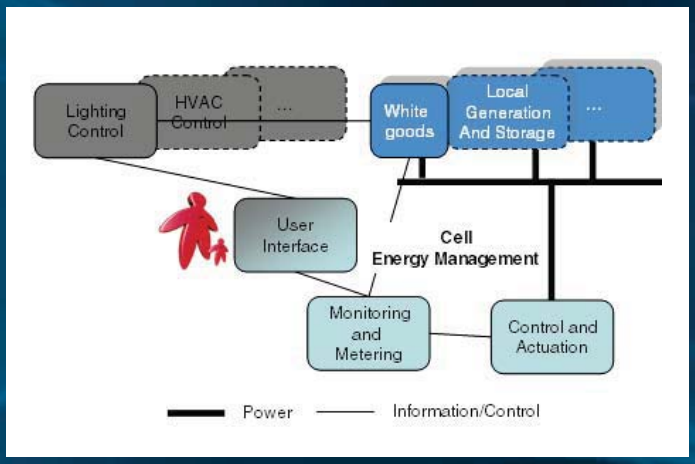


Figure 2 *eDIANA Target Cell Diagram*

MARKET INNOVATION & IMPACT

The technology to be developed in eDIANA will improve energy efficiency and optimise the energy consumption of buildings by 25%, providing real-time measurement, integration and control. Moreover, comfort will be improved, making the user aware of and enabling user-controlled policies for household devices (lighting, domestic electronics, etc.). Such progress beyond the state-of-the-art will enable the building to become an "active macroCell" in the energy network, connected to similar macroCells in a district or urban area.

START	*1 January 2009*
DURATION	*3 years*
TOTAL COST	*€ 17 m*
CONTACTS	*Jose de las Heras*
EMAIL	*jherasbu@acciona.es*
WEBSITE	*www.artemis-ediana.eu*

CAMMI

ASP8 100008

Cognitive Adaptive Man-Machine Interface

The man in the control loop of a complex system is exposed to physiological, psychological and time stresses that lead to a human cognitive decrement, thus diminishing the performance and safety of the overall system. Adaptive cognitive man-machine interfaces and human-centred communication can be exploited to improve the level of operational performance and safety in domains like next-generation flight-management systems for aircraft, UAV for civil and security applications, infrastructure management systems and high-speed driver assistance systems in the rail domain and in large and complex industrial plants.

MARKET INNOVATION AND IMPACT

The CAMMI project intends to develop technologies for intelligent multi-modal interactive systems that address in particular the user's interaction with adaptive context-aware systems. Application relevance is focused on advanced multidimensional cockpit displays and flight management systems in the aircraft, although a broader range of applications is envisaged such as complex process plants and on-board embedded MMI applications of a modern agricultural machine. CAMMI's goal is to introduce a joint cognitive approach into controlling an operator's console where workload that exceeds the operator's capability should be reflected in off-loading non-critical, time-consuming tasks to automation. This will enable task control sharing between operator and system, allowing the operator to focus specifically on critical tasks.

CAMMI proposes a functional demonstrator consisting of a synthetic environment that simulates a MMI mock-up so as to emulate operations related to a predefined set of cockpit procedures. In order to achieve adaptive control systems, the CAMMI demonstrator provides a cognitive supervisor agent that selects MMI operating modes from those available and balances the induced workload with pilot's cognitive capability.

Application relevance is focused on advanced multidimensional cockpit displays.

START	*June 2009*
DURATION	*3 years*
TOTAL COST	*€ 7.3 m*
CONTACTS	*Claudia Keinrath, Human Factors Scientist, Honeywell*
EMAIL	*Claudia.Keinrath@Honeywell.com*
WEBSITE	*www.cammi.eu*

Finland ~ Petri Liuha, Antti Lappetälainen, Juha-Pekka Soininen

ART OBJECTS

AUTUMN
EVENT'09

SMART OBJECTS

For Intelligent Applications - first results made open

Written by Petri Liuha (Nokia), Antti Lappeteläinen (NOKIA), Juha-Pekka Soininen (VTT)

The SOFIA project directly addresses the challenge of Artemis Sub-programme 3 on Smart Environments. The main mission of the project is to make "information" in the physical world available for smart services in embedded and ubiquitous systems. As concrete results, the project targets the development of an Open Innovation Platform (OIP) architecture and an Application Development Kit (ADK). Initial results, during the first year of the project, have already been made known by putting the core component of the interoperability solution – called Smart-M3 – to open source.

WHAT SOFIA IS ABOUT? ~ SOFIA aims to define and open a completely new domain for technology and service innovation on a global scale, with the theme the opening of embedded information for all kinds of applications. The key challenge is the interoperability between devices and embedded systems originating from different domains.

The enabling technologies for both computing and communication have matured to a level where cost-efficient use of embedded, ubiquitous technologies makes sense. Thus, it is feasible to start realising the concept of smart spaces that has been widely studied in ubiquitous computing, ambient intelligence and future internet research.

From the user aspect, continually evolving information and communication technologies (ICT) touch nearly every aspect of our contemporary life. The introduction of new applications or services must address the human dimension of technology. In the ambient services that use ubiquitous technologies, this human-technology interaction will in the very near future extend to much more complex fields of everyday life that it has so far.

What are the application areas of SOFIA? ~ The interoperability solution can be applied in many areas. However, the project will test its real use in three different application contexts: personal spaces, smart indoor spaces and smart city. While each of these addresses specific requirements and constraints arising from their environments, all face similar challenges in sharing information.

