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Editorial

"The times they are a changing," Bob Dylan already sang in 1964, and his words then are definitely appropriate to the age we are in now. According to some, we are moving towards a period of exponential growth, which is currently shown by phenomena like global urban population growth, mobility, number of ageing people, use of smart phones, increasing proportion of middle classes in the emerging economies, etc.

Software is one of the drivers of this growth, but it also delivers solutions to control and balance that growth. Moore's law is no longer the most prominent; software and big data are the factors that create enormous possibilities for innovation, new products and services in modern-day society.
In this magazine we see some great examples in engineering/modelling application areas, such as the OPEES project, in which open source partnerships facilitate model-based system engineering. We also see the strong positive effect of innovative software technology in improving our healthcare, as attributed to a project such as BENEFIT, which dramatically improves the success rate of the surgical treatment of aneurysms.

MODRIO is also a great example of how software innovation helps to balance and control growth, e.g. for increasing renewable energy generation. The project leads to solutions that, amongst others, help enhance the energy transition, for which supply and demand of renewable energy need very secure finetuning and actions to maintain a balanced energy grid.

Sustainability and energy are also topics of the Smart Cities World Expo that will be held in Barcelona from 19 till 21 November. ITEA is proud to be prominently present during this event. No less than 12 projects will be participating in the ITEA booth while ITEA Chairwoman Zeynep Sarilar and Vice-chairman Philippe Letellier will both give presentations and contribute to dedicated workshops about Smart Cities and digital innovation.

Smart Cities provide the perfect platform to show how software innovation can enhance growth by new products and, at the same time, deliver solutions to deal with the limits of growth in the urban world.

AI can play a special role this respect, for example by making more and more precise predictions and supporting direct decisions and actions. ITEA is strengthening its position on AI, as evident in several articles in this magazine and at the ITEA Project Outline Preparation Days in Amsterdam, where it was the most represented topic/technology. How AI will change our lives is something we do not know yet, but time will change, and it will change fast. If we do not actively gain a leading position, others will and we will have to follow. ITEA is a strong Community that has the companies, trusted environment and knowledge that is needed to be the innovator on AI. Crucial for the future position of Europe and Eureka partner countries. Without a strong position they might get squeezed by the US and the Far East. By investing in state-of-the-art research, but also by supporting AI propositions towards applications that can be introduced in the market and have business prospects and opportunities we can ensure our future position. This is where ITEA is ready to play its role as the industry-driven Community that is able to develop AI top-knowledge applications that will have an impact on the market and, in the end, our changing daily lives.

Jan Jonker

Focus on Turkey

Creating a climate for impactful R&D

TÜBİTAK is a vital cog in Turkey's wheel of innovation in which SMEs play a significant role and in which networks are central. This much was already evident in an earlier interview (Magazine 25) in 2016 with Mete Karaca, Scientific Programmes expert at TÜBİTAK. Three years on and how is the situation today? To catch up on developments, we talk to Mehmet Aslan, who joined TÜBİTAK in 2005 after a little over a decade working in the Defence industry, focusing on telecommunications there. Having begun as an expert, Mehmet rose through the management ranks to become head of department at this specific arm dedicated to Technology and Innovation Support Programs (TEYDEB). Mehmet has responsibility for ensuring that the programmes and activities help realise industrial research and technological development, support for innovation as well as monitoring and developing collaboration between academia and industry. In this article, Mehmet elaborates on the vision, mission and practice of this TÜBİTAK arm and looks at how this fits together with the goals and projects of ITEA.

Support for R&D culture

"Our aim," Mehmet begins, "is to contribute to our country's private sector organisations so that we can create and maintain an internationally competitive structure in the development of research technology, technology management and innovation, and to be a well-known organisation whose practices are recognised throughout the world. To do that effectively, it is important for us to disseminate an R&D culture that enables the research, technology development and innovation activities of private sector organisations to be more competitive." To this end, TEYDEB cooperates with the relevant sectors in various ways, for example, applying and developing risk-sharing support mechanisms to encourage private sector organisations to allocate resources to project-based research and technology development activities. Furthermore, it contributes to the establishment of national/international cooperation and technology transfer mechanisms between industrial organisations, universities and research institutes as well as sets up measurement, evaluation and monitoring systems that enable the analysis of the socio-economic effects of support programmes.

ICT – enhancing competitiveness

In all of this, the software-intensive sector and the innovation it both needs and produces are essential ingredients. Mehmet: "Let me put ICT in perspective. In an economy of 766 billion US dollars last year, making Turkey among the world's leading economies, 27.4 billion US dollars can be attributed to ICT-related services and products. The software sector alone is worth 3.8 billion US dollars, with exports valued at 775 million US dollars. Over the past ten years or so, we have witnessed in Turkey a transition from medium-to-low technology to medium-to-high technology. This could not have been possible without a strong ICT sector. In this context, there is a clear horizontal relationship with all other sectors ranging from chemistry and pharmaceutical to food-processing and machine-building. Our focus, then, is on developing and producing ICT that can enhance the capabilities and competitiveness of all these industries, both at home and abroad. This way we can boost our exports and the reputation of Turkish products and services on the international stage."

Great potential

An important vehicle to achieve this target is open innovation and open source. "This will also help us to integrate Turkey as a global technology player," Mehmet explains, "one that can operate as an effective partner in international networks. The European dimension is important here and programmes like ITEA have a vital role to play for us in this respect. After all, it is the EUREKA Cluster that specialises in software. There is so much potential in the emerging technologies and we want to be as much at the forefront of developments as we can. Which means getting our research and business communities involved where this can benefit our national priorities that target Artificial Intelligence, information security, robotics, big data and cloud computing, among others. To this end, we have set out 154 Calls, some 42 of which are in the areas mentioned. This is all part of the drive in the ambition Turkey has to produce smart technologies, smart solutions, smart companies – and gain a growing market share in these areas. A specific initiative is the establishment of a new Artificial Intelligence institute." This institution will develop core technologies in the field of Artificial Intelligence and serve as a bridge by offering the scientific outputs produced at the academy to the service of public and private sectors.

In terms of supporting and promoting software innovation, annual investment is expected to reach 1 billion US dollars by 2023. "An important date for us," Mehmet proudly points out, "since this year we will be celebrating the 100th anniversary of our Republic." TEYDEB, as the department whose task it is to provide the relevant support mechanisms for software innovation in the private sector, assisted some 35,000 businesses between 2012 and 2018 to the tune of 1.5 billion US dollars, with 84% of that destined for SMEs in support of their R&D activities. A third of these are directly involved in ICT.

