

ITEA 2

M

Magazine

APRIL 2011 • NO. 9



Strong concentration on
high tech industries

Focus on Israel



Spring is in the air!

The new projects of Call 5



Systems management crucial to
future networks

The stories of AIMES, SEMbySEM & ACQUEAU



INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT

European leadership in Software-intensive Systems
and Services – www.itea2.org

ITEA 2 is a EUREKA strategic ICT Cluster programme

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INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT

ITEA 2 (Information Technology for European Advancement) is Europe's premier industry-driven co-operative programme for pre-competitive R&D in Software-intensive Systems and Services (SISS).

As a EUREKA Cluster programme, ITEA 2 stimulates and supports projects that will give European industry a leading edge in the area of SISS.

M – ITEA 2 Magazine is published three times per year by the ITEA 2 Office. Its aim is to keep the ITEA 2 community around the ITEA 2 projects updated about the ITEA 2 programme status and progress, achievements, projects and events.

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Submissions: The ITEA 2 Office is interested in receiving news or events linked to the ITEA 2 programme, its projects or in general: R&D in the Software-intensive Systems and Services field. Please submit your information to communications@itea2.org.

Opinions expressed in the M – ITEA 2 Magazine do not necessarily reflect those of the organisation.

Special thanks to all contributors to this issue of the M – ITEA 2 Magazine.

ITEA showcasing openness and collective creativity

After the celebration of our 12 years of success, we must recognise the maturity of ITEA – mature in the sense of optimised process, track record and mobilised community. The open question is what are the next steps? I am pleased to take advantage of the contents of this 9th issue of our magazine to stress some important main directions for the future of ITEA.

The strengths of ITEA allow our programme to be **open** – particularly to other programmes, ICT or not, and to new solutions that benefit industry and society as a whole. For example, we are participating in the EUREKA inter-Clusters initiative to push the advantages of the EUREKA model. From this initiative, we are building a special relationship with Acqueau – a non-ICT Cluster focused on water management. Xavier Chazelle, president of Acqueau, is very clear on the need for special ICT development in this domain which meets one of the most important societal demands. It also opens important new business opportunities for the ITEA community.

EIT is a new tool initiated by the European Commission. Willem Jonker the CEO of EIT KIC ICT Labs explains how it will reinforce Europe's ability to take advantage of research results from a business point of view. This target is totally in line with the ITEA goals and we are looking together how we can collaborate to strengthen our industrial partners'

ability to take advantage of the research results of our different R&D projects.

This openness which has become a culture for ITEA to reach our targets on innovation and business impact is also highlighted by the close partnership established by the OSAMI project with the FP7 Universaal project to push new open solutions for ambient assisted living.

Creativity is another characteristic of ITEA and a recognised strength of our community. An illustration is our impressive Project Outline Preparation Days. Our community arrives with more than 80 different project ideas and, through a process of successive brainstorming sessions and general presentations, we see a miracle of convergence toward around 25 proposals with coherent shared ideas and a first set of consortia. During these days, the ITEA community demonstrates a good level of openness and collective creativity which is certainly one secret of the ITEA success.

Our featured projects in this issue – AIMS and SEMbySEM – provide an interesting view of creative advances in systems management and monitoring. And this is reinforced by the results and impact of three project innovation reports – from better integration of machine-to-machine communications



Philippe Letellier
ITEA 2 Vice-Chairman

through standardisation in UseNet, through flexible and robust secure access to data across multiple domains in MULTIPOL to the easy-to-use collaborative design environment in 3D TESTBENCH.

It is a pleasure to have the portrait of our dear friend Jesús Bermejo, who has been a member of the ITEA bodies since 2002. Despite the strong worldwide economic crisis, Spain saw a tremendous growth in investment for innovation in 2010 through grants and loans. Furthermore, the country has decided to move from one-year to project-life labelling. This is very good news for the Spanish partners of ITEA projects.

All these next steps will be confirmed by the ITEA 3 label which is currently in full preparation.

Sincerely yours,

A handwritten signature in black ink, consisting of a large, stylized initial 'P' followed by several loops and a horizontal stroke at the end.

Philippe Letellier

Strong concentration on high tech industries

Innovation and technological development play a vital role in Israel – a small country with a lack of local trading partners and few natural resources. The Israeli government decision to position the country at the centre of the knowledge economy has served the country well. Israel now spends nearly 5% of GDP on R&D annually to develop new products and technologies. And, although the process has not been fully planned or constructed, the role of the government and its co-operation with and support to the private sector have made Israel an information and communications technology (ICT) high-tech power. Today, half of Israel's industrial export is generated from hi-tech, mostly ICT related.

Israel has also become one of the most active participants in EUREKA since 2007. Currently more than 10% of all EUREKA projects labelled each year include an Israeli participant, usually a small or medium-sized enterprise (SME). This trend was reinforced in 2010 when the country took over the rotating chairmanship of the international research initiative with ambitious plans to build new partnerships and seize strategic opportunities wherever they may be found

The EUREKA Israeli Chairmanship is focusing on new models and sources of funding for EUREKA projects, especially for SMEs and start-ups. The new mechanisms are needed because stakeholders are cautious of risk-taking and because venture capital (VC) funds are not focused on long-term gains. Of course, governments are not VC funds; governments should promote high-risk R&D and they should receive indirect gains through spill-over effects.

SUPPORT FOR ALL R&D PERFORMING COMPANIES

MATIMOP – the Israeli Industry Centre for Research and Development – is the national innovation agency implementing the international co-operation programmes of the Office of the Chief Scientist in the Ministry of Industry, Trade and Labour. “We support all

R&D-performing companies, but SMEs are of course the largest sector being assisted,” says Israel Shamay of MATIMOP, currently the EUREKA NPC chairman and head of the Israeli EUREKA Chairmanship Organisation. “Over 80% of the participants in the co-operation programmes are hi-tech SMEs.”

The main functions of MATIMOP include:

- Setting R&D goals at a national level;
- Ensuring effective co-operation between the government and the private sector – specifically venture capitalists;
- Designing support schemes that encourage entrepreneurship and global competitiveness;
- Encouraging a strong international orientation of the local industry as the local market for innovation is rather small, hence open minded and well prepared for international co-operation in R&D; and
- Ensuring substantial investment in education.

This policy is reinforced by immigration, effective investment incentives favouring foreign investors, the maintenance of a ratio of R&D investment to GDP higher than that of any other industrialised country, and the implementation of incubator and venture capital programmes, as well as well-performing commercialisation companies in the major universities to convert research into cutting edge businesses. Security issues also play a role in the development of Israel's ICT sector.



Tale of two worlds

At the macro level, Israel, which became an OECD member last year, has made important strides in laying the foundation for macroeconomic stability, controlling inflation and implementing wide-ranging reforms to reduce the size of the public sector and support modernisation of the economy.

IMPROVED INTERACTION WITH CLUSTERS

“We are very happy that the interaction between the Clusters and the EUREKA network has been greatly improved since the beginning of the Israeli Chairmanship,” says Shamay. A much tighter integration of the Clusters into EUREKA had already been achieved, thanks to the setup of the ‘Inter-Cluster Committee’ during the former German chairmanship.

The Israeli Chair has reinforced this by inviting the appointed Clusters’ spokespeople to all official meetings. It is also ensuring the efficient management of exchanges between the Chair and the Clusters and between the EUREKA Secretariat in Brussels and the Clusters. In addition, the Israeli Chair is promoting more information exchange and better awareness of the Clusters with the EUREKA national project coordinators (NPCs) and High Level Group (HLG) representatives on one hand, and of the EUREKA network with the Cluster representatives on the other.

This has been well demonstrated by the active contribution from the Clusters to the EUREKA Strategic Road Map, by a more permanent presence and periodic presentations of Clusters’ representatives at NPC/HLG meetings – including ITEA’s contribution to the EUREKA meeting in Eilat in February – and also by the work that has started concerning pan-European co-operation.

“Together with the Clusters, we are also promoting multidisciplinary activities in relation to the EUREKA Clean-Tech Action,” adds Shamay. An Inter-Cluster Information Day, with the presence of all Clusters, was organised in Eilat on 23 February to address the strategic challenges through multidisciplinary actions led by EUREKA Clusters.

Israeli think tank Metaverse Labs and its founder Dr. Yesha Sivan have played a major role in the success of the METAVERSE1 ITEA 2 project that has resulted in MPEG-V a global standard on connecting real and virtual worlds.

The METAVERSE project emerged from the ITEA PO Preparation Days in Germany in 2007. Yesha Sivan, who is also the head of the information systems programme at the Tel Aviv Academic College, presented the field of virtual worlds as one in need of standardisation. “Mobile phones started in the USA but took off with European standardisation efforts in the GSM forum,” he points out. The same type of approach was needed to virtual worlds for European leadership.