In personal environments, the use cases are typically dynamic and the area limited. Devices and their services can be developed throughout their lifetime, independent of each other. In smart indoor spaces like smart office, embedded infrastructure equipment as well as appliances and personal devices can share information without being part of an integrated system. The smart city is a very large application context, where typically public areas include different embedded systems, some of them critical or closed. Personal devices can access some of this information

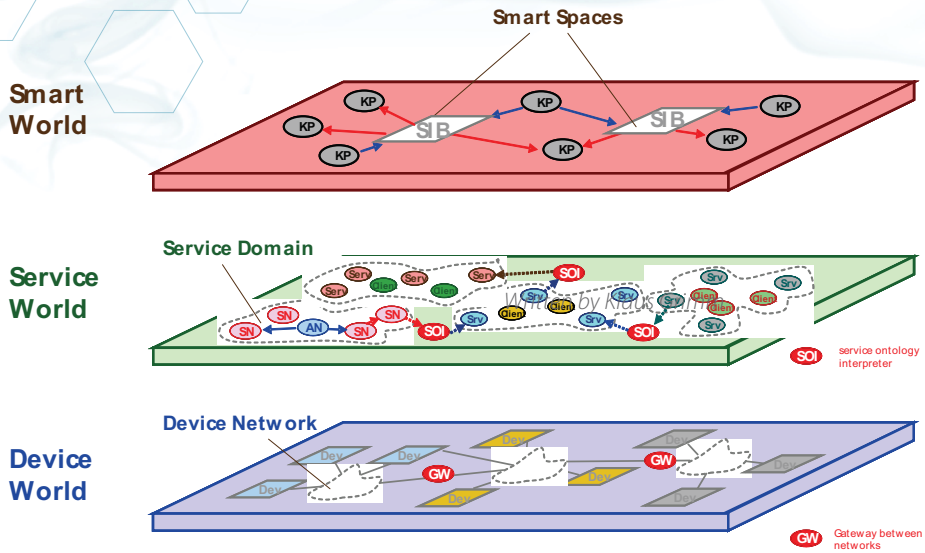


Figure 1: Smart-M3 view on layered interoperability

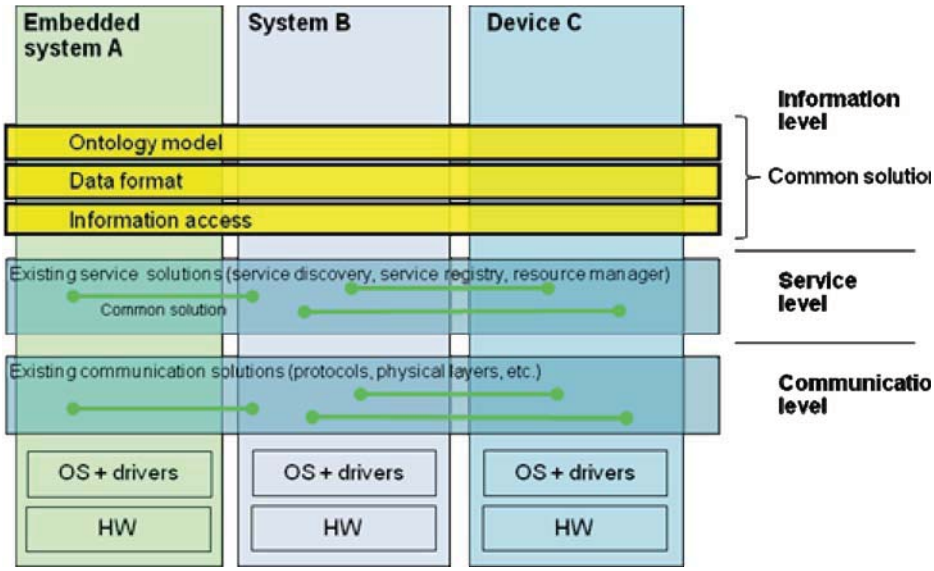


Figure 2: Logical view deployment of Smart-M3 with several embedded systems or devices.

and the embedded systems further benefit from aggregated data provided to users in the space.

The project covers the various areas with partners that represent different domains (including mobile and CE devices, public infrastructure and the construction industry), regions (Finland, Italy, the Netherlands, Spain and Switzerland) and organisation types (25% SMEs, 30% universities and research institutes). The project is headed by Nokia in Finland. The ARTEMIS programme offers a good opportunity to involve such a multidisciplinary set of partners in a strategic project.

WHAT IS THE OPEN SOURCED SMART-M3? ~ Open sourced implementation is a core component of the SOFIA Open Innovation Platform. It provides the baseline for the solution to cross-domain and cross-platform interoperability platform and information exchange, and, moreover, the project develops further enhancements and adaptation technologies. The solution is called Smart-M3, where the M3 originally stands for Multi-device, Multi-vendor, Multi-domain. Smart-M3 makes it possible to mash up and integrate information among all applications and domains ranging from different embedded domains to the Web. Fragmentation of technical solutions in different domains and standardisations that are specific to the use case hinder cross-domain application development. Smart-M3 enables the evolution of applications without compromising existing investments.

The Smart-M3 interoperability layers are shown in Figure 1. On the lowest layer, Device World, we have devices connected with device networks and gateways. On the middle layer, Service World, we have applications, clients and services. Services are directly available only within a single domain.

The information exchange between service domains happens via service ontology interpreters.

The highest layer of interoperability is Smart World where interoperability is based on semantic information. Smart World unifies the lower layers with information level interoperability. Smart-M3 includes software modules to create all required functions of Smart World.