Shared goals

"ITEA is also becoming a growing and important component of this support and promotion," Mehmet says. "We are both on the same page when it comes to the goals of the two organisations. And, of course, ITEA also gives Turkish firms a platform to establish contacts and collaborate with European partners. The benefits of this cannot be underestimated. In fact, we see it as a critical instrument in our ambitions. The collaboration between SMEs, large companies and research institutions in various European and other countries enhance and reinforce our capabilities and competitiveness. So, essentially, this collaborative environment provided by ITEA acts as a support mechanism for our national priorities. We realise that in the global market, we have to collaborate in order to compete. That's a simple fact of life. Ultimately, it's about the transfer of critical technology knowledge into results and, in turn, the transfer of those results into business impact. Which means that there are two things at play here – technology and entrepreneurship. For the latter we also provide support to our companies but through contact and exchange in the ITEA Community, our companies can learn and so improve their competence in doing business internationally and successfully."

ITEA VICE-CHAIRMAN'S BLOG POST

From old-fashioned linear TV shows to YouTube fake news... our unique future? Perhaps not!

We observe some massive societal trends towards more individualistic behaviour:

- linear, channel-based TV show viewing, which was the main means of information and entertainment in the past, is rapidly decreasing in popularity (the daily average in France remains at 3h18m per day, but it decreased by 18m last year);
- the huge growth of personal content is overwhelming internet (Facebook, Instagram, YouTube). Every minute, 300 hours of video is uploaded to YouTube, a stellar amount;
- OTT (over the top) video consumption with websites like Netflix;
- immediate delivery.

Nevertheless, these trends lead to:

- a huge amount of content, which enables you to find something of interest, wherever this lies;
- availability of contents that are increasingly authored by ordinary people like you and me;
- strong visibility of the known stars on these media, but, on a regular basis, also the possibility to see an unknown person breaking through and reaching the status of a star, which remains a dream for many people.

On the other hand:

- it is becoming more and more difficult to find specific content due to the quantity of content (a large majority of the available content remains invisible); and
- this content generates massive fake news and mob violence and due to the size of this content database, nobody understands how to moderate it.

Our modern society is thus confronted by a mass of communication media, which is no longer under control and which destabilises global society. Have a look at the results of last elections everywhere in the world and the associated instability or governments far removed from the European principles of democracy.

In ITEA, an innovative path has been explored in the MOS2S project to protect the massive personal content trend from fake news or mob violence, and, at the same time, to offer some edited content based on this personal content. The demand is clearly to allow everybody to express oneself on any topic.
VRT, the innovative Flemish public broadcaster, has invented some new content formats supported by technical innovation of the MOS2S consortium.

For example, the MOS2S consortium has built what they call a *Babbelbox*. Let's imagine, when a topic is considered as 'hot' (by journalists or pushed by people), the VRT journalists structure an interview with a set of questions (open and closed) to allow everyone to express their opinion. Then they deploy some kind of voting booth where you have a camera, a screen and a push button to move from one question to the other. This voting booth collects personal videos of ordinary people responding to these questions. This generates a huge personal content database on a dedicated topic. This database can be exploited on a content streaming site, but MOS2S also offers tools for the journalist to go quickly through all this content and edit a synthesis of this personal content with professional media quality. The role of the journalist is then to filter the scrap and fake, and propose a synthesis of the different positions. To master the personal content flood, the challenge is to be able to do it in an efficient way and MOS2S has made some good steps in this direction. This personal content synthesis can be then reused for the more traditional TV shows, to enrich it with the added value of personal content.

Another proposed tool is *online debate* allowing anyone to generate a debate with several people, watched by interested people with thumbs up, thumbs down, generating augmented content which can be reused later on the web or in a TV show.

Yet another tool is the *live hangout*, where anyone can behave as a journalist. If you are at an interesting location or at an event, you can call the VRT channels where a moderator qualifies your skills (technical as well as content) and puts you on a waiting list to be pushed on the TV live show. It is a good tool to show more personal feedback, in real time, on the latest news or events.

For sports events, MOS2S developed some advanced tools to acquire content and to track and analyse the data so that everyone can create some augmented personalised content which can be re-exploited later on.

I am convinced that MOS2S has reopened the door for the TV media to become rejuvenated with this personal content. It could realign TV media with the new trends in our society. They have developed a huge number of diverse tools to acquire content, support creation and share personal content, ensuring some moderation to safefguard the quality (technical and content-wise). By rejuvenating the traditional TV show and giving society the power of enquiry on big challenges, it can become a key tool for new e-Democracy.

I invite you to have a more in-depth look at the results of MOS2S; you may find part of our future there. Then we have to push for exploitation to deliver the impact this project deserves.

Feel free to contact the MOS2S project leader Gjalt Loots (gjalt.loots@tno.nl) and Karim Dahdah (karim.dahdah@vrt.be); they will be ready to discuss with you how it can impact your business.

ITEA Success story

OPEES

Open Platform for the Engineering of Embedded Systems

The ITEA 2 project OPEES stood at the inception of two important trends: open collaboration with open source in industry and open source tools for model-based systems engineering (MBSE). Neither of these trends were well developed in 2009, but almost 10 years later, and with acceleration through the OPEES project, we benefit from both good open source MBSE tools and many open collaboration initiatives in industry. OPEES was both a pioneer and a catalyst in this evolution.

The ITEA 2 OPEES project was created to develop an open source platform for software tools to support engineering technologies for embedded systems and to secure the competitiveness and development of the European software industry. One key requirement, brought by Airbus, was to be able to use tools for more than 50 years, during the complete lifetime and duration of support of an aircraft programme. During the project that ended in 2012, the 28 partners not only developed and significantly improved existing open source projects such as Frama-C, Eclipse Papyrus and others, but also defined the governance and the structure for a sustainable organisation to gather an ecosystem of both developers and users.

In 2012, the first Working Group was created at the Eclipse Foundation. The Eclipse Foundation provides a global community of individuals and organisations with a mature, scalable and commercially-friendly environment for open source software collaboration and innovation. With actors from industrial sectors such as aerospace, transport and energy, this PolarSys Working Group quickly reached a larger community by recruiting both new members and new technologies. It consisted of 25 members including some OPEES partners such as Airbus, CEA and Thales as members of the Steering Committee.

When Airbus reached out to the Eclipse

Foundation in 2007, they explained that they needed to setup an organisation similar to the Eclipse Foundation, but for industry collaboration instead of collaboration between software vendors. Companies like Airbus, Thales, Ericsson and others, need tools that have properties that fit well with the freedoms offered by open source: to use, study, improve and share software. In industry terms this means the capability to adapt the software to a specific industry context, to support the software for the long term (>10 years) or even the very long term (>50 years), to ease deployment across the supply chain and to ease interoperability through open standards.

Innovation and collaboration in the MBSE tooling ecosystem

Three of the noteworthy projects that evolved inside PolarSys are Papyrus, Capella and OpenCert.