Virtual worlds bring together the fields of virtual reality and gaming. Related fields range from the economy of virtual goods, sociology and the nature of communities, and law – copyrights and ownership – to biology, such as new brain based human-computer interfaces, computer science and mathematics, particularly algorithms for 3D rendering and animation.

Such worlds are basically a combination of 3D and 3C. The former involves a representation of 3D worlds in which it is possible to walk in an immersive way. The latter stands for three concepts: *community* in the form of a more advanced type of Facebook social networking; *creation* with the ability to create mainly digitally-oriented artefacts; and *commerce* by making it possible to make money out of it – the Internet originally was not money making but now Amazon and similar web organisations have changed the concept.

His presentation generated much interest and discussion. As a direct result, Sivan joined forces with Jean H. A. Gelissen, Senior Director Strategic Partnerships at Philips Research to form the METAVERSE1 group which involved companies from Belgium, France, the Netherlands and Spain. The goal of the resulting product was simple: to connect real and virtual worlds to enable the new medium to blossom. It involved both the theoretical framework required and four or five use cases.

The project was successful in several ways:

1. It resulted in the MPEG-V virtual world standard: a very direct and concrete outcome which may only be a beginning but is an essential step;
2. It came up with lots of small items that can continue to be developed – these were presented at the 3D/3C world conference (www.3d3cworlds.com) in Israel on March 23, 2011; and
3. It led to the establishment of extremely strong links between the various partners which are already resulting in new co-operations.

Working with EUREKA and Europe is important for Israel, according to Sivan. “Europe is nearby so doing business there is easier,” he points out. “However, while it is a big market, it is less consolidated than the USA, although the euro zone helps. People in Israel are also more Americanised in their thinking. There is a big Israeli community in the USA and many Israelis speak English.”

The new projects of Call 5

VITALITY

Monitoring & Managing your Health and Well-being

Project leader: Philips (the Netherlands)

There is an economic and social need to support self management of lifestyle and healthcare processes to lower demands on the healthcare system as well as increasing independence of the user. VITALITY will develop an intelligent broker between the vast amount of sensor data in the user's context from the 'Internet of things' and the health and well-being applications provide by the 'Internet of services' to support the user in her/his daily activities.

MEDUSA

MEDical Distributed Utilization of Services & Applications

Project leader: Technolution (the Netherlands)

The objective of MEDUSA is to enhance the quality of diagnosis and decision making in acute and/or critical situations in a patient's condition by introducing a new service concept in healthcare based on three pillars:

1. Advanced imaging as a service;
2. Secure virtual workspaces as a service; and
3. Medical diagnosis support as a service.

SEMOSA

Single European Open Mobile Services Area

Project leader: Eteration (Turkey)

SEMOSA will provide an open innovation platform and tools for mobile applications and services enabling European interoperability. It aims to simplify development and speed interoperability of ecosystems for trusted services by providing open interfaces and toolkits. The open platform will allow the easy development of mobile applications for service users and be an enabler for service providers to provide capabilities as plug-ins.

EURADIO

The European Digital Radio Platform

Project leader: Institut Telecom (France)

Digital radio opens the door to an enriched experience. On the production side, it allows the aggregation of extra content with the main audio stream and on the delivery side it enables a personalised stream for each user and access to contextual and visual information. EURADIO will create new tools and a global scalable framework to help traditional radio services as well as new entrants transform the way they produce, distribute, protect and monetise their content.

ENERFICIENCY

User Led Energy Efficiency Management

Project leader: INDRA (Spain)

ENERFICIENCY will design, implement and test an open software platform for energy-efficiency monitoring and management from the customer side able to interact with the power network and provide services for efficient use of energy. It aims to build a software platform capable of integrating many heterogeneous data sources and providing appropriate services to convert this data into valuable information for energy-efficiency management, audit and benchmarking.

EASI-CLOUDS

Extendable Architecture and Service Infrastructure for Cloud-Aware Software

Project leader: Thales (France)

EASI-CLOUDS will provide a comprehensive open-source, innovative and validated cloud-computing infrastructure, the future pillar of this fast-growing market. This infrastructure will feature the three classical categories – infrastructure-as-a-service, platform-as-a-service and software-as-a-service – with superior reliability, elasticity, security and ease-of-use. The infrastructure will be used to set up an application type-specific cloud for private, public or hybrid use and implementing a given level of security, privacy and quality of service.

CREATE

Creating Evolution Capable Co-operating Applications in Industrial Automation

Project leader: Fraunhofer IML (Germany)

CREATE will develop an innovative, fully decentralised service-oriented software architecture using web services for industrial-automation systems based on modular and autonomously co-operating components called 'smart neighbourhood modules' (SNMs). An SNM is a modular composite consisting of mechanical parts – such as production machinery – and all associated control and automation software functions providing services as modular contributions to the automation system configuration management, to control and monitoring as well as to production and logistics workflows.

MANY

Many-core Programming and Resource Management for High-Performance Embedded Systems

Project leader: Aurenis (Spain)

Hundreds of cores are expected to power up and accelerate applications in various embedded devices to increase processing power and reduce power needs.

MANY will provide application developers in the embedded-computing realm with an efficient programming environment to facilitate the development (process) of applications for embedded systems from telecommunications to the automotive industry. It allows the creation of code executing at the Pareto efficiency front of minimum energy consumption and maximum performance.

SAFE-IM

Situation Assessment For Emergency Incident Management

Project leader: Bosch (Germany)

SAFE-IM combines activities towards sensor improvement, data fusion, situation visualisation, fire and crowd simulation, decision support, multi-actuator use and interface standardisation to enhance safety and security measures in large building environments by interconnecting, aggregating, enriching, intelligently interpreting and visualising sensor data. Such an integrated approach will provide a better overview of situations, allow early identification of abnormal or critical conditions and ensure a better and quicker reaction.

WoO

Web of Objects

Project leader: Thales (France)

The 'web of objects' will create a uniform, resource-efficient network and service infrastructure simplifying development, deployment and operation of smart distributed applications in building automation. WoO targets a web of objects facilitating smart distributed applications which combine information from different domains currently isolated from each other. The general goal is to simplify object and application deployment, maintenance and operation.

TWIRL

Twinning virtual World (on-line) Information with Real world (off-Line) data sources

Project leader: Alcatel-Lucent Bell Labs (France)

TWIRL will create an open platform to process, query, enrich, interlink and fuse data from real-world applications and knowledge extracted from virtual data sources – such as open linked data, social communities and forums, blogs, wikis and RSS web feeds. It will lift today's applications into a new dimension by facilitating the creation of augmented-reality applications, thereby fostering this domain. The ultimate goal is to conceive the reference environment for augmenting applications with on-line information.

ADAX

Attack Detection And Countermeasures Simulation

Project leader: Cassidian (France)

ADAX will study the feasibility of solutions to detect complex attacks against an information system and react smartly and quickly. The core innovation is a decision-support system for security operations and policy management integrated within a security-information management (SIM) platform, acting as a mediator

between the SIM environment and the monitored ICT system, helping the operator to assess the seriousness of security issues, validate remediation actions, deploy them over the monitored infrastructure and monitor their efficiencies.

DICOMA

Disaster Control Management

Project leader: Siemens (Germany)

The goal of DICOMA is to ensure effective management of large disasters and complex emergencies by providing a set of tools which aim to improve the effectiveness of decision makers in dealing with disasters by better training and in situ support in the field. This toolset will include data-abstraction, simulation-and-modelling and decision-support-and-training tools.

PREDYKOT

Policy REfined DYnamically and Kept On Track

Project leader: Evidian (France)

PREDYKOT will provide an innovative, modular and consistent ecosystem of software modules to refine a security policy dynamically and ensure that it remains effective whatever changes occur to it. The project will shift the focus of security-policy management from basic operational improvements to critical intelligence for business-process improvement. It targets markets where security is crucial, such as cloud computing, large and mission-critical systems, identity and access management and professional mobile radio.

ATAC

Advanced Test Automation for Complex Software-Intensive Systems

Project leader: Barco (Belgium)

European industry requires a combination of powerful processes, methods and tools for the quality assurance of complex software-intensive systems. ATAC aims to develop, enhance and deploy high-performance methods and tools for quality assurance of large and distributed software-intensive systems. It will consider such challenges as variable and complex configurations, systems used in large varieties of environments and modularity of product development.

SAFE

Safe Automotive software architecture

Project leader: Continental Automotive (Germany)

Modern vehicles are extremely complex embedded systems that integrate software and hardware from a large set of contributors. To cope with this complexity during development, models are used that allow for an early validation of important properties. The main objectives of SAFE are to: extend the AUTOSAR architecture mode; enhance methods to benefit from the integrated model; and define an ISO 26262-compliant process on top of model-based development.