Smart-M3 applies blackboard software architecture to provide a cross-domain search extent. Implementation of Smart-M3 provides a uniform, use case independent service API for sharing information in a Smart Space. The possibility to expose Smart Space service APIs concurrently through multiple domains and transport technologies makes the information currently isolated in multiple heterogeneous embedded domains available by using web programming tools and methods without compromising power, safety and performance requirements of the embedded domains. As an example this would allow an application programmer who programs for a mobile platform to access contextual information in a car, home, office, football stadium, etc, in a uniform way and improve the user experience, without compromising the real-time requirements of the embedded system.

The impact on existing system investment is minimised. The domain-specific technology choices are not compromised and the applications in different domains are not coupled together.

For more detailed and technical information, please refer to the SOFIA web site and the Smart-M3 wiki pages.

Smart-M3 Wikipedia article:
http://en.wikipedia.org/wiki/Smart-M3

Sofia web pages:
www.sofia-project.eu

The open source project is located in SourceForge:
http://sourceforge.net/projects/smart-m3

WHY HAVE THE PROJECT RESULTS BEEN MADE OPEN SO EARLY? ~ There are at least three advantages in being open in the early phase in the project.

1. By opening up some of the results, more developers and contributors are expected to contribute new technical innovations and uses for the SOFIA solutions, and get feedback and help in focusing on the most critical technical issues as well as the most relevant applications. This is expected especially from the Artemis community, but also from other early adopters. In the case of smart environments, which present implicitly multi-vendor contexts, openness is a key enabler and facilitator for faster progress towards project objectives.

2. The Smart-M3 is one of the core elements in the SOFIA project. The work done in the project specific to applications contains many domain-specific and, to some extent, proprietary solutions, which cannot and do not need to be open. The advantage here is a clear distinction of shared and non-shared ground. The project work can be focused on those parts that are essential for each partner and that benefit from opening to interoperability.

3. By going open early we define an Artemis route to collaborative innovation research in Europe. Now all project partners are given a channel to contribute parts of their results for peer review. Consequently, all partners can enjoy the results of others in a very meaningful way.

The openness principle should be applied only to issues that benefit from being open. The basic prerequisites are the need for common solutions, where no control point is up for grabs as such, and the potential to share results across different domains, platforms and even products.

The risk of fragmentation of open solutions always remains a challenge. A large project with set objectives can act as a supervisor of the development. After all, this is always an issue in large initiatives.

WILL THERE BE IMPACT BEYOND THE SOFIA PROJECT? ~ The partners involved in the project have various use scenarios for the SOFIA solutions in many application fields. We see this as the opening of a new development for embedded systems in general.

We hope that already during the project lifetime, many other Artemis projects could benefit by utilising the results we have made available. We see the Smart-M3 as a particularly convenient solution for SP3 smart environments. At the same time, we believe that somebody might find the ideas useful in other application contexts as well. We look forward to a lively community of players in the embedded systems area who will try out the SOFIA technology and hopefully adopt it as a novel way of enriching their solutions. ■

Espoo ~ Co-chair ARTEMISIA WG SRA, Tatu Koljonen

ARTEMIS AND THE REST OF THE WORLD

Embedded Systems Are Dead.Long Live Embedded Systems!

Written by ARTEMISIA Co-chair WG SRA, Tatu Koljonen

The "embedded everywhere" revolution is fuelled by device miniaturisation, where more and more functionality is available at less and less cost; by cheap and pervasive networking technologies; and by digital convergence between formerly distinct technology families and industrial sectors. Convergence means the adoption of industrial best practices and the removal of inefficiencies. On the other hand, embedded systems are becoming increasingly complex and difficult to design and build. Embedded computing systems are facing unprecedented challenges, with fierce competitive pressure from established and emerging global players.

Europe has led the revolution in embedded systems by excelling in certain strong vertical domains of embedded systems like the automotive and aerospace industries. However, despite convergence, markets and technologies for embedded systems remain mostly fragmented. The mission of Artemis JTI is to maintain embedded systems as a stronghold of European industry, when embedded systems migrate elsewhere, a trend that will make it purposeless even to talk about embedded systems per se. The embedded systems of tomorrow will be ubiquitous and immersive systems for everyday life rather than standalone gadgets. This vision has many names depending on the speaker: future internet, internet of things, ubiquitous computing etc.

TRADITIONS BY GEOGRAPHY ~ Although standards and technology development are increasingly global, there are regional characteristics that explain some of the differences in the direction taken by different countries and regions.

The US led the world in the personal computer and internet markets in the 1980s and '90s. The development was company driven, creating proprietary solutions and business models. A large home market and an active venturing culture were the breeding ground for bottom-up innovation.

The development in *Japan* can be characterised by a strong unanimity and top-down innovation culture orchestrated by the actors with a government mandate, such as NTT. This approach has enabled the take-up of most advanced ubicom solutions like contactless payment through NFC and the most widespread embedded operating system TRON (The Real-time Operating System Nucleus).

Europe is diversified in approaches, fragmented in different countries, and mostly based on domain specific excellence crated around individual companies. The challenge will be to consolidate the efforts and excellence in an open and networked manner.

TECHNOLOGY APPROACHES ~ The *technology centric* approach often assumes a single technology (NFC, ZigBee) to take over the whole application space and replace all other solutions. So far the conquerer has failed mainly due to the installed base of alternative and legacy systems.