Papyrus had been established as an Eclipse project in 2008, prior to the launch of the OPEES project. Aspects of project development were brought under the umbrella of OPEES, and after the project, Papyrus development continued via the collaboration of several industrials led by Ericsson. The main rationale behind this support was the need for an industrial platform supporting UML, that was customisable and extensible to allow innovation and collaboration. And again, open source technologies seemed to be superior to proprietary closed tools in terms of extensibility and creation of an ecosystem.

Capella, an MBSE tool based on the Arcadia methodology, was launched in the late 2006 as an internal tool at Thales. By 2013, however, and thanks to their participation in OPEES, Thales realised that the closed nature of the tooling was an obstacle to larger deployment, especially with an extended supply chain, because subcontractors did not have access to the tool due to its proprietary nature. In 2014, the Capella open source project was created in PolarSys with the goals of lowering the barriers to use and of fostering collaboration. In subsequent years, Capella has been applied in industries such as Aerospace, Automotive, Defence, Energy and Railway. A few years later, there are not only thousands of users of Capella on hundreds of projects inside Thales, but also more than a hundred companies worldwide using it, including European organisations such as the European Space Agency, Ariane Group, Rolls Royce and Siemens, that rely on Capella in their System Modelling Workbench product. Finally, it supports an ecosystem of European SMEs, like Obeo and Artal, that sell packaged products, support and expertise on top of Capella not only in Europe, but also in North America and in China.

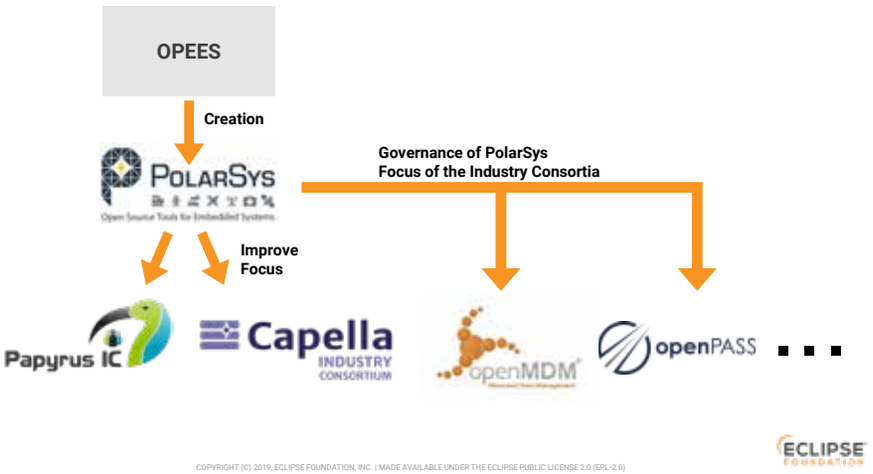
A blueprint for industry collaboration in open source

The principles for industry collaboration through open source, as developed in OPEES, continue to be used in a range of successful Working Groups hosted by the Eclipse Foundation. This governance model has proven to be adaptable in many different contexts and industries, with goals ranging from simple collaboration amongst stakeholders to more advanced collaboration through focused development co-funding.

Open source as a catalyst for dissemination

Another aspect originating in OPEES is the use of Open source as a catalyst for the dissemination of research results. After this approach was pioneered by OPEES at Eclipse, the AMASS project followed with the open source OpenCert, along with others such as Amalthea4public and Eclipse APP4MC, APPSTACLE and Eclipse Kuksa. All use the same approach that leverages open source for the dissemination and exploitation of research results and encourages the development and sustainability of these technology communities.

OPEES/PolarSys as a blueprint for Industry collaboration



OpenCert was created in late 2015 by Tecnalia, another partner of the OPEES project, and other partners from the OpenCOSS (FP7) and AMASS (ECSEL) projects. The goal of OpenCert was to create an open source platform for safety and security assurance project management, assurance case management and evidence management while integrating other projects like Papyrus and CHESS for System Design and Analysis. This project focused on model-based safety and security engineering conformant to ISO 26262, ECSS 40 and other standards. Following the pattern originating with OPEES, the OpenCert stakeholders created an ecosystem to gather research institutes, software vendors, and users around the results of several research projects.

Conclusion

The structures and initiatives originating with OPEES continue to be successful in other European industries. Industries such as Automotive are benefiting from collaboration on technological innovations to meet specific challenges common to the entire industry and from continuous, sustainable innovation through open source. This model allows industrials to continue to compete in other areas while leveraging common open source assets. Two good examples of initiatives inspired by OPEES are: OpenMDM, a platform for the management of diagnostic data in automotive, and OpenPaas, a platform for virtual testing of ADAS. These two Working Groups gather, next to all the German automotive OEMs, also several international automotive OEMs and several Tier 1s to collaborate on industry open source platforms. Engineering teams welcome open source because of not only the advantages of using a common base, but also the enrichment of the work environment and worldwide visibility and collaboration. In these industries, it could be said that the OPEES project has resulted in outcomes that have sustained their benefits well after the end of the project.

More inofrmation

https://itea3.org/project/opees.html

Calendar

18 November 2019
INTERNATIONAL SMART CITY BUSINESS FORUM
Barcelona, Spain
https://smartcitybf2019.b2match.io/

19-21 November 2019
SMART CITY EXPO WORLD CONGRESS

Barcelona, Spain
http://www.smartcityexpo.com

ITEA will be present at the exhibition together with 13 running ITEA projects. Several activities will be organised, including a side event on Innovation trends for Smart Cities and Innovation discoveries.
https://itea3.org/smart-city-world-expo-congress.html

19-21 November 2019
EFECS 2019
Helsinki, Finland
https://efecs.eu/

21 November 2019
SWISS INNOVATION FORUM 2019
Basel, Switzerland
https://www.swiss-innovation.com

21-22 November 2019
SLUSH 2019
Helsinki, Finland
http://www.slush.org

2-5 December 2019
AI & BIG DATA FOR INNOVATION SUMMIT
Brussels, Belgium
https://www.knowledge4innovation.eu/k4i-events/ai-data-innovation-summit/

3 February 2020
12TH OPENMODELICA ANNUAL WORKSHOP
Linköping, Sweden
https://www.openmodelica.org/events/openmodelica-workshop/openmodelica-program-2019

4-5 February 2020
14TH MODPROD WORKSHOP ON MODEL-BASED CYBER-PHYSICAL PRODUCT DEVELOPMENT
Linköping, Sweden
https://modprodblog.wordpress.com/modprod-workshop-2020/

14 February 2020
DEADLINE FPP SUBMISSION ITEA 3 CALL 6

28 February 2020
LAUNCH SYNCHRONISED CALL EURIPIDES²-PENTA 2019
http://euripides-eureka.eu
http://www.penta-eureka.eu

Smart City Expo World Congress 2019

New approach, new opportunities

Customer orientation is one of the main ambitions in ITEA. Innovation has no purpose unless it results in exploitation and, for exploitation to work, the results should address customer's needs. We therefore started organising the ITEA customer and end-user workshop in 2015, and with success. Since then, a high number of ITEA projects are based on the needs expressed during these workshops.