News

MPEG-V event in Korea

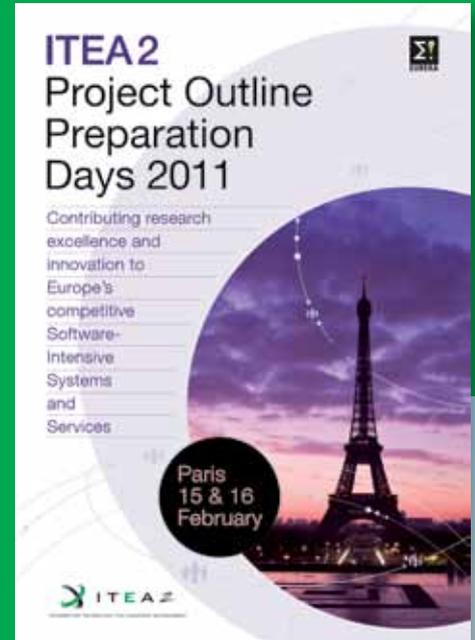
The 1st International MPEG-V Workshop and Demonstration Day 2011 was organised in parallel with the 95th MPEG meeting on 25 and 26 January, 2011 in the Inter-Burgo Exco hotel in, Daegu, Korea. The purpose of this event was to present and demonstrate MPEG-V, a new standard in the MPEG range and published by ISO in November 2010. This new standard is the first version of ISO/IEC 23005 (MPEG-V, Exchange with Virtual Worlds) initiated by the ITEA 2 Metaverse1 project and co-created with a large number of partners of the Metaverse1 consortium and several companies; institutes and universities from Europe, Korea and Japan.

MPEG-V-based products and applications enable multi-sensorial user experience and interchange between virtual worlds.

The standard is composed of several parts referring to:

- Architecture and use case scenarios;
- Syntax and semantics of data formats for interactive devices, device commands and sensed information;
- Metadata to describe device capabilities and user preferences;
- Metadata to represent sensory effects; and
- Metadata to represent virtual-object and avatar characteristics.

The MPEG-V awareness day was particularly targeted to developers of products and application for multi-sensorial user experience, content creators, broadcasters, multimedia device manufacturers, sensor and actuator manufacturers, virtual worlds and online game developers, and those interested in new opportunities in digital media.



The Project Outline deadline was 1 April 2011. 34 Project Outlines were submitted, with a total effort of 4259 Person Years. Again this year the PO Preparation Days were a good starting point for most of the proposals and consortia. Looking back, 24 projects out of these 34 project proposals were first sent in and/or presented as project idea at the PO Preparation Days 2011.

ITEA 2 opened its sixth Call for projects



The Marriott Hotel Rive Gauche in Paris, France, was the venue for this year's ITEA 2 PO Preparation Days, which took place on 15 and 16 February 2011.

The aim of this two-day meeting was to help organisations form consortia and generate preliminary outlines for projects by bringing together interested companies, research institutes and universities with innovative ideas for projects in ITEA 2.

Some 275 participants from 19 different countries attended the event. French organisations were well represented, but there was also a strong participation from Finland, Germany, the Netherlands and Spain.

Like last year, we received over 80 initial project ideas which were published on the restricted PO Days website before the event. Some 50 ideas were presented in the poster session and 55 pitch presentations were held in the parallel sessions. After discussions, this resulted in a total of 25 project ideas.

A lot of positive feedback was received from participants during the event. This appreciation corresponded with the result of the online questionnaire that was sent to all attendees. Over 45% of the participants completed the evaluation and rated the event 3.9 on a 5-point scale. Again, the scores for usefulness of the poster and brainstorm sessions – respectively 4.5 and 4.1 – clearly show the value of the networking and brainstorm possibilities during the event. Compared with last year, 42% of the respondents evaluated this year's event as better and 51% similar.

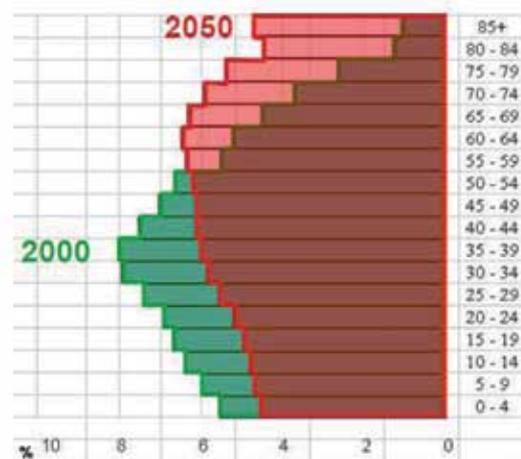
OSAmI-Commons and universAAL increase collaboration



OSAmI-Commons (Open source ambient intelligence commons) and universAAL (Universal open platform and reference specification for ambient assisted living) announce that coordination actions have started to reinforce the existing synergies and complementarities between the two projects. UniversAAL and OSAmI are convinced of the benefits of this collaboration which will bring together 49 leading research organisations and industry players across 13 European countries.

The health domain is one of the demonstration areas of the OSAmI platform and a core domain in universAAL. Both initiatives, running under EUREKA ITEA 2 and Seventh Framework Programme respectively and building on previous results, agree on the benefits that open software can bring to addressing the challenging future of the health and assistance systems in Europe.

For more information visit: www.universaal.org; www.osami-commons.org



	Total EU Population (millions)	Dependency Ratio (65+ in % 20-64)
2000	450,7	26
2050	452,6	56

Source: www.oecd.org/dataoecd/52/31/38123085.xls

Systems management crucial to future networks

As the two projects showcased in this issue demonstrate, systems management and monitoring are playing an essential role in future ICT systems developments. This ranges from cutting the cost of high technology healthcare by full integration of technical service in the AIMES project to the need to provide simple and effective control for the myriad of devices that will be found in the 'Internet of Things' as demonstrated by the SEMbySEM project.

Real-time systems management and monitoring are equally important in other areas such as drinking water and wastewater treatment and water distribution as demonstrated by the new EUREKA Cluster ACQUEAU. Its work programme involves new sensor and control technologies for reliable, durable and sustainable systems in often remote and harsh environments.

Developing an advanced infrastructure for medical equipment management and services

As the market for medical equipment service and maintenance changes, it needs new concepts for service management. The ITEA 2 AIMES project has now developed a service infrastructure for the overall hospital technical facilities, covering the integration of management tools into an appropriate communications infrastructure, distributed condition monitoring, diagnosis and remote access to medical equipment, management and tracking of mobile medical devices using radio-frequency identification (RFID).

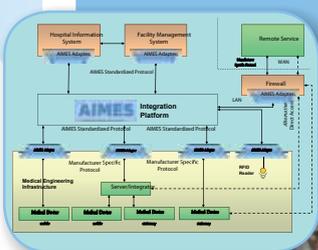
“There is a particular problem in smaller rural hospitals,” he points out. “Here equipment failure – such as a computer tomography (CT) scanner – can mean that no alternative is available.”

FULLY INTEGRATED APPROACH

AIMES set out therefore to develop a fully integrated approach that would reduce manual processes, cut errors and improve quality through the use of modern electronic business processes.



ENABLED SERVICE QUALITY



The medical equipment service and maintenance sector is dominated by original equipment manufacturers and closed systems. However, there is now a strong move to independent service organisations and third-party subcontractors with open systems to avoid product line lock-in. Moreover, healthcare providers want to have IT systems offering totally integrated asset, quality and supplier management.

The project started with a set of assumptions:

1. The *service platform* should be flexible and extensible to new requirements and technologies, with mobility- and context-awareness for devices and technicians;
2. *RFID technology* was necessary for locating and allocating equipment in a cost-effective way – this is crucial in a modern large hospital that can have 20 or 30,000 medical devices in use – with state-

AIMES

ITEA 2 07017



Andreas Zeidler
Project leader,
Siemens

Partners

Dräger Medical AG & Co. KG
Enverdis GmbH
FEIG ELECTRONIC GmbH
ifak e.V. Magdeburg
INDRA Sistemas
RGB Medical Devices S.A.
SBSK GmbH & Co. KG
Siemens AG
TELEFONICA I+D
Universitätsklinikum Magdeburg
University of Girona

Countries involved

Germany
Spain

Project start

May 2008

Project end

December 2010

“Today, more than 50% of the total life cycle cost of medical equipment lies in technical service,” says project coordinator Andreas Zeidler of Siemens. Yet work processes are particularly old fashioned with no integrated supply chains and service requests relying on paper and phone ordering. This is a reflection on how IT has developed within the healthcare domain with a series of isolated IT islands.

of-the-art web-integration technologies to keep track inside and outside the hospital;

3. The *Enterprise-Service Bus* should be used as the main underlying infrastructure integrator; and
4. *Data mining* and *knowledge extraction* should be exploited in new applications to enhance maintenance though increased use of preventive and predictive servicing.