The *internet centric* approach relies on the internet architecture and tries to solve to challenge by assuming each object runs an IP protocol and has an internet address. Traditionally the US has dominated internet

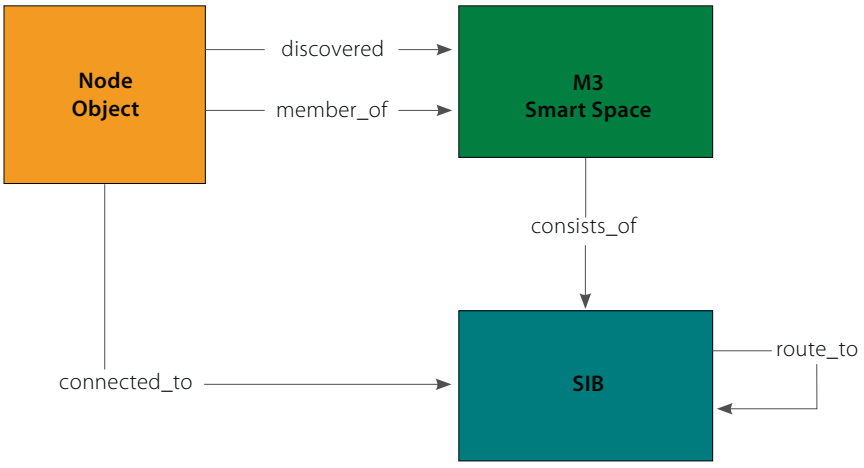


Figure 1 *M3 infrastructure model.*

development but others are becoming more active. For example, Contiki uIP, developed in Sweden, is supposed to be the World's smallest IP stack (TCP and UDP) with 5kB of code and 2 kB of RAM. DLNA (Digital Living Network Alliance) and UPnP (Universal Plug and Play) are the interoperability solutions for the internet centric approach intended mainly for multimedia content delivery but they are also too heavy for simplest sensor devices.

A *device centric* approach assumes everything revolving around the mobile phone. Other objects and appliances are treated as peripherals. Although handheld devices play a major role in the future ubicom world, terminal centric tends to lead to proprietary solutions.

The *Usage Space centric* approach has been adopted in Artemis Sofia project. The main idea is to provide interoperability in smart spaces by a proposal (1.10.2009) called M3 (multipart, multidevice & multivendor). M3 should provide scalability to heterogeneous platforms and efficient management of highly variant information, which are the key issues of interoperability. M3 defines the interoperability and usage of ontologies for the producer-consumer transactions at the information level. M3 is based on same ideology as NoTA (Network on Terminal Architecture), is technology agnostic and allows services and systems to be built up incrementally. M3 is an alternative to DLNA/UPnP interoperability and its promoters claim that they provide a solution to some of the basic issues in DLNA/UPnP like the excessively open internet approach by being able to restrict communication of private data in the usage space.

The M3 model consists of M3 smart space, node objects and Semantic Information Brokers (SIBs). These three parts form the core part of the information layer in this smart space interoperability approach.

ECOSYSTEM RACE ~ The race to build the future business ecosystem in embedded systems has begun. In Artemis JTI, Europe has a good instrument to invest in the competition, and in M3, a concept, preserving old investments and allowing for new, open innovation. ■

Tatu Koljonen

Professor, VP, Strategic Research into ICT VTT Technical Research Centre of Finland

Professor Tatu Koljonen is Vice President, Strategic Research of VTT Technical Research Centre of Finland. Koljonen is responsible for VTT's technology strategy, strategic partnerships, research, standardization in ICT field. VTT Technical Research Centre of Finland plays a pivotal role in the Finnish innovation system. It is an impartial expert organisation and with over 2000 researchers it is the biggest contract research organisation in Northern Europe. VTT has long background in embedded system design with more than 100 researchers full time working with the topic and dozens of related project on-going.

GENESYS (GENERIC EMBEDDED SYSTEM)

A Candidate for an ARTEMIS Cross-Domain Reference Architecture for Embedded Systems

Written by R.Obermaisser, Prof.Dr.Dr.h.c.H.Kopetz, S.Kuster

The emergence of the FP7 GENESYS project is based on the challenges defined by the ARTEMIS Working Group on Reference Designs and Architectures. The GENESYS project resulted in the blueprint for a cross-domain architecture, which is a candidate for the ARTEMIS reference architecture for embedded systems. The ARTEMIS project INDEXYS is the first step to the industrial implementation of cross-domain architectural concepts developed in the GENESYS project. Examples of envisioned future research activities include the realisation of GENESYS in a Multi-Processor-System-on-a-Chip (MPSoC) and the instantiation of the GENESYS development methodology.

AN ARTEMIS CROSS-DOMAIN REFERENCE ARCHITECTURE FOR EMBEDDED SYSTEMS ~

The members of the ARTEMIS Working Group on Reference Designs and Architectures have acquired requirements and constraints for system architectures in order to enable more advanced embedded systems in Europe [1]. The idea of a cross-domain architecture was born out of the perceived fragmentation in the research and development of embedded systems, although many of the challenges identified in the SRA are common to the different application domains (e.g., economies of scale of the semiconductor industry) and could be tackled by a cross-domain approach. Driven by the goal of developing the blueprint of a cross-domain architecture, the GENESYS (GENeric Embedded SYStem) project was defined and selected for funding under the 1st FP7-ICT call (FP7-213322). The aim of the GENESYS project, which took the ARTEMIS SRA requirements and constraints as a starting point, was to develop a candidate ARTEMIS European Reference Architecture for embedded systems.

The GENESYS project lasted from January 2008 to June 2009 and 23 project partners (among them major European companies like Nokia, Infineon, Thales, ST Microelectronics, NXP Semiconductors and Volvo Technology) developed an architectural style with fundamental architectural principles for designing embedded systems, architectural services as a baseline for developing applications, and a model-based development methodology. The results of the GENESYS research reveal that significant improvements concerning time-to-market, cost and robustness for a wide range of applications – from mobile phones to safety-critical computers in airplanes – are possible if further research and development is pursued.