Another main ambition is business impact and (preparations for) this can already start during the project lifetime. Furthermore, the ITEA Community has requested to have more customers at ITEA events.

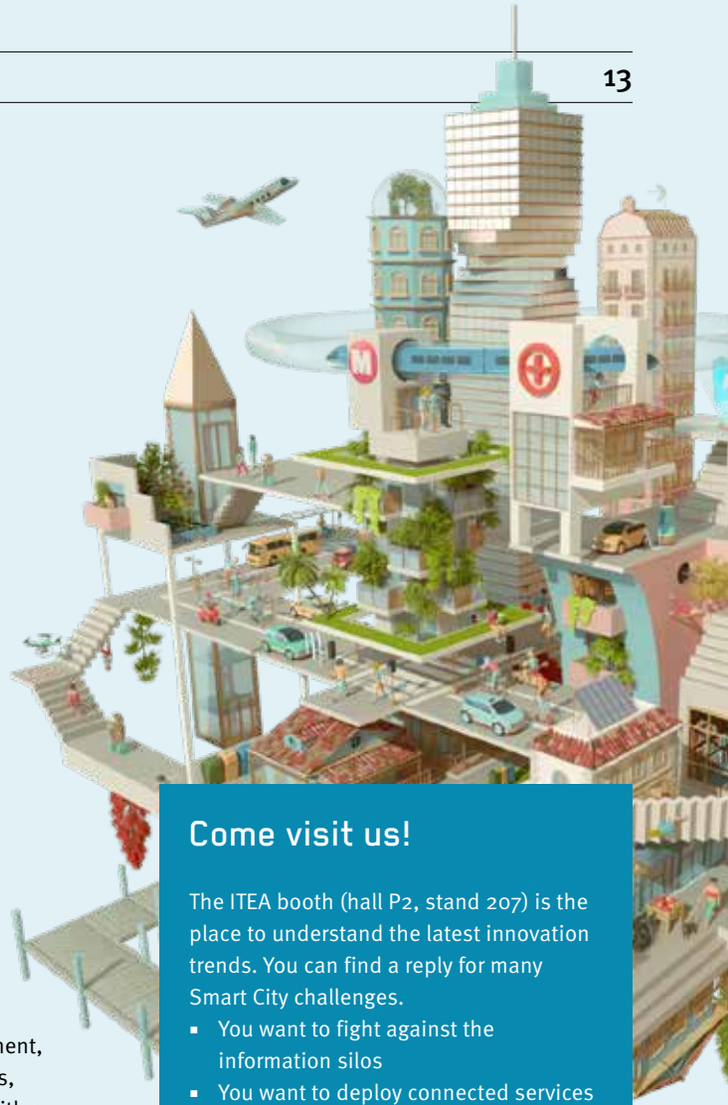
That is why ITEA has decided to target several commercial events, and Smart City Expo World Congress (SCEWC) taking place on 19-21 November at Fira in Barcelona, is the first one that we will attend with a set of 12 ITEA projects. This event provides a perfect opportunity for these projects to present their results to potential customers and for the cities and other visitors to discover the latest trends in the domain of Smart cities.

Exhibiting ITEA Projects are:

- APPSTACLE
- BIMy
- CitiSim
- DANGUN
- ESTABLISH
- I2PANEMA
- MOS2S
- PARTNER
- POLDER
- PS-CRIMSON
- SOLOMON
- SPEAR

SCEWC - Cities made of dreams

SCEWC is the leading international event for the smart urban solutions industry, the key meeting point for experts and leaders of the world's most innovative cities, companies, research centres and international organisations. Over 25,000 professional visitors are expected, with over 1,000 exhibitors, along with high level



representatives from more than 700 cities and over 400 international speakers that will share their vision of how to build more sustainable and liveable urban environments: Cities made of dreams. This year's edition will have five focus areas: Digital Transformation, Urban Environment, Mobility, Governance & Finance and Inclusive & Sharing Cities.

Discover innovation

To strengthen the customer orientation and the exploitation of the innovations developed by the ITEA R&D Community within the ITEA projects even more, we have designed the Innovation Discovery, dedicated guided tours based on a customer's need. The target is:

- to understand the customer's innovation challenges;
- to identify some unique results developed by the ITEA projects that can contribute to solving these challenges; and
- to help the customer to exploit some ITEA innovations with the support of partners from the ITEA Community.

Innovation trends for Smart Cities

On Thursday 21 November, from 9:00-11:00, ITEA will organise a Smart City innovation session in room 1.4. Area CC1. During this side event, ITEA project partners of Smart Cities R&D projects will share the latest ideas and developments for new Smart City services. New technology and its impact will be explained from a user point of view. This ITEA side event is open to all SCEWC visitors and is being set up especially for all stakeholders of a city to discover the latest innovative solutions to their current Smart City challenges.

International Smart City Business Forum

On 18 November, the day prior to the SCEWC, the International Smart City Business Forum will be organised at the World Trade Centre in Barcelona. This forum is a partnership between the Netherlands and the Nordic countries, supported by ITEA and has the purpose to provide government, city representatives, start-ups, SMEs, corporates, experts and investors with a platform to initiate long-term partnerships.

Organisations and cities from all over the world will gather to establish new alliances and build on existing ones. Innovators and experts will share their solutions and it will be a great opportunity for investors with a Smart City focus to find investment opportunities.
The programme will consist of inspiring keynotes, thematic panel sessions and a high number of interactive workshops. Additionally, there will be possibilities for matchmaking sessions throughout the day. ITEA Chairwoman Zeynep Sarilar and Vice-chairman Philippe Letellier will have a keynote speech during which several Smart City innovations from ITEA projects shall be highlighted. In addition, the projects participating in the SCEWC exhibition will contribute to several panel sessions and workshops.

More information

http://www.smartcityexpo.com
https://itea3.org/smart-city-world-expo-congress.html

Come visit us!

The ITEA booth (hall P2, stand 207) is the place to understand the latest innovation trends. You can find a reply for many Smart City challenges.

- You want to fight against the information silos
- You want to deploy connected services in your city
- You want to enhance the mobility in your city
- You want your city to be safe
- You want to offer a secure open platform for health data of your citizens
- You need to enhance the e-Democracy in your city
- You want to protect the commercial activity in the centre of your city
- You want to master (security, taxes, shared services) the key buildings in your city
- You need to master indoor as well as outdoor air quality
- You need to strengthen the sporting & cultural events in your city
- You need to optimise the energy consumption in your industrial buildings
- You need to enhance the efficiency and sustainability of your port in your city

Community Talk with:

Özgün Algin

Creating innovation, results and exploitation with friends

Özgün Algin is founder and managing partner of Acadron, a Turkish research consultancy company that provides services on research strategy development, research business development, collaborative multi-national research project/consortium development and management. He has been in and around the ITEA Community circuit for more than a decade.