An important question lay in the need to develop new business models for suppliers and hospitals for all this to make economic sense.

TECHNOLOGICAL ADVANCES

Technological advances include the development of an RFID reader with the necessary certification for use in hospitals. This product has already been nominated for several design awards and will be commercialised by project partner FEIG.

An end-to-end mobility- and context-awareness demonstration was created using a mobile device based on standard smart phones. This showed that from identification of a problem in the hospital until the resolution of the incident by the device manufacturer's service technician and even the billing could be done without leaving the IT domain. "There are no technological reasons for using any other media," insists Zeidler. "This is completely new and demonstrates the added value of using mobile devices and mobile technology."

AIMES also demonstrated end-to-end integration between hospitals and manufacturers. "We showcased one manufacturer which connected a lifeline monitor via web-service technology to the integration infrastructure without any service organisation behind it. The hospital could access the device directly and get status information from it." A large part of this work was subsequently proposed to the ISO 11073 committee on health informatics – medical/health device communication standards as an extension to the standard to cover technical service. It was accepted for consideration.

Dräger Medical – another manufacturer of medical devices – demonstrated its belief in this approach by putting the necessary AIMES extensions into its proprietary integrated service gateway hardware to enable the company to access its own devices in hospitals and use AIMES results in the future. While this is now part of its products, there is no integration scenario to exploit it as the hospitals do not yet have the facilities in place.

Siemens as a manufacturer of medical devices such as CT scanners already has a fully integrated service organisation. Its interest now is to open up this service for integration with hospitals. "We have shown that we can have this integration at the level of the service organisation but not yet at the level of the device," adds Zeidler. "Our devices already have a high degree of predictive and preventive maintenance built in – such as an X-ray tube that can indicate when it needs replacing."

LOWERING THE TOTAL COSTS FOR HIGH TECH HEALTHCARE

Overall the project has been a success as it was essential that Europe took action in this area where for example IBM and Oracle are already very active in the USA. While the European approach may have been narrower than the IBM smart initiative, everyone will benefit as the outcome will be lower costs for high technology healthcare.

More information: www.aimes-project.eu

Project showcase • SEMbySEM

Semantic approach simplifies services management in the 'Internet of Things'

Services management will be crucial in the forthcoming world of the 'Internet of Things'. With more and more objects able to provide information, it will be essential to have some form of mechanism that makes it possible to control the whole system in a meaningful way. And, ideally, this mechanism should be user centred. This was the starting point for the ITEA 2 SEMbySEM project which took a semantics approach to systems operations. Applications are already developing in transport control, virtual manufacture and building management systems hypervision.

"Imagine entering a room with a group of people all of whom start talking to you immediately," says Patrick Gatellier of Thales, project coordinator for SEMbySEM. "What we need is a management mechanism to say either give me your information or put yourself in the situation to give me your information."

This system needs not only to find out what information is available but also to decide on priorities. For

example a machine telling you that your tea is ready needs the sound shut off if you have just received an important phone call. "This is the problem we sought to address: we are in an arbitrary world where lots of objects are able to speak and we need to have a generic mechanism to control this information."

As the management system does not know the objects, the first thing needed is some way of describing them. "This why we need semantics – a language to describe

the objects. And the objects should be able to store their own description – what they are and what they do. Semantics offer an arbitrary way of doing this – providing normal words that are processable."

IMPROVING QUALITY OF SERVICE

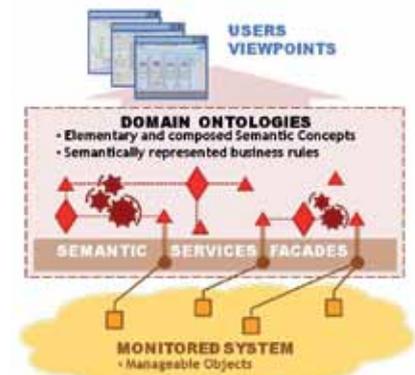
SEMbySEM started with the management of computer systems where there is an ever-growing need to provide quality of service and to understand the kind of service which is being provided.

“When managing a website, the user is interested in the percentage of downtime, not why the system is down,” points out Gatellier. “For example, he may want his website down for no more than an hour a month.” This needs to be translated into the various sources of anomaly in the system so that is explicable in human terms. The requirement is for a summary of computer operations in terms of human goals.

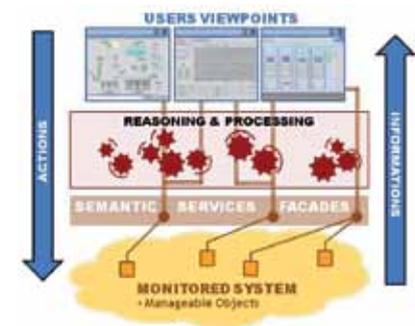
The resulting system then has to manage the human need directly and not the technical issues. “For example, in the basic management of the computer system for an application, you can say that you want a certain amount of computing power – say 20% of the CPU, half the memory, disk space, etc. We wanted to be able to process these concepts and speak in terms of these concepts.”

‘train started’ and ‘train stopped’ and all other activities that modify these properties. This live model of the system can then be queried before carrying out an action. This living dynamic reference of the system being managed is analogous with how the brain sees the body and controls its actions.

SEMbySEM demonstrated that the semantic approach is the most appropriate and versatile way to describe concepts and rules, with the largest consensus on the terms and their meaning. It lets different users define their business model in terms of concepts and rules and define their own representation. These concepts are then linked with their real counterpart to manage them by obtaining information from them and acting on them. Key outputs of the SEMbySEM project included:



SEMBYSEM DESIGN TIME



SEMBYSEM EXECUTION TIME

sharing of cargo information and technical data for safety, maintenance and inventory;

- Management of virtual metrology results for metal car-panel production to provide users with highly detailed information on part quality and process performance; and
- Centralised control of multiple building management systems with different software or systems integration configurations to enable mapping of heterogeneous supervisory control and data acquisition (SCADA) systems in a single coherent system

The software developed will be published as an open-source tool and the results are already being applied in partners' own products. Thales has been demonstrating a systems application for a Spanish underground railway network, enabling the automation of decision processes in both normal and abnormal conditions. ARC Informatique will use the results in new, more dynamic generations of its SCADA systems. And Spanish partners will develop the virtual metrology systems for commercial applications in the car industry.

More information: www.sembysem.org

Partners

AGMLab
ARC Informatique
Asociación Innovalia
CBT
CityPassenger
DATAPIXEL
Identoi
LIG, Université de Grenoble
LISSI, Université Paris XII
LORIA / INRIA Lorraine
Oliotalo
SQS
Thales Communications
Thales Services

TRIMEK
VTT Technical Research
Centre of Finland

Countries involved

Finland
France
Spain
Turkey

Project start
July 2008

Project end
December 2010

SEMbySEM

ITEA 2 07021



Patrick Gatellier
Project leader,
Thales Services

Ideally, the system should compute in terms of the application with reasoning based on the concepts involved – for example when dealing with a railway system this should be in terms of carriages, passengers and stations. With existing standards, it is not always certain that these concepts will be maintained across the system and results will be available in computable time.

“To be sure we can always compute, we limited the capacity of the language being used to try and address all the possible problems,” says Gatellier. This resulted in a specific internal concept called Micro Concept using semantics to describe the systems in terms of an ontology so that it is not necessarily to change the vocabulary on a continuous basis.

BUILDING A DYNAMIC LIVING MODEL

This vocabulary is used to design a living model of the system which at run time is fed with events such as

- The *Micro Concept standard* which represent concepts in terms of objects, parameters and actions, and semantic rules based on these concepts;
- The *Semantic Services Facade standard* which connects the concepts to the manageable objects they model;
- The *model studio* which enables the user to define the concepts;
- The *visualisation studio* allowing the user to design its own viewpoints; and
- The *runtime framework*.

OPEN-SOURCE TOOL TO EMERGE

SEMbySEM proved the efficiency of semantic models for supervision and ‘Internet of Things’ related technology. The concept was validated by the various partners in a series of demonstrators that included:

- Real-time localisation and tracking of locomotives and goods wagons in rail transport as well as

Water and systems management: Delivering monitoring and control enhancements



By Xavier Chazelle, ACQUEAU chairman
www.acqueau.eu

EUREKA Clusters are generally related to information and communications technology. ACQUEAU is the first EUREKA Cluster dedicated to water. It launches projects focused on drinking-water production and distribution and wastewater collection and treatment. The Cluster's projects cover nine water components identified as priority areas in the technology road map laid out in the ACQUEAU Blue Book. These priority areas range from water resources to the end-user and the customer, and from urban drainage and wastewater collection to biosolids. With sustainability in mind, ACQUEAU labelled projects address the three pillars of sustainable development: economic, social and environmental. The innovation in these projects will improve the 'social benefits of growth, employment and quality of life.'