KEY RESULTS AND TECHNICAL APPROACH

~ GENESYS is a component-based platform architecture that offers architectural services to the components that realise the functions of an application. These platform services are the result of a convergence of architecture views and services from the different domain-specific architectures (e.g., AUTOSAR in the automotive domain, IMA in the avionic domain, NoTA in the mobile domain).

The platform services are hierarchically structured as shown in Figure 1 Structuring of Services. At the bottom of this service hierarchy are the core services that define the platform. They are mandatory in every instantiation of the architecture since they form the foundation for all higher-level services. The core services can be grouped into four service categories: basic configuration, component execution, basic communication and basic time. The basic configuration services are needed to introduce the components to the platform and to connect the ports of the components, thus establishing communication channels among the components. The component execution services are used to control (e.g., start and stop) the execution of components. The basic communication services enable the components to send unidirectional multicast messages on the established communication channels. Finally, the basic time services make

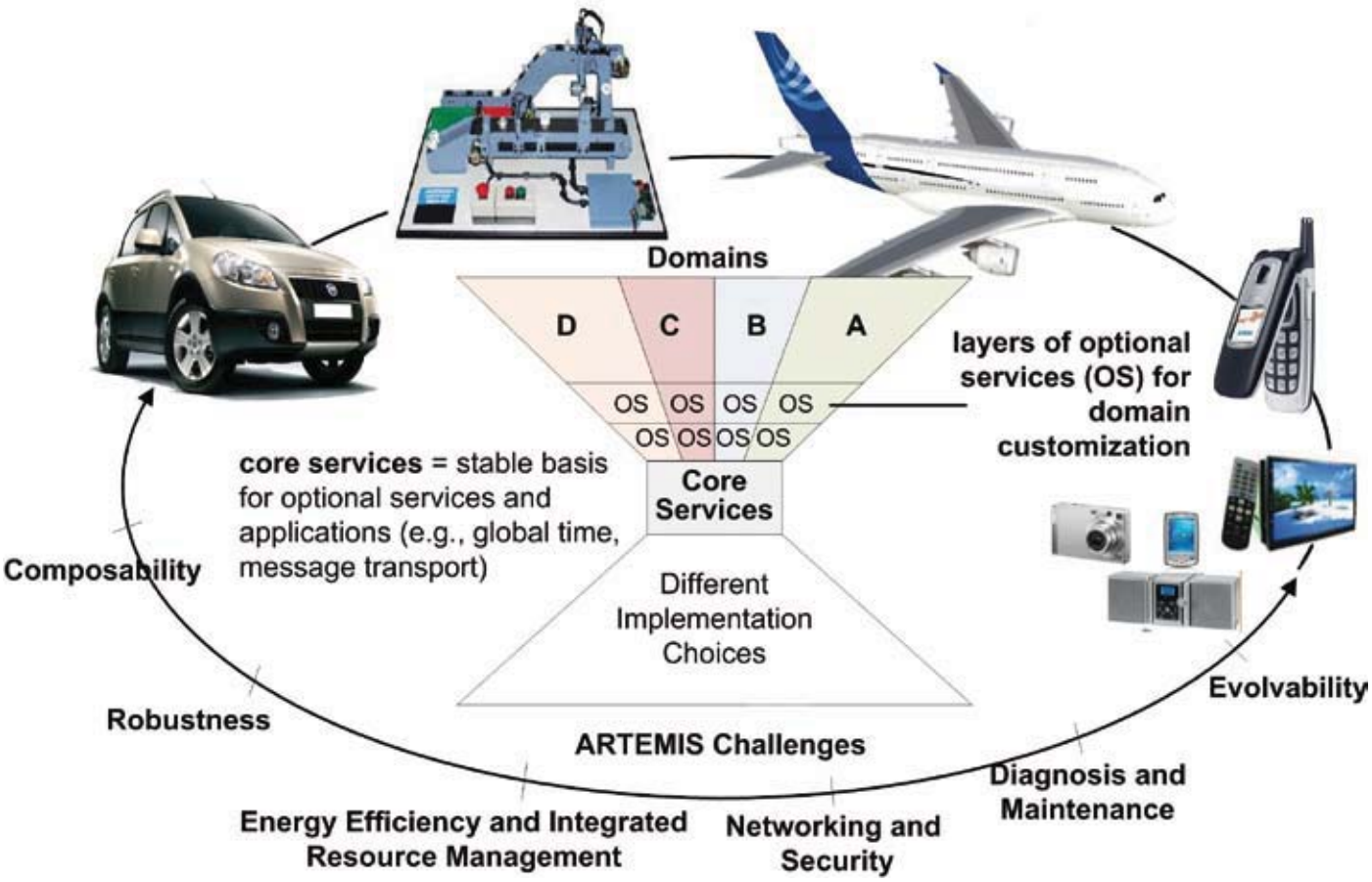


Figure 1: Structuring of Services

the components time-aware and establish a common notion of time.

Above these core services are the optional services that provide enhanced capabilities to the users of the platform to be able to readily access the functionalities needed in many, but not all application domains. Most of these services are used in self-contained components that can be implemented as IP cores in a multicore system on chip. It is up to the user to decide which of these optional services are to be included in a concrete instantiation of the architecture. The rationale is that developers can pick them out of a library, which includes a set of existing, validated components providing the optional services.

In summary, the GENESYS architecture is domain-independent and serves as a template that can be instantiated to concrete platforms for individual application domains (i.e., automotive, avionic, industrial control, mobile, consumer electronics).