A growing Turkish presence

A BSc graduate in Mathematics from Yildiz Technical University in 2004, Özgün already began software programming at university so it was a logical step to kick off his career as a software engineer, working both for himself and for consultancy firms before moving to Mobilera in 2006. It was soon after this move that he first came into contact with ITEA, initially as a research project manager and later research director. “It was then that I became involved in the first ITEA 2 project, LifeWear, led by a Turkish company. It developed a new platform that enables wearable electronics to work in conjunction with mobile computers to enhance the mobile lifestyle of users and create new market opportunities.” This statement of intent regarding the Turkish commitment now sees a strong presence within the ITEA Community and spectrum of projects.

During this period as Research Director, Özgün managed several projects for ITEA 2, CELTIC and MEDEA+ within the Eureka world in which Mobilera participated either as a partner, work package leader, country coordinator or project leader. “My role included the strategic planning of the research department, in terms of partner relationships, networking, product development and the research agenda as well as being responsible for managing Eureka grant submissions to local Public Authorities (TÜBİTAK),” he says. “And I’m proud to say that we achieved a success rate of 100%.”

Transferring knowledge

In 2012, Özgün decided to taste life as an entrepreneur as he founded his own company, Acadron. Going over to the 'other side of the fence' as it were, working actively as a consultant for clients, Özgün helps SMEs and large companies to apply to and benefit from European (Eureka Clusters such as ITEA, CELTIC, EUROGIA) and Turkish incentive programmes. "I act as the main point of contact between research teams and the high-level management of my client companies on whose behalf I establish multinational networks that embrace the business, academic and research worlds. Of course," he continues, "I am able to make good use of my experience as a research director and involvement in ITEA and other programmes. I can pass on to clients my knowledge and expertise in areas like developing research agendas based on corporate targets, developing research networks, managing multi-million budget research projects including idea development, consortium building, grant application and subsequent project management."

Multinational collaborative research context

Four years later, in 2016, Özgün turned to an interesting opportunity offered by Turkcell Technology, one of Turkey's leading R&D and innovation companies. It was set up to develop competitive information and communication technology (ICT) services and products and to facilitate the international spread of the products and solutions that create a difference in the environment of the Turkcell group of companies, and thus also to create value for other operators. "At Turkcell Technology I represented the company in the Eureka Research Cluster boards, such as being a member of the ITEA Steering Group and Board Support Group as well as being a member of the CELTIC+ Core Group. Working closely with research teams and managers in Turkcell Technology, we are able to define the research agenda, identify new research projects and develop consortiums with universities and research partners. All in a European multinational collaborative research context."

The joy in networking

Clearly, Özgün has a real affinity with and commitment to the collaborative research context and to ITEA, in particular, so what is it that appeals to him? "There is not just one thing but I guess if I had to sum it up briefly, it would be the fact that it creates an environment in which innovation can really thrive. I mean, the collaboration is sincere and open, and everyone feels free to share ideas with the aim of achieving a result, of having an impact. Which brings me to the second key point: bottom-up. All the projects are driven by the needs of clients. You get to work in teams or consortia that include stakeholders from all across and through the ecosystem, from research and engineering to industrial stakeholders, both smaller and larger companies, as well as Public Authorities and funding agencies. This gives ITEA its strength, I think. And ensures that the goals of projects are aimed at real tangible results that have an impact on the users of those results. This is something of which I am aware myself since my job is to help clients find suitable research projects to help them get an innovative idea to market." At the time of writing, Özgün has returned to focus full-time on his 'baby' – Acadron – enriched by his involvement and experience in a Community he describes as a 'fun' place to be.

Special feeling

"While innovation, results and exploitation are important for both business and society to benefit from our efforts and are highly rewarding for project participants like myself and for ITEA as a whole, I must admit, it is just as rewarding to have the opportunity to enjoy working with people who then become friends – or should I say family? From my very first day within the Community I struck up friendships – such a variety of people, backgrounds and cultures – it doesn't seem to matter, everyone wants to be friends. Of course, that helps build trust and encourages the openness to collaborate effectively. So not only professionally but also personally I feel that my life is richer because of ITEA. That sense of happiness in being part of the Community cannot be underestimated. It's quite unique and gives me a very special feeling."

ITEA project results enhancing people's lives

Prevent rupture of a brain artery

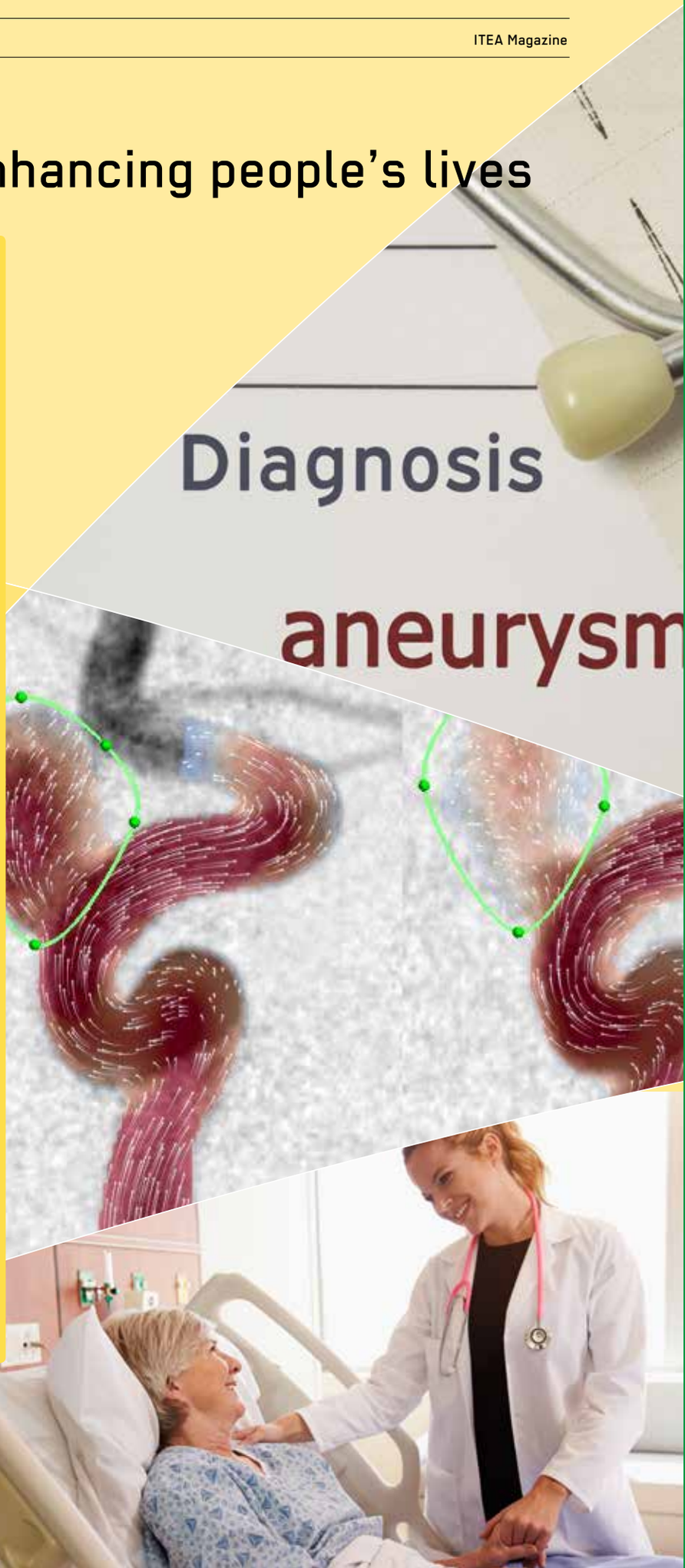
Each day, lives of people are endangered by aneurysms. In the case of an aneurysm, the wall of a blood vessel gets weakened, so it can locally bulge and in some cases even rupture. If this happens in the brain, it may cause serious disabilities or even death.