While developing the strategy in the ACQUEAU Blue Book, it became clear that technology advances, such as real-time systems management (RTSM), are a key need for the European water sector. Further developments in RTSM have the potential to deliver comprehensive monitoring and control of water resources, treatment and distribution, and of wastewater collection and treatment, at lower cost than current systems. This is expected to result in benefits in terms of water quality, security of supply and service, and greater energy efficiency.

- *Water resource.* Introducing new sensors and algorithms could allow the water sector to monitor and manage the level and quality of water resources more dynamically than is currently possible. Water catchments are often a difficult environment for electronic components and innovation is anticipated

in low energy sensors, wireless communications and system software.

- *Drinking water production.* ACQUEAU has specified that technical advancements should be implemented in the monitoring of existing and emerging water threats such as viruses and bacteria. The detection of the threat should be accurate and allow controllers to have remote access for monitoring and intervention action. The online access of the command and control system is a major issue as well as the lifetime of the technology. The control system has to be reliable, durable and sustainable.
- *Drinking water distribution.* Water distribution challenges include effective infrastructure asset management planning such as maintenance and replacement scheduling, network pressure and leakage control, and maintenance of water quality

from the treatment plant through to the customer's tap. As with water resources, developments in low energy sensors, two-way – monitoring and control – wireless communications and smart software systems will help the water sector deliver continuing operational and capital efficiencies. The ability to detect buried water pipes and sewers of all types of materials more readily would greatly assist asset maintenance in our streets.

RTSM is also required in the field of wastewater. In the sewer network, developments in proactive management help reduce the environmental impact of wastewater discharge into the environment, for instance through: early detection of pollutants and early-warning systems for flood prevention. As regards wastewater treatment, online sensors are desired to help optimise process control and plant operation. These technological developments coupled with adequate modelling can help build improved tools for integrated management of urban drainage, including sewer and stormwater systems.

While it is said that "water is everywhere", water networks are not the same everywhere. If technology can generate improved tools and methods for integrated management of water systems – monitoring, data collection, data processing and optimisation – through technical breakthroughs in sensors, communications, models and algorithms, it will be easier to control water and wastewater systems in real time with greater accuracy, precision, security and quality for the benefit of all water users.



Business key to research success

R&D manager Jesús Bermejo has steered several ITEA projects to success on behalf of ITEA founding company Telvent. This major global IT solutions and information services provider is headquartered in Madrid, Spain. Jesús believes strongly in the business orientation of ITEA projects and has been part of the ITEA roadmap team.

Although keen on physics, family tradition led Jesús to a mechanical-engineering degree – specialising in structures for industry and engines. However, he jumped into the computer field right out of university and has now been involved for 27 years in software-intensive domains.

“I’m from the Sinclair ZX Spectrum generation,” he explains. “At that time I developed some software for fun. Then, in university, software became essential for calculating structures and for turbo-machine simulation.”

In his first job, Jesús was involved in the development of command, control and information centres for the navy as part of a project involving frigates and an aircraft carrier. These systems compiled the information from a very broad range of sources, analysing it to support decision making.

He has also been involved in training simulators and in large scale infrastructures for generating distributed synthetic environments. These software-built worlds simulate the environment, including the electromagnetic spectrum, and allow the dynamic integration of real entities. Real and intelligent virtual entities interact in these environments and analytical tools are embedded for driving human skills acquisition in training simulations.

Jesús moved to the civil field to help coordinate the year 2000 software transition. Here he was mainly dealing with critical systems controlling infrastructures such as energy and transport. “At that time I became aware of ITEA and, due to my previous background, we decided to participate in an ITEA project. Following this, we were invited to participate in the management bodies and we joined other projects.”

He believes strongly in the EUREKA approach. “A tool enabling and promoting co-operation based on business needs is very important for industry and for the return on investment of public and private funding,” he insists. He finds it difficult to imagine a market segment in which software could not play a key role for the innovation which is everyday more important in a context of global competition. “Both aspects together reinforce the importance of EUREKA and specifically in the software-related domains.”

The strong link with the business is what makes EUREKA different; it is very important in dynamic markets. Software, due to its digital nature, evolves much faster than other domains. And now Internet has removed the traditional physical support necessary for software distribution, enabling things to run even faster. There are also other business-related issues differentiating software from other domains – such as a minimum cost of replication, which makes this a volume market for price competition, or its layered nature, as frequently software builds on software.

All this together drives this market to very large ecosystems in which the computing platform is also an essential element. The same is applicable for software-based services as these are software in execution. And the continuous interaction with the customer is opening new business models embedding the user in the process. Again the business dimension is strongly related to this market.

“Frequently, the success of a software R&D proposal depends more on how it fits in the business than on the quality of the proposal,” he says. “Many software R&D investments do not reach the market due to the absence of an adequate business framework.”



Jesús sees software penetrating many devices and being linked through communications networks. “It is becoming the nervous system for our world with global intelligence moving to the data centres,” he says. “It would be interesting to visualise the software and see how it is powering different activities. Most people are not aware about the lines of code running around them – such as in a car, mobile phone or in a TV”.

In such a visualisation, software would appear to be penetrating devices, similarly to a live organism growing to power society. “Taking advantage of this potential preserving the value in the society allowing for a sustainable development is a challenge; the challenge of building an open services ecosystem based on the web of objects.”

While heavily involved in his work, Jesús balances his life with fishing – he has a small boat and is only an hour or so from sea. His three sons also keep him fully occupied.

Innovation Reports

3D-TESTBENCH

(ITEA 2 ~ 06043)

3D virtual design environment speeds complex product development

MULTIPOL

(ITEA 2 ~ 07001)

Securing access across multiple domains

UseNet

(ITEA 2 ~ 06004)

Leading the way in ubiquitous machine-to-machine networking

3D-TESTBENCH

(ITEA 2 – 06043)

Andy De Mets, Barco
Belgium

3D virtual design environment speeds complex product development

The 3D-TESTBENCH project has developed a virtual environment linking multiple engineering tools for collaboration in design analysis and validation of complex products. It provides a multi-disciplinary 3D display solution based on integrated automated workflows and knowledge-based engineering tools to enable virtual prototyping and testing – reducing design times markedly while providing notable cost savings. The individual building blocks are already being exploited, while the overall concept has been proven and is being developed further by the project partners.

Many disciplines are now involved in industrial product design. So it is necessary to operate at a higher level to review activities and catch problems such as those of integration early on. Even 10 to 15 years ago, a product could have been developed and built by relatively only a few people. Now many more people are involved because the complexity has increased and more disciplines, also non technical, have become part of the design and manufacturing phases.

3D-TESTBENCH has developed a test platform which allows all participants to visualise and validate a complete development or part of a development. The whole team can come together in one room to review the design on a 3D display with input from multiple desktop or laptop computers, moving from one

block to another in the development cycle. And this approach could possibly be extended in the future to enable collaboration between remote teams in plants say in China and Europe enabling both teams to have the same views of the project.

The initial idea was to bring semantics and ontological aspects related to documents and drawings within engineering processes. The original project proposer was unable to obtain funding, but global visualisation solution provider Barco was still keen to continue. Together with Vrije Universiteit Brussel (VUB), Barco oriented the project to more 3D scientific visualisation aspects, manipulating simulation models for engineering. The idea was to develop a virtual design environment consisting of multiple engineering design

tools to take the collaboration and design analysis to a new level and even further to improve the validation processes of complex products.

The two original partners were quickly joined by test and mechatronic simulation specialist LMS International in Belgium through its subsidiary NOESIS Solutions – now an independent spin-off company and leader in process integration and design optimisation – and aircraft wiring harness manufacturer Fokker Elmo and TU Delft in the Netherlands. While there was also interest from Germany and Spain, the funding for them was unfortunately unavailable. So, in the end, it was a small project with just five partners in two countries. This meant concentrating on proving the concept and its feasibility.

COMPLEMENTARY EXPERTISE

The five partners proved a good match as they were highly complementary with good individual expertise and each a leader in its own domains:

- Barco – an ITEA founding company – could supply the visualisation technology for the virtual environment, projection hardware and integration of the multiple user interfaces;
- NOESIS Solutions – as part of LMS – offered a workflow management framework to enable the integration and configuration of engineering tools or services;
- TU Delft specialised in modelling language, test formalism and knowledge-based engineering (KBE);
- VUB had particular expertise in analysis and visualisation software for modelling and inspection of coupled of computational fluid dynamics (CFD) and finite elements methods (FEM) numerical simulations; and
- Fokker Elmo could provide a real use case for wiring in aircraft to raise the level of design automation and improve the accessibility of tooling.