Among the major contributions of GENESYS are benefits in the following three areas:

- **Complexity Management:** The management of the ever-increasing cognitive complexity of embedded systems is a major concern in all application domains. GENESYS tackles this problem by lifting the design process to a higher level of abstraction – to the level of self-contained hardware/software components that communicate exclusively by the exchange of messages. Components can be reused on the basis of their interface specification without having to know the internals of the component implementation. The GENESYS framework supports the straightforward composition of components as well as the classic simplification strategies of abstraction, partitioning and segmentation.
- **Robustness:** An embedded system must deliver an acceptable level of service, even in the presence of software and hardware faults, and operator mistakes. GENESYS supports robustness by establishing a framework for fault containment and error containment, the selective restart of components that have failed after a transient fault and the masking of transient and permanent errors by the replication of components. Security is addressed at all levels of the architecture.

Follow-up projects are envisioned to perform instantiations of the GENESYS architecture for ….

- **Energy Efficiency**: GENESYS provides for energy efficiency by a technology-agnostic model-driven design style that supports the migration of a stable component form of software on a CPU to an ASIC (and thus improving the energy efficiency enormously) and by an integrated resource management that makes it possible to individually reduce the power-requirements of components or to turn off completely components that are not needed during a particular interval (power gating).

A concise description of the GENESYS architecture is now available and documented in a book (ISBN 978-3-8381-1040-0), which is commercially available through the publisher SVH. An electronic version of this description can be downloaded free of charge from www.genesys-platform.eu/genesys_book.pdf

POTENTIAL IMPACT AND USE ~ The GENESYS architecture provides a starting point for further research and development (e.g., within ARTEMIS) that will lead to more advanced products allowing European companies to keep or to achieve world-leading positions in computing solutions. Follow-up projects are envisioned to perform instantiations of the GENESYS architecture for concrete applications and to continue research on the technological challenges (e.g., robustness, integrated resource management, evolvability). Through its conceptual model, the introduced architectural style and the identified architectural services, GENESYS provides a framework for the integration of upcoming technologies for embedded system architectures (e.g., novel architectural services for specific technological challenges).

A first initiative in this direction is the ARTEMIS project INDEXYS, which will realise industrial-grade implementations of GENESYS' cross-domain architectural concepts in three domains: automotive, aerospace and railway. A key research activity planned for the future is the instantiation of the GENESYS architectural blueprint in a Multi-Processor-System-on-a-Chip. Such a chip can provide a powerful instrument to conquer the challenges concerning complexity management, robustness and energy efficiency, while fully exploiting the economics of scale in the semi-conductor industry. ■

R. Obermaisser, the technical coordinator of the GENESYS project, is docent at Vienna University of Technology. His research focuses on system architectures for embedded real-time systems. He authored numerous conference papers, journal publications, and a book on an integrated time-triggered architecture published by Springer-Verlag.

Prof. Dr. Dr.h.c. H. Kopetz is professor for Real-Time Systems at Vienna University of Technology and member of the IST Advisory Group.

S. Kuster is research coordinator at Vienna University of Technology and was the commercial coordinator of the GENESYS project.

R. Obermaisser

Prof. Dr. Dr.h.c. H. Kopetz

S. Kuster

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THE ARTEMIS-AUSTRIA PLATFORM: LINKING EMBEDDED SYSTEMS RESEARCH TO

Written by Dr. Markus Kommenda

Interest was high and support strong as the European ARTEMIS platform was launched in Austria. Since the earliest discussions, public authorities (led by the Austrian Federal Ministry of Transport, Innovation and Technology, BMVIT) and members of the research community have been eager to see this initiative fly.

STRONG TEAMS ON THE PLAYING FIELD ~ Well-known experts in the field such as Professor Kopetz of Vienna University of Technology and high-profile industry groups including AVL LIST GmbH have been acting as driving forces behind this initiative while several Austrian companies and research institutes are actively involved in projects or proposals submitted in response to the first two calls of the ARTEMIS Joint Undertaking. With Austria having provided dedicated support for the embedded systems field for several years now, many of the participating researchers and scientific experts are able to build on this previous work. This is particularly true for projects carried out in the framework of the Austrian IT research programme FIT-IT that has a specific programme line dedicated to embedded systems. All this underlines the strong RTD base that Austria has in the area of embedded systems.

ESTABLISHING ARTEMIS-AUSTRIA ~ Given the size of the embedded systems field and the active role of Austrian players, the creation of a national ARTEMIS platform was just a matter of time. The major Austrian players have now taken the opportunity to establish ARTEMIS-Austria in order to make optimum use of the existing knowledge and to exploit the opportunities offered by the European ARTEMIS initiative. Initiated by the BMVIT, this platform's mission is to bring together research institutes and suppliers of embedded systems with representatives from key application domains, such as automotive and manufacturing. This mission is in line with the ARTEMIS Strategic Research Agenda (SRA) and reflects its orientation towards application drivers. The platform is supported by the BMVIT and works closely together with the Austrian Research Promotion Agency FFG – the National Contact Point for the European RTD Framework Programmes.

Major goals of ARTEMIS-Austria are to:

- Enhance the international visibility of Austrian actors in the field and to support their involvement in European activities
- Act as a national knowledge platform and information hub, providing all relevant information concerning national and European developments
- Provide strategic guidance and alignment of Austrian initiatives with the ARTEMIS Roadmap
- Strengthen the innovation environment *through the support* of instruments, e.g. in the areas of human resources development, research infrastructure and regulatory measures
- Foster new partnerships and strategic alliances for collaborative RTD at national and international level and to support the transfer of knowledge and technology.

SHARPENING THE FOCUS ~ Although no major car manufacturer is headquartered in Austria, automotive suppliers constitute one of the strongest sectors of domestic industry. Plant construction and automation are other important areas. For this reason, the focus of the first ARTEMIS-Austria Conference, to be held on 5 October 2009 in Vienna, will be on embedded systems in industrial automation. Other activities planned in the near future will concentrate on information dissemination and on the acquisition of additional partners. In accordance with the ARTEMIS SRA, the focus here will lie on addressing and identifying companies that have not traditionally been involved in ICT research as such but are expected to rely on embedded systems more and more in the future. ■

For more information on the ARTEMIS-Austria platform refer to the web site or contact the co-ordinator.