Aneurysms can be treated by navigating a thin catheter, under X-ray guidance, to the location of the aneurysm and placing a perforated stent as a kind of 'inner tube' in the vessel. This reduces bloodflow into the aneurysm so that it will gradually clot there and consequently remove the pressure from the aneurysm.

Until now the physician could only predict the long-term success of the surgery by a subjective visual assessment of flow patterns, which could easily be influenced by several factors (e.g. the injection of less or more contrast fluid). Only after a check-up, a couple of months later, could the result of the surgery be assessed. In some cases, the stent appeared to be implemented inaccurately, which meant that the patient had been at risk for a longer period and needed to undergo another surgery on top of that.

In the ITEA project BENEFIT a quantitative method has been developed, which can objectively predict the chance of success by means of the 'Mean Aneurysm Flow Amplitude ratio'. It is the first interventional tool to visualise and quantify flow patterns in a vessel and an aneurysm. It is calculated from a fast sequence of X-ray images before and after stent placement. A ratio below 0.9 has proven to be a reliable indicator of successful treatment. If the outcome is higher, the surgeon can take additional measures (e.g. placing an extra stent) while the patient is still on the table and the catheter is in place. This way, the risk for the patient is reduced as well as the need for repeated treatments, saving money and lives at the same time, while improving the patient's wellbeing as well.

ITEA 2 project
BENEFIT



MOS2S results from TNO and Kiswe win the '2020 Dutch Eurovision Song Contest Innovation Challenge'

On 16 May 2020, the Eurovision song contest will be organised in Rotterdam, the Netherlands. In order to enhance the experience for viewers and fans during the 2020 Eurovision Song Contest (ESC2020), the Dutch public broadcasting organisation NPO with AVROTROS, NOS and the European Broadcasting Union (EBU) launched the '2020 Dutch Eurovision Song Contest Innovation Challenge'.

Photo by Natalie Bouwens

Organisations that have a solution to enhance the online experience of viewers and fans or a solution that supports or enhances the production of online content before and during the Eurovision Song Contest were invited to participate in this competition.

The innovation challenge around the Eurovision Song Contest led to an overwhelming response from the international tech world. The entries varied enormously in terms of services and technology: from URL-shorteners and hashtag generators to 8K virtual reality and AI. A total of 209 solutions from 39 countries were submitted, with ten being shortlisted and invited to present their solution and talk to experts from the parties involved in the organisation of ESC2020. Among those ten, three solutions resulted from the ITEA MOS2S project: from TNO, Kiswe and TiledMedia.

Eventually on 30 September, three finalists were selected to actually implement their solution for the Eurovision Song Contest, and two of these three solutions derived from the MOS2S project:

- **Kiswe Mobile (BE):** Traditionally, every country has one TV signal made for that country. With Kiswe Mobile, a large number of customised streams aimed at different target groups can be made, with the choice of different commentators, such as social media influencers, who seek interaction with the public and can show the results in the stream.
- **TNO (NL):** TNO provides UltraWide Viewing. UWV records the show with special cameras and gives a very high resolution view of the entire stage where the performances take place and can be projected at full size on large screens, for example in cinemas and at other event locations so that the audience can experience the performance as if they were there themselves.

Sceenic (UK) was the third winner. Its solution lets friends and family see and hear each other by using live real-time video chat perfectly synchronised with the livestream of the show so that they can share those essential moments together.

Each winner received up to € 35,000 to help realise their application in the coming period. The organisation will ultimately decide whether the developed application goes into production and will be connected to the live show. And of course, if that happens, being officially associated with the Eurovision Song Contest will give the winners worldwide exposure.
We congratulate MOS2S, and especially Kiswe Mobile and TNO, on this great achievement and we wish them good luck with the realisation of their applications!

ITEA Success story

MODRIO

Digital twins for the safe and efficient design and operation of cyber-physical systems

Cyber-physical systems (CPS) are very large systems that not only involve a large number of stakeholders but are safety critical and have significant impact on the economy and the environment as well. This makes tools for the safe and efficient design and operation of such systems imperative. The ITEA project MODRIO, which ran from 2012 to 2016, was set up to extend modelling and simulation tools based on open standards (Modelica and FMI) from system design to system operation.

Integrated modelling and simulation framework
The main technological ambition of the project was to provide an integrated modelling and simulation framework able to efficiently specify, design and operate CPS. To that end, new ideas were developed to address the complete engineering lifecycle, from preliminary design to operation and maintenance. New features include the formal modelling of requirements involving objects, sub-systems, systems and human interactions in space and time in order to automate system design verifications.

With optimisation of the operation of large transients such as start-ups or shutdowns or the evaluation of the consequences of faults and failures in mind, a new modelling approach was developed. The aim was to provide the ability to simulate the system behaviour away from its nominal operating point when transitions between modes, represented by completely different sets of equations, take place. For the safe and efficient systems operation, techniques used for weather prediction, known as data assimilation, were adapted to CPS in

order to evaluate the system state, in real-time for predictive control or with the error margins for system diagnosis. The stochastic aspects of CPS were also taken into account by associating in the same framework probabilistic methods (such as fault-trees) with deterministic modelling and simulation.

Key success factors

A key success factor for this project was the involvement of large industrials whose businesses are to design and operate large CPS in four major industrial domains: Energy (electricity production, transmission and distribution), Aerospace (civil aircraft), Transportation (trains) and Buildings. The industrials ensured that the project was always on the right track by providing requirements constantly updated to the industries real needs, which are rapidly changing because of environmental concerns and harsh economic competition, and by validating the results of the project against real-life demonstrators.