Integration of the multidisciplinary development process focused on two specific problems. The first was the need for a collaborative engineering environment with high-end visualisation technology and with workflow automation software to make it smart. The second involved the growing importance of knowledge-based engineering aspects to take software-based modelling and simulation to a new level.

One of the main aspects of the project was the use of computer resources to predict and provide a virtual experience of a product without the need to build it physically. 3D-TESTBENCH developed a solution using knowledge-based engineering to do just this – eliminating the need for expensive mock-up prototyping with real hardware. The result is achieved faster and cheaper in a collaborative environment with all the disciplines in one room.

The major emphasis in the project was the integration of mainly existing technologies – but with new twists. While there were no real individual breakthroughs, there were several important innovations such as:

- Integration of the engineering work flow from NOESIS;
- Development of desktop-sharing technologies that Barco intends use both internally and for new products;
- Creation of a domain-specific language to automate wiring harness design;
- Formalisation of design processes for knowledge-based engineering; and
- More ontology-based integration for future enhancements.



PROOF OF CONCEPT

The concept has been proven and many of the building blocks already commercialised but not yet the entire concept. However, Barco is intending to establish engineering design rooms internally using this approach and is continuing development. And all the partners are still in contact and working together to continue this approach to a higher level.

Less tangible benefits included:

- Prototyping with a reduction in hard prototyping effort and/or lead-time;
- Easy workflow management with the creation of a session structure as easy as using a Lego building block system;
- Automatic reporting of development/review for project leader; and
- A high speed and network-efficient desktop sharing system which meets industry expectations – such not having to switch plugs when viewing a series of presentations from different computers.

Use cases selected for the ITEA 2 project have already demonstrated these benefits in a real industrial environment. For example, Fokker Elmo has been able to automate the pin assignment for electrical connectors in an aircraft – a process which had to be done manually before. Savings of 2,300 hours of engineering labour resulted per aircraft programme. And savings of up to 1,600 hours of engineering labour per aircraft programme have resulted from automating wiring harness design.

Use of knowledge-based engineering in applications development is already providing savings of over

20% compared with traditional automation. And this will increase when the domain-specific language is extended

EXPLOITING THE BUILDING BLOCKS

Overall, the project was very successful with a series of building blocks that are already being commercialised in different markets. Barco's XDS desktop-sharing solutions make it possible to bring different sources – such as different laptops – together on one big screen. The advantage of this approach is that no special new software is required – the system just shows what is already on the PC. XDS systems are already being delivered to car manufacturers and the oil and gas industry – and are of interest to any company doing development work that needs to integrate multiple results.

NOESIS is also already marketing its OPTIMUS workflow management software and allowing the federation of many engineering disciplines to effectively support engineering collaboration. And the knowledge-based engineering solutions developed by TU Delft have led to a spin-off – KE-Works – which is supplying implementations to Fokker Elmo.

The outcome of this ITEA 2 project is well adapted to meet the growing need for multi-disciplinary collaboration as European engineers become more specialised and better equipped. VUB's new BRUFACE – Brussels Faculty of Engineering – initiative, to start in the 2011-2012 academic year, will help to overcome the multidisciplinary gaps between the different engineering domains.

More information: www.3d-testbench.org

MULTIPOL (ITEA 2 07001)

Thierry Winter, Evidian
France

Securing access across multiple domains

The ITEA 2 MULTIPOL project has developed an innovative modular and consistent security suite enabling fully automated runtime access between independently administered domains with the implementation of strong security features. This is based on coherent authorisation mechanisms which take into account the different security policies enforced in the individual domains. The results of the project were demonstrated in a healthcare application speeding secure access to patient files between different hospitals.

Flexible yet robust identification and authorisation – be it radio-frequency identification (RFID), biometry or strong authentication with digital certificates – is essential for commercial and research organisations that increasingly work with external groups and consortia. The demand is to extend business and other processes outside normal boundaries to enable electronic exchanges with partners and suppliers.

Even within an enterprise, different business units often manage distinct sets of users and resources. The deployment of service-oriented architectures (SOAs) or the composition of Web Services pose similar problems: the different services can relate to different companies or organisations, with different policies for enforcing the security of each service.

IMPROVING AUTHORISATION IN MULTI-DOMAIN ENVIRONMENTS

Authentication and authorisation are the key elements of security mechanisms for access control. While much has been achieved in the area of authentication, authorisation has not been properly standardised nor even sufficiently understood in multi-domain environments, where all domains are administered independently and are enforcing different security policies.

No single company is able to handle the external inter-domain processes end to end by itself. Such

inter-organisation security requires co-operation with inter-domain access control – the type of approach developed in MULTIPOL. This ITEA 2 project set out to specify and implement a complete authorisation chain, applicable to multi-domain environments. In addition to mechanisms applied at runtime, such as converting profile roles and attributes, or negotiating and reacting to a contextual security level, MULTIPOL has implemented out-of-band mechanisms, aiming at comparing security policies for compatibility, intelligent composition, etc.

MULTIPOL focused on three principal problems:

1. Securing the expansion of business processes beyond the usual organisation boundaries;
2. Providing the essential security policy mechanisms to enforce access control; and
3. Controlling the access to applications and information across security domains.

Key advances included:

- *A multi-purpose authorisation chain* which required the development of a technical chain of modules to ensure authorisation for access control, including a Policy Administration Point, a Policy Decision Point and Policy Enforcement Points;
- *Security policy composition* – if a company wants to be a member of a consortium, secured by MULTIPOL, its domain has to be compatible with

the set of security rules given by the consortium. A company can continue to use its own rules internally but now has additional rules selected pragmatically to enable it to work with the consortium – this involves ‘composition’ of local company policy and global consortium policies to enable work with the consortium; and

- *A suite of tools and software components* addressing the design, implementation, deployment and management of a comprehensive security infrastructure assuring a consistent security policy in multi-domain environments.