Dr. Markus Kommenda
eutema Technology Management GmbH
kommenda@eutema.com

JOINT UNDERTAKING NOW HAS AN EXECUTIVE DIRECTOR

Written by Klaus Grimm

Far left Kostas Glinos, left José Cotta, above Eric Schutz

It was the group of major R&D actors in embedded systems that formed the ARTEMIS European Technology Platform in 2004 and that generated the SRA 2006 in which it was highly recommended to construct a Joint Technology Initiative to improve Europe's position on embedded systems. The commission and the key European member states shared the vision of the ARTEMIS-ETP SRA 2006 and became active in all the preparatory work in constructing the Joint Initiative.

FROM INTERIM TO FULL TIME ~ We all know that the ARTEMIS Joint Undertaking, the statutory entity of the ARTEMIS JTI, was founded in February 2008, with Kostas Glinos, head of the embedded systems and control in the European Commission Information Society and Media Directorate-General, appointed Interim Executive Director. Before that Kostas Glinos was instrumental at the Commission side in helping to construct the text of the Council Regulation that is the basis for the Joint Undertaking. In dedicating himself to all the preparatory work on the Council Regulation and later as Interim Executive Director of the Joint Undertaking he worked very long hours to find the time for this in addition to his job as head of the Commission's unit. When he moved to another unit at the beginning of 2009, he was succeeded in Commission job by José Cotta, who also took over his parallel job as Interim Executive Director. On April 28 of this year the Governing Board appointed Eric Schutz as Executive Director from1 September 2009. Eric Schutz will be accountable to the Governing Board of the ARTEMIS Joint Undertaking.

I would like to thank Kostas Glinos and José Cotta for all the work they performed for the Joint Undertaking and wish Eric Schutz every success in his new job, and I am looking forward to a very fruitful cooperation. ■

INTERVIEW
ERIC SCHUTZ

Interviewed by Else Embregts

ARTEMIS Magazine spoke with Eric Schutz, the newly appointed Executive Director of the ARTMEIS-JU, to get his view on the working of the JU Office and the future course of ARTEMIS.

Why Brussels?
Well, I'm from Brussels, of course! *[laughs]*. More to the point, the Brussels location is defined in the Council Regulation that set up the ARTEMIS JU, but in fact, being located here is a major asset because of the central location and the proximity of the existing services of the Commission here. The office is presently located very close to a major train station with direct connection to Brussels Airport, and high speed connections to other major European cities like Paris, Amsterdam and Cologne. People can visit the office with very little additional effort. The proximity to the Commission services is also very important. The work of running the ARTEMIS JU up to now has been done by personnel of the EC, in DG-INFSO. It is vital that we are close to them, especially during the hand-over period, so that all the knowledge, experience and information can be transferred to our own people quickly and efficiently. Also, we share office space with four other JTIs, which means we share some of the infrastructure costs and gain through economies of scale.

What is the position of the ARTEMIS-JU Office vis-à-vis the ARTEMISIA Office in Eindhoven?
Let's be clear: ARTEMISIA, the Commission and the ARTEMIS Member States are all partners in the same venture. The primary role of JU Office is to make a success of the Joint Undertaking and to do this, the JU Office is there to serve all of these stakeholders. This means that there will be constant communication between the JU Office and all the partners, including of course ARTEMISIA and its office personnel.

One large area where I see a lot of synergy with the operations of the ARTEMISIA Office is in public communications. We have seen the important role ARTEMISIA plays in communicating with the community of stakeholders, with it very professional market communications capability. The more attention we get, and the more the public (i.e. political) world sees the huge benefits that ARTEMIS research and innovation can bring, the better. We need to keep "spreading the word" about ARTEMIS, keeping it in the public's eye as much as possible. ARTEMISIA's extensive networks are already a boon in this, and we must capitalise on them to the full.

What is the function of the JU Office for the ARTEMIS community, and specifically for the projects?
As I said before, the JU office exists to serve the ARTEMIS community of stakeholders. By far the most important and difficult activity is the running of the programme from an operational standpoint. We have the task of organising ARTEMIS along a path to a fundamentally different Europe, starting with ensuring that the R&D programme and its projects run as smoothly as possible. This means effectively "hiding" the legal and procedural complexity from the project participants. All this paperwork and formalism is a mandatory part of public funding – it is taxpayers' money, after all – but we don't want it to hinder the excellent research and innovation work going on in the field. We want to be sure that ARTEMISIA in particular is able to concentrate on defining the technical content of the programme, stimulating the IRC in their job of proposing a really excellent Multi-Annual Strategic Plan to the Governing Board, and Annual Work Programme to the Public Authorities Board.

The JU office has the task to drive the programme, from the time a Call is launched to the final payment of funding. This covers everything, from organising the calls, running the evaluation process and negotiating the contracts, with the national contracts on top, too. This last item is the foundation of the unique funding model, of course. The Programme Officers also have the task of helping the projects along once they have started. Of course, checks and reviews of projects' progress towards meeting what they promise is necessary, but I want this to be seen as a help for the projects, rather than a gate of Hades they must pass through. After all, it is in

the interest of all stakeholders that ARTEMIS projects are successful; not only from a project administration viewpoint but also from the excellent and valuable results they will produce. The JU office team will be busy from a long time before each Call is published up to supporting the projects as they execute, including those still running from previous calls. Up to now, the large and often criticised - though in actual fact very well oiled - machinery of the European Commission has taken care of all this. Since the team started on September first, we have the challenge to take over all these tasks. It's quite a significant challenge, too, but one I know we are all eager to take on. We have a strong team in place, made up of quality people with an unhealthy enthusiasm for making ARTEMIS a success.