Another key factor for success was to base tool development on two existing standards, Modelica and the FMI, whose properties of being already mature for industrial exploitation and yet still sufficiently flexible to be adapted to the problems at hand fitted the bill. The fact that all prominent players in the MODRIO project participated in those two standards, in terms of standard and tool development, was also a major reason for success.

Last, but not least, the project benefited from the cooperation between SMEs and research organisations. The latter developed new methods to solve the difficult scientific and technological problems related to the modelling and simulation of CPS, handing over the results to the former to be implemented in a wide range of commercial and open source tools covering nearly all aspects of physical modelling and simulation at the system level: Energy performance simulation for buildings (Sherpa Engineering), IDA ICE (EQUA Simulation AB), JModelica.org (Modelon AB), SimulationX (ESI ITI GmbH), Triphase (Triphase), Wolfram SystemModeler and OPCClassic (Wolfram MathCore AB). Having the OPCClassic Modelica library as part of Wolfram's offering has been an important enabler for them to broaden their

"R&D projects, in particular ITEA ones, helped in creating or enhancing new capabilities from quite low TRL in particular domains to levels which now allow industrial use of these promising technologies"

scope on process industry projects. After the MODRIO project, they have taken on a number of public funded research projects and consultancy projects within the process industry domain which, in term, has led to the development of their OPCUA Modelica library that further strengthens their modelling and simulation platform in the process industry domain.

Results were also implemented in tools from larger organisations such as Dymola (Dassault Systèmes), LMS Imagine.Lab Amesim and LMS Virtual.Lab Motion (Siemens), O3PRM editor (EDF), OpenModelica (Linköping University), PySimulator FMI 2.0 (DLR), Simpack (Dassault Systèmes) and xMOD (IFPEN).

Power of exploitation

The project results have been exploited in numerous ways, starting while the project was still in progress. One of the main early achievements was the ability to generate software code for optimising the control of almost one tenth of German electrical power production. Since August 2015, OpenModelica has been used in ABB's product Optimax Powerfit to generate optimising control code that controls and coordinates about 5000 MW (ca 7.5%) of German electricity production within seconds. This has subsequently been expanded to about 6000 MW. Up to 1500 MW comes from more than 2500 small solar and wind power generators that are coordinated to operate as a single big power plant.

As another example of early achievement, Vattenfall used the results to optimise the start-up of conventional power plants, with an estimated yearly gain of €850k per plant. Such optimisation is being made necessary by the rising share of renewable energy production that forces conventional power plants to manoeuvre more frequently to balance the grid, while complying with all operational constraints in order to meet safety and environmental regulations and minimise system wear.

For Dassault-Aviation, MODRIO has enabled many very useful breakthroughs for the design of next-generation aircrafts, in particular the results regarding the modelling of requirements and system architecture, associated with fast multi-core simulations, multi-mode modelling of system failures and safety analysis. Outputs from ITEA projects brought Dassault-Aviation capabilities allowing working differently, in a more global capabilities to handle complex systems; which takes part of the global (digital) transformation of the company.

In the rail domain, the industrial cooperation partners – Knorr-Bremse and Bombardier Transportation – focused the results on crosswind stability and friction brakes, where there is high economic potential once the brake distance management has become adequately reliable. To raise the potential of brake distance management, Knorr-Bremse uses FMIs extensively to share simulation models between the stakeholders. This makes it possible to simulate the behaviour of the entire system of a passenger train in a very early stage of development. As a consequence, the newly developed braking systems allows Knorr-Bremse to reduce by 30% the hardware tests, which in general are very resource consuming. In addition, the safety margins between trains can be smaller with this braking system and

more efficient usage of the track and better flow of trains - between 5-14%, depending on the type of traffic - and passengers can be achieved.

In the area of connected driving, the simulation of autonomous vehicles and ADAS (Advanced Driver Assistance Systems) has been enhanced through a City Traffic Modelica Library. A combined multiple-shooting and collocation optimisation method was further developed for efficient solution of complex optimal control problems by TU Ilmenau. A student team of TU Ilmenau applied this method in the framework of model predictive control to the autonomous driving Audi Q2 cars in connection with another software environment (ADTF), winning 1st prize in the Audi Autonomous Driving Cup 2017 and 3rd prize in 2018.

In the building sector, EQUA Simulation AB created the only building monitoring tool (the IDA ICE Building Tracker) that leverages the information collected by the numerous sensors installed in modern buildings to provide unique diagnostic capabilities. Many, very diverse, customers already have shown strong interest in the IDA ICE Building Tracker. Currently, EQUA Simulation AB is in the process of building prototype projects; discussions are ongoing for an office building in Austria, an airport in Germany, and a multi-family residential building in Sweden.

From the start of the Modelica initiative, DLR-SR has used Modelica models directly in controllers, with the considerable benefit that non-linear models of the systems can be used in the controllers with acceptable design effort, enabling the controllers potentially to cover large operating regions. A key technique here is the so-called inverse model approach, where an inverted non-linear plant model is used in the control system. Modelica, with Modelica tools, allows such systems to be described and handled in a simulation environment. However, generating code from Modelica models on controller hardware is not simple. The MODRIO project now makes this technique also available for non-specialists.

These different exploitation examples show how the MODRIO framework can accommodate the different stakeholders of the European energy system, paving the way for closer cooperation to tackle the challenges of the energy transition.

Enduring impact

A few years after its completion, the project impact is still strong. EDF uses results regarding the modelling of requirements to automate the FMEA (Failure Modes, Effects and Criticality Analysis) of safety critical systems. Because the cost of modifications grows exponentially while going further into detailed design, the benefit is the ability to perform safety verifications all along the engineering lifecycle in order to correct design errors as early as possible and avoid costly late modifications. The expected gains are estimated to be around 30% of the cost of large projects.

EDF uses results regarding state estimation to detect and diagnose the causes of power losses in power plants. A new power loss monitoring system, which combines physical modelling with Modelica and Bayesian networks and modelling based on neural patterns, is now deployed in EDF's nuclear power plant fleet, and has prompted the launch of a new start-up to provide model-based smart diagnosis and prognosis services for CPS.

The 1D and 3D real-time models originating from MODRIO are being used by Siemens Industry Software NV as building blocks in human-in-the-loop simulators (car, motorcycle, aircraft), and in Virtual Sensing (getting more out of measured data thanks to models), a joint research line with KU Leuven that has become a leading R&D area, with the elaboration of numerous applications. For Siemens Industry Software NV, the FMI/FMU is the cornerstone for recent and future developments of the Executable Digital Twin (xDT): part of a model is exported as an FMU, the rest of the structure is available physically and tested. This is also called Model-Based Testing (MBT). For running models on a real-time platform, the FMI/FMU has confirmed itself as the leading technology.
ModeliScale, an ongoing French funded project that aims at scaling up Modelica to very large systems, uses results regarding multi-mode modelling and state estimation.