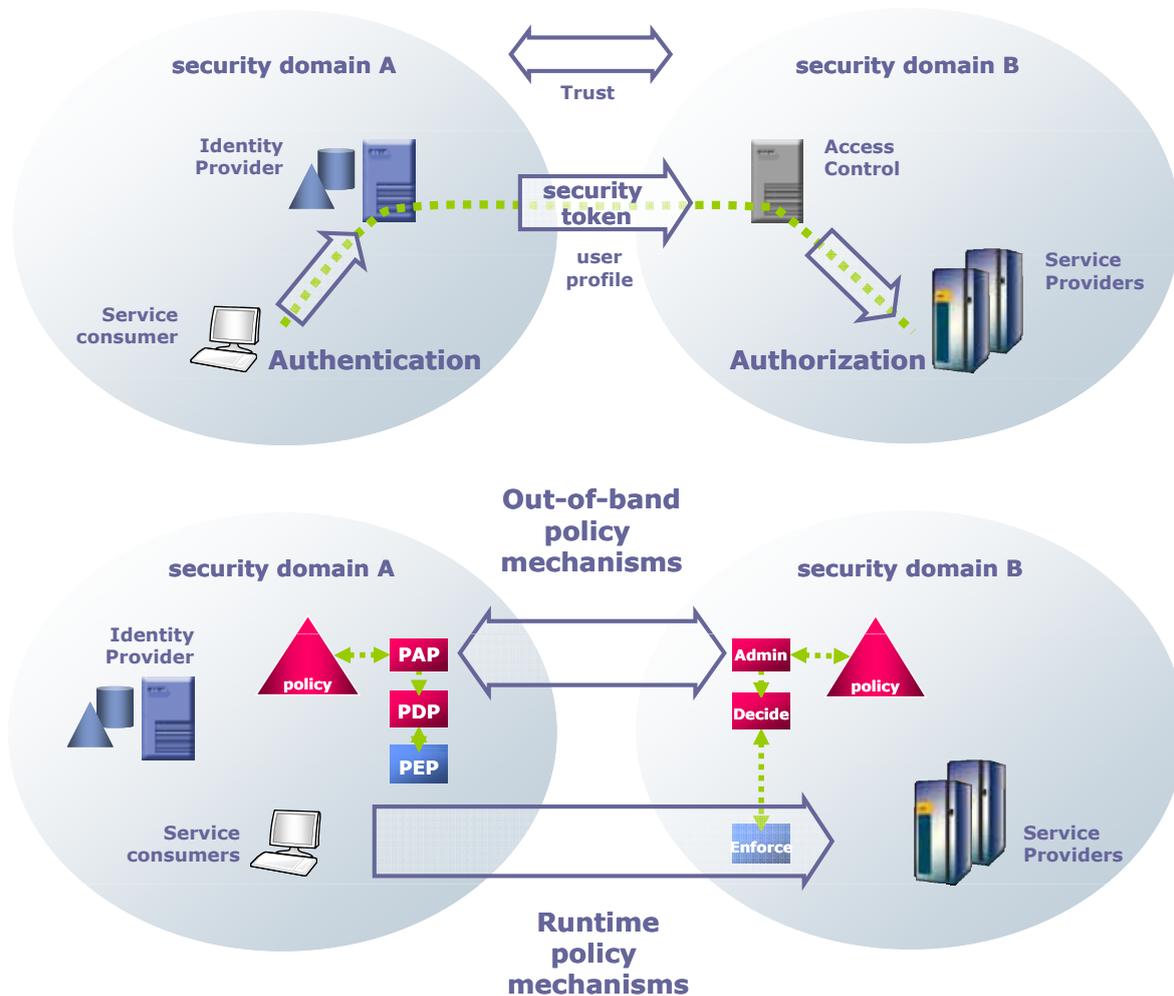
RECONCILING SEMANTIC DIFFERENCES

Authorisation in multi-domain environments can be established by integrating the access control policies of collaborating domains. MULTIPOL took a more realistic approach by composing each local existing policy with a set of rules, global to the consortium of domains. The resulting composed policy is enforced by each domain at runtime, when users or services access to resources.

Existing methods for expressing access control policies offered restricted extensibility and lack of semantic expressiveness, interoperability and reasoning capabilities. MULTIPOL circumvented this critical limitation using an ontological approach that offers a new abstract ontology on top of the proposed policy representations: XACML and extended RBAC.

Important advantages resulting from the use of MULTIPOL software include:

- Maintaining the local security policy while enforcing extra policy rules for the multi-domain co-operation;
- Abstracting the security implementation using a semantic approach; and



- Helping map to real-life deployments with a modular suite of components.

Two markets were selected for demonstration of the MULTIPOL approach.

1. *The healthcare sector* – the major effort was focused on simplifying secure inter-hospital access to patient records. While a doctor established in a hospital will have access to in-house records controlled by local access rules, access to the file of a patient from another hospital is more complicated. Currently, it is necessary to phone the other hospital, explain what is wanted and request access. MULTIPOL provides automatic access to the second hospital as part of an inter-hospital consortium; and
2. *Interbuilding access* – this more limited demonstration involved sharing of information between highly secure buildings such as

embassies. This was designed to allow access to applications and databases between embassies.

QUICK EXPLOITATION OF RESULTS

Enterprise security and inter-domain security are key topics globally in a market with currently strong competitors in the USA. MULTIPOL brought together French and Spanish researchers working on access management and control, and systems integrators building such systems. European-level co-operation was seen as essential to provide all the skills necessary.

The project was deliberately short to enable a quick exploitation of results. Project leader Evidian has already included some modules developed in MULTIPOL in its standard product offer – such as in its latest identity and access-management software suite launched in September 2010.

Other partners have plans to integrate results during 2011.

Success in the ITEA 2 project has also helped increase the visibility of the European software industry in this area of security. It enabled consortium members to communicate their success to the key industry analysts that influence their customers by demonstrating that European companies are spending money on multi-domain security.

Standardisation did focus on sending recommendations back to the OASIS standardisation body, to show how use was being made of existing international and US-driven standards and to outline areas where such standards should be improved.

More information: www.itea2-multipol.org

UseNet

(ITEA 2 06004)

Juhani Latvakoski
VTT Technical Research Centre of Finland

Leading the way in ubiquitous machine-to-machine networking

The ITEA UseNet project focused on the specification of horizontal machine-to-machine (M2M) infrastructure in close interaction with domain-specific application experiments. The horizontal approach is expected to boost transfer from a highly fragmented vertical M2M market, working today mostly in separate silos, into the horizontal M2M market. The success of the project is driving global standardisation in this area and has already resulted in a range of experimental products and applications ready for commercialisation in the domestic, industrial, transport and well-being sectors.



Machine-to-machine systems connect the physical world to the information and communications technology (ICT) world, making use of ICT technologies to enable remote measurements and remote control of devices. This involves the assembly of sensor and actuator networks and the services that can be offered using such networks. Network activities include sending, receiving, storing and processing of information, and all kinds of actions needed for remote operations.

M2M services involve the collection, transmission and processing of the information, and the establishment of interactive systems with the remote devices that can ultimately be integrated within a managed M2M software system solution. Such a solution may or may not require human interaction.

ENABLING UBIQUITOUS USE

While M2M network applications have been developing rapidly, they have been limited to vendor or domain-specific closed systems. Developments costs have therefore been high because solutions had to be developed and implemented separately for each domain or even specific business case. This has led to the wheel being invented over and over again in different contexts.

UseNet set out to develop ubiquitous M2M service networks, where the infrastructure is able to connect

and combine services produced in different domains. The overall objective was to develop a universally applicable M2M service infrastructure to enable interoperation between devices and applications in wired and wireless systems, regardless of the supplier.

The increasing availability of ever-cheaper sensor and actuator devices has led to a sharp growth in demand to monitor and control a fast-rising number of machines and devices from mobile communications to machine tools. UseNet aimed to enable ubiquitous use of M2M services provided by different kind of machines and devices that are connected to heterogeneous and extended IP communications networks. By making it possible for separate M2M solutions to work together, UseNet has made it possible for a wide range of business opportunities to be developed combining the services provided by such devices.

GENERIC SOLUTIONS, SPECIFIC APPLICATIONS

The technological focus of the ITEA project was the development of a common infrastructure, environments and network elements based on the use of service-oriented architecture to replace existing proprietary vertical applications. The resulting conceptual horizontal M2M infrastructure specification and corresponding solutions were then evaluated in a range of applications relevant to the project partners.

Partners joined the project to seek generic M2M solutions that they could use in their own markets. The consortium consisted of 13 industrial companies – both large corporations and small and medium-sized enterprises – and four research organisations. ITEA offered a good framework for the large-scale international co-operation including connections to standardisation bodies via project partners.



UseNet focused on M2M systems in applications domains such as: remote metering and control of built infrastructure; maintenance and control of mobile machines; ubiquitous mobile client for consumer devices; and wired and wireless mobile telematics systems.

The principal goals were to:

- Enable interoperable M2M applications for various stakeholders in the M2M service solution;
- Specify generic service infrastructures for M2M services to be applied and reused in different application domains;
- Enable communication over heterogeneous M2M networks such as all IP-converged public networks and ad hoc wireless networks – including 802.11.x wireless local area (LAN), ultra-wideband (UWB), radio-frequency identify (RFID) and near-field communications (NFC);
- Develop and apply advanced M2M endpoints such as devices, sensors – including sensor networks – and actuators, smart and electronic identity (eID) cards and RFID tags;
- Make use of M2M services smooth and convenient for mobile users;
- Provide end-user services for smart applications; and
- Clarify and enhance the roles of the different stakeholders in the M2M domain.

WIDENING BUSINESS POSSIBILITIES

The resulting M2M systems are already widening business possibilities and offering advantages for companies, especially when information systems controlling their core processes are using the real-time information produced by the M2M system. In consequence, a company can increase the quality of its services, reduce costs and increase customer satisfaction. This fundamental change is already bringing new opportunities.

Exploitation of results has started within many of the project partners, and commercial products are now coming into the market. Around 13 products have already been announced – such as the Ounet centralised remote-control system for building automation from Ouman and a range of wireless products including logging sensors, bridge detectors, ZigBee roaming sensors, M2M web services and a sensor gateway from Rmoni.

Project partner Fagor Electrodomesticos is using results in its domotic business unit to develop improved products, new services and new business opportunities, including monitoring domestic appliances in the home to enable better technical assistance. And computer giant Bull has created a specific offer for the transport industry to enable the tracking and geo-localisation of vehicles.

Many business segments in THALES are planning to exploit UseNet outcomes. These include use of M2M devices to collect data on incidents and fraud, and to track vehicles in public transport systems, to improve tramway management and control solutions. UseNet results are also being used to improve safety and security of critical infrastructure at airports and major events, as well as to increase border surveillance.

Belgian partner Alcatel-Lucent is making use of UseNet results to evolve M2M networking from information management systems to representational state transfer (REST) and web technologies – such as in its ALU 5580 Home Network Manager. It is also exploiting the results for its mobile wireless networks.

DRIVING GLOBAL STANDARDISATION

Standardisation played a key role in the project which has had a major impact on M2M standardisation internationally. While even the opening up of the application value chain required standardisation of the interfaces between the components of a M2M system, the major effort was concentrated on the M2M core architecture through the European Telecommunications Standards Institute (ETSI).