What is your priority for the coming year?
Well, for the administrative part, our top priority is to achieve autonomy. We are working hard to get this in place in the second half of October already. Operationally, and in parallel, we have to make the handover from the Commission staff and be sure we hit the ground running. We are part way into Call 2009 and see Call 2010 already approaching fast, so there's a lot to get done in the short term. Looking ahead, though, I want to be sure that a constant dialog between ARTEMIS stakeholders is maintained and even increased. We need to increase speed, show the participating countries that we have a good, agile programme and encourage more investment and with our Think Big approach, go for projects with Big Impact. With good preparation and mutual understanding of each others' concerns, we can take ARTEMIS – the first of the "jetties" – through to being more than just "an excellent programme", but one which really brings very visible benefits to industry and to society: one we can all be proud to be a part of. ■

WHO'S WHO IN THE JOINT UNDERTAKING OFFICE

The Executive Director is Eric Schutz, already a well known figure in the ARTEMIS world. Previously, Eric represented his company, ST Microelectronics, in ARTEMISIA and was one of the five Founding Fathers of the association. He also co-chaired the Working Group SRA. Catherine Lenoir is the office Assistant. She takes care of all the secretarial needs of the team.

For the Programme side, we have Alun Foster, Programme Manager, and Programme Officers Antonio Vecchio, Berta Ferrer Llosa and Patrick Vandenberghe. They all come from Industry. Alun has worked with ARTEMIS since its very beginning, and also with ARTEMISIA as Programme Coordinator, while Patrick has a lot of experience in collaborative research with ITEA2. Both Antonio and Berta, though coming from industry, recently have experience in working with the Commission so are already familiar with many of the processes. Looking after the finances and managing the administration of the office is Juan Pablo Contreras Solis, who is Head of Administration and Finance / Accounting Officer, aided and abetted by Anastasios ("Tassos") Varvaroussis, Accounting Assistant. Both Juan-Pablo and Tassos come from the Commission, and are very well versed in the workings of public administrations.

Eric Schutz
Executive Director

Catherine Lenoir
Office Assistant

Alun Foster
Programme Manager

Antonio Vecchio
Programme Officer

Berta Ferrer Llosa
Programme Officer

Patrick Vandenberghe
Programme Officer

Juan Pablo Contreras Solis
Head of Administration and Finance / Accounting Officer

Anastasios Varvaroussis
Accounting Assistant

A N N O U N C E M E N T

ARTEMISIA Association joins forces with Embedded World 2010

ARTEMIS SPRING EVENT 2010

ARTEMIS will hold its annual Spring Event 2010, organised by the ARTEMISIA Association, in conjunction with Embedded World 2010 in Nuremberg, Germany. Both organisations expect this will be a very efficient opportunity for the European ARTEMIS community to shake hands during both international events.

The embedded world Exhibition&Conference takes place in the Exhibition Centre Nuremberg from 2-4 March 2009. The experts rate the embedded world Conference as a real industry highlight due to its excellent programme. Top speakers report on the latest technological solutions, present current findings from research and development and provide valuable practical knowledge at presentations, workshops and tutorials. The exhibition set another new record in 2009 with more than 700 exhibitors, and some 16,000 trade visitors use the opportunity to obtain an impression of the latest trends in embedded technologies. Last-minute visitors can still get a free entrance ticket for the exhibition easily and quickly online: www.embedded-world.de

So, note in your calendars:
ARTEMIS SPRING EVENT 2010: 1 - 2 March 2010
Embedded World 2010: 2- 3 - 4 March 2010
Venu: Exhibition&Conference at NürnbergMesse, Nuremberg, Germany.

More information about Embedded World 2010: www.embedded-world.de
More Information and online registration about the ARTEMIS Autumn Event 2010 will be available on the website of ARTEMISIA Association soon. ARTEMISIA members will benefit special opportunities so check the ARTEMISIA website regularly: www.artemisia-association.eu

embedded world 2010 Exhibition&Conference

ARTEMIS

Calendar

12TH OF NOVEMBER 2009

BITS&CHIPS 2009 EMBEDDED SYSTEMS
EINDHOVEN, THE NETHERLANDS

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.

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

8 DECEMBER

ESI SYMPOSIUM 2009
EINDHOVEN, THE NETHERLANDS

This is the second Symposium organised by ESI. This event provides a great opportunity to catch up on the latest research being carried out by ESI and its network partners. See and hear the results from more than 7 projects and meet with your colleagues from the embedded systems community in the Netherlands and beyond. The central theme, this year, will be 'The Dance of the System Qualities'.

More information: www.esi.nl/events/esi_symposium_2009

2 - 4 MARCH, 2010

EMBEDDED WORLD 2010
NÜRNBERG, GERMANY

Presenting the leading European event for the Embedded Community covering all areas of Embedded System development. In addition to hardware, software and tools, the conference will also be devoting itself to themes such as green electronics or project management and thus picking up current trends and developments.

More information: www.embedded-world.de

15-16 DECEMBER

ARTEMIS BROKERAGE EVENT !
VENUE TO BE CONFIRMED

Check the ARTEMISIA website regularly: www.artemisia-association.eu

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 Strategic Research Agenda, and is a founding member of the ARTEMIS Joint Undertaking.
ARTEMIS Magazine is published by the ARTEMISIA Office, which provides information on the developments within the ARTEMIS Technology Platform .

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