Alcatel-Lucent has been one of the steering members of the ETSI M2M work group. This has made extensive use of UseNet results on functional decomposition and role models in the core which acts as a bridge between heterogeneous device networks to enable communication between both devices and applications. ETSI has also drawn heavily on concepts defined by UseNet for multi-protocol interface bindings – REST, SOAP, etc. – and devices as web services.

Other standardisation activities included service life-cycle management of devices in OSGi; 3GPP work towards M2M features specifications; OMA Device Management in the Open Mobile Alliance (OMA) and an increasing number of devices using web-based standards from the W3C (SOAP, XML, ...).

Overall, the UseNet project has been a major success, pioneering work on specification of horizontal M2M infrastructure, pushing Europe to the forefront of M2M standardisation worldwide, encouraging fast exploitation of results and opening up new research routes in complex and dynamic M2M asset networks and in the technical details of various layers in the system.

More information: <http://usenet.erve.vtt.fi>

CALENDAR

18-19 MAY
EUROPEAN BUSINESS SUMMIT 2011
BRUSSELS, BELGIUM

www.ebsummit.eu

15-16 JUNE
EURIPIDES FORUM 2011
HELSINKI (SCANDIC MARINA CONGRESS CENTER),
FINLAND

www.euripides-eureka.eu

28-29 JUNE
TERATEC FORUM 2011
PARIS (ECOLE POLYTECHNIQUE), FRANCE

www.teratec.eu

25-26 OCTOBER
ITEA & ARTEMIS CO-SUMMIT 2011
HELSINKI, FINLAND

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ERTS² 2012
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The Call for papers already starts in June 2011

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EIT ICT Labs • Willem Jonker

Driving entrepreneurial innovation in ICT



Professor Willem Jonker has taken on the role of Chief Executive Officer for EIT ICT Labs, the newly established Knowledge and Innovation Community (KIC) on ICT of the European Institute of Innovation and Technology (EIT). With a background in both academic and industrial research, Prof. Jonker has most recently been Vice President of Philips Research. He outlines the background and ambitions of his organisation in helping drive entrepreneurial innovation in the European information and communications technology (ICT) industry.

EIT is an EU initiative to help make Europe competitive on the global scene by unlocking our potential for innovation. While knowledge lies at the core of innovation, it is only when this is shared among those who generate it and those who apply it that new opportunities are created.

There are many excellent European education and research facilities but they are often isolated from the business world and do not reach the critical mass necessary for innovation. EIT will overcome these shortcomings through a novel approach that integrates fully the three sides of the knowledge triangle: higher education, research and business innovation.

FOCUSED COMMUNITY ACTION

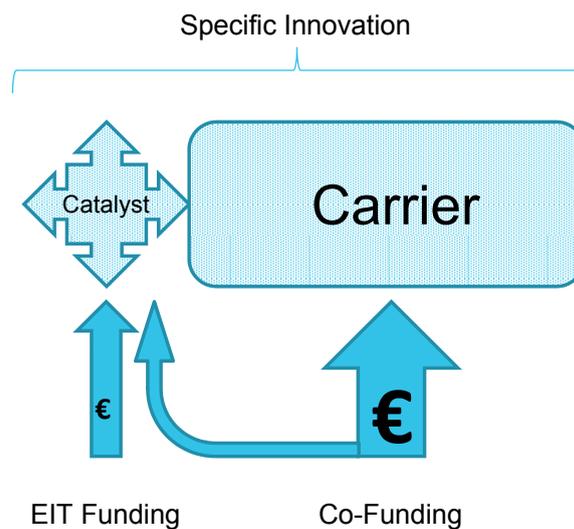
EIT activities are focused through Knowledge and Innovation Communities (KICs) which promote the production, dissemination and exploitation of new knowledge and best practices, transforming the results of higher education and research activities into commercially exploitable innovation. Three KICs are already operational: Climate, InnoEnergy and ICT Labs.

The main ambition of ICT Labs is to make Europe a real world leader in ICT innovation. This involves:

- Education – breeding a new generation of innovative talent;
- Research – focusing on excellent entrepreneurial research that will lead to world-class knowhow on which to build economic activity; and
- Innovation – boosting innovation through existing companies and new business creations.

Five nodes consisting of innovation hot spots and co-location centres have been established in Berlin, Eindhoven, Helsinki, Paris and Stockholm, with associate groups in Budapest, London and Trento.

Each node features at least one strong research institute, a major university, a European-based multinational company, an active regional network of SMEs and full national and regional support. Major companies involved include Deutsche Telekom Laboratories, SAP, Siemens, Philips, Nokia, Alcatel-Lucent, Orange France Telecom, Ericsson. Involved research institutes include: DFKI, Fraunhofer, INRIA, Novay, VTT, SICS.



We are now executing a multi-year work plan of innovation activities. For example, we are developing a masters' school with a number of masters' programmes which we will offer at EIT Labs, implemented by our key universities such as Aalto University, 3TU / NIRICT, TU Berlin, Université Pierre et Marie Curie, Université Paris-Sud 11, Institut Telecom, KTH.

This has two specific elements:

1. Bringing business-related subjects into the curriculum so that students will not just be following technical ICT programmes; and

2. Gearing programmes to application domains – we have selected six: future media and content delivery; health and wellbeing; smart energy systems; digital cities of the future; intelligent transportation systems; and smart spaces.

OFFERING A UNIQUE COMBINATION

We are offering a unique combination of research, education and business activities in one integrated organisation and in one integrated programme. We of course collaborate with existing education and research projects – 'carriers' to which we can add instruments we call catalysts to boost innovation.

Our masters' programme may consist of technical modules to which we add catalysts in terms of business modules. We select the technical modules relevant to our application domain and add the necessary business modules for overall innovation.

We have our own research agenda consisting of thematic actions lines in our six targeted areas. We plan strategy and a programme of what needs to be developed for each action line in terms of education, research and business exploitation. And we identify the carriers needed to achieve our goals.

Carrier projects must have other funding sources. These projects may be part of e.g. national research programmes or European research programmes like EUREKA - ITEA 2 and the FP programmes. We will link to such other programmes and establish combinations of e.g. ITEA 2 projects and EIT ICT lab catalysts.

UP AND RUNNING

The ICT Labs KIC signed its formal agreement with EIT on 13 December 2010. We received a grant in 2010 to help us set up activities as we negotiated the contract. So the co-location catalysts are already up and running; the masters' programme will be ready this summer, allowing us to start outreach to students in the autumn with courses starting in summer/autumn 2012.

More information: <http://eit.ictlabs.eu>



EUREKA News

Chairmanship event Eilat, 21-24 February



Source: <http://www.flickr.com/photos/eureka-israel/>

The second event held under the Israeli EUREKA Chairmanship took place in Eilat on 21-24 February. EUREKA's High Level Group Representatives and National Project Coordinators approved a series of promising cooperative R&D projects in several fields, including renewable energy, agrofood technology, biotechnology, physical and exact sciences, IT and electronics, industrial manufacturing, and more.

The event marked the launch of its new EUREKA Clean-Tech Action, a campaign focused on generating cooperative industrial R&D projects in the cleantech sector. Israeli NPC (National Project Coordinator) Chairman Israel Shamay comments: "When launching the EUREKA Clean-Tech Action, we set a very ambitious goal to mobilize all available EUREKA instruments in order to generate and support clean-tech projects. The fact is that dozens of innovative

companies from EUREKA's member countries, as well as ALL the EUREKA clusters – which incorporate Europe's industrial market leaders – are attending the meetings in Eilat. This is the real proof of concept for the rationale and necessity of the Clean-tech Action initiated by the Israeli EUREKA Chairmanship".

During these Eilat meetings, on 23 February, the EUREKA Inter-Cluster Info Day took place where participants could learn more about funding opportunities and partner-matching services through the EUREKA Clusters. Leading Cluster representatives presented their activities, involvement in the EUREKA Clean-Tech Action, calls for proposals, and opportunities for the submission and development of new projects in clean-tech. ITEA 2's Chairman Rudolf Hagenmüller was one of the speakers and spoke about ITEA 2, its way forward and clean-tech in ITEA 2.

EUREKA Inter-Parliamentary Conference

The Israeli EUREKA Chairmanship will hold its Inter-Parliamentary Conference (IPC) on 31 May 2011, in Jerusalem. The conference sessions will explore how governments can more effectively support industrial innovation for business generation in times of economic crisis.

The Conference - organised on a bi-annual basis - will be followed on 1 June by the first EUREKA Investor Shop, part of EUREKA's EInnovest initiative.

Other upcoming EUREKA Events

NPC/HLG MEETING 4
JUNE 20-23, 2011

25TH ANNIVERSARY EVENT
JUNE 2011



More information on both events will follow soon
www.eurekanetwork.org and www.eureka-israel.co.il