EMBrACE is a recently labelled ITEA 3 project in which 45 organisations across 8 countries aim to develop a new standard and associated tools for the formal modelling and simulation of requirements. The roots of EMBrACE can be found in MODRIO that produced the draft specifications for a new requirement modelling language called FORM-L adapted for CPS.

"The newly developed braking systems allows Knorr-Bremse to reduce the hardware tests by 30%."

Finally, ideas developed in MODRIO about multi-mode modelling were among the incentives to launch the development of a new modelling language, named MODIA by Modelica founders, that could be the successor to the Modelica language in the long term.

Dassault-Aviation states *"R&D projects, in particular ITEA ones, helped in creating or enhancing new capabilities from quite low TRL in particular domains to levels which now allow industrial use of these promising technologies, but at the beginning difficult to implement. ITEA projects have allowed to gather skilled partners to tackle the problem, on the base of industrial needs provided by companies like Dassault Aviation, EDF ..."*

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New ITEA Office Director: Jan Jonker

Right time, right place, right person

Jan Jonker, the new ITEA Office Director, also passionate music and mountain lover, finds time to introduce himself to the 'family' through the medium of this magazine.

The new man at the helm – all of three weeks at the time of writing – was born and bred in the Dutch city of Nijmegen and went to university there where he graduated in Economic Geography in 1989. "Then it was time to get on with my career," Jan says. "I had a variety of roles in both the public and private sector, all in the area of economic and regional development and advice, whether this was giving advice to SMEs, supporting start-ups or making economic policy recommendations. I also had plenty of international focus, for example, with international investors for the province of Utrecht. In my work at the East Netherlands Development Agency I covered a range of topics over the years, from ICT and broadband infrastructures to life sciences, health and medical technology. In my most recent role, I was team manager in the field of smart and renewable energy."

Twin peaks – innovation and cooperation

In this wide spectrum of topics, innovation was a key component, Jan points out. As managing director of an innovation cluster known as Health Valley, a role he held for around five years before his job heading up the energy team, healthcare innovation initiatives were central. "In all these roles," Jan explains, "innovation and cooperation with industry and SMEs featured strongly. In all the different sectors in which I have been engaged, setting up cooperation to generate innovative products and solutions was a key part of my job." Clearly, such wide-ranging experience built on a spine of innovation and cooperation has stood Jan in good stead for his new position steering the ITEA Office.

In fact, this is the reason why Jan saw the vacancy at ITEA as offering the perfect opportunity to make use of his experience in the different sectors and deploy this on a more international stage. “I am committed to enhancing and strengthening the digital transition, something that I believe will become increasingly important in the coming years in an international playing field, where we (Europe) have to take a position.”

Taking off at the PO Days

Jan could not have got off to a better start to his ITEA career than the PO Days in Amsterdam at the beginning of September. “Right away you get to meet members of our Community. I spoke to a lot of people and what I found really gratifying was a sense I got from everyone that not only was this a meeting place for innovative initiatives but also, and just as importantly, a moment of fun. Clearly, working at ITEA has a positive vibe! It’s a really thriving Community with a sense of togetherness – a family feeling. There is so much diversity but the contact between people from such wide-ranging background and sectors – both private and public – was really good. I think this comes from the trust and open attitude towards cooperation that prevails, and indeed a condition for a Cluster to flourish.”

Office teamwork

So how have the first few weeks been at the Office itself? “It’s a great atmosphere,” Jan smiles. “I can see how dedicated and driven everyone is to achieve success for ITEA. There is a real ‘go-for-it’ attitude – when something needs to be done, everyone helps each other. Of course, each person has a particular job to do but there is a team spirit to get things done for the organisation as a whole. A bit like a football team. Each ‘player’ has a set of skills and has a job to do but the strength lies in the interaction of the players (in pursuit of the team’s objective). From my perspective as Office Director, that’s really pleasing to see. In my previous roles I also worked with similar kinds of teams so I am conscious of how much can be achieved with this kind of attitude. It underlines to me that I have certainly made the right choice in joining the ITEA team.”

Catalyst for innovation

And as Jan acclimatises to his team and vice versa, the benefits of what he brings will only further strengthen the ITEA Office. Like his experience of partnerships in the private and public sectors. Jan: “It is, of course, important for the organisation that it has been able to bring in someone with a good knowledge of the ins and outs of Public and Private Partnerships (PPPs), dealing with public as well as industrial interests, and projects that create impact in society and the market (someone who knows how that game is played). How to act as a catalyst for the kind of projects that ITEA generates, especially in crucial areas like Big Data, AI, machine learning and so on. For me that is what ITEA’s role is – to act as a catalyst for new opportunities and successful combinations, to be the lubricant to help enhance the innovation process. I believe one of my qualities is that I can stimulate this. Connecting and motivating people, creating a trusted and independent space. At the same time I am aware of the limits and requirements on quality and financial levels. Giving people responsibility, but within clear limits, can be very stimulating and challenging to be creative and productive."

Fit and healthy, in mind and body

When Jan’s finger is not on the pulse, it can often be found on the strings of his guitar. Not quite an obsession but a good way of letting the creativity flow through a bit of improvised jazz … also as part of a team, or band. “Music has always been important in my life. It gives me energy and relaxation. Jazz is also about creating freedom and energy within certain defined limits. It’s – sometimes more than – a hobby that has found a good place in my life along with my wife and two children. The other thing that I like to spend my time doing is hiking in the mountains, especially in Spain, where I lost my heart to the Pyrenees and Sierra Nevada. Keeps me fit and healthy, in mind and body.” Fit and healthy for the challenges to come.

SME IN THE SPOTLIGHT

Yazzoom

From downtime to uptime with real-time anomaly detection

Alexis Piron is Sales Manager at Yazzoom, the AI & Machine Learning company based in the Belgian city of Gent where computer science and engineering are combined to solve many different challenges in all industrial sectors. He takes time out to explain what makes this SME tick.

From undergrowth to clearing

Yazzoom has been around for about eight years. Its beginnings can be traced to 2011 when the company was focused on using data from industry for a whole range of purposes. “It was largely a matter of employing our knowledge of modelling and engineering and matching this to market needs,” Alexis explains, “and in the first few years we tended to undertake projects for companies aimed at using their data to improve the quality of production and products. And using the knowledge and experience we gained in this period, we evolved into developing what is our current product line of data analytics solutions, transitioning from project to product. We cut our way through the undergrowth, if you like, and paved a path towards what we have become today. So yes, we are a company in transition. In fact, we are always in transition – we have to ensure that we stay at the forefront in an environment that changes from day to day so that we can come up with solutions to the constantly evolving challenges.”

Into the unknown

Yazzoom’s application domain solution is more or less the same for all its customers whether in the energy, chemical or automotive sectors. But why do they come to Yazzoom, what is it that makes Yazzoom unique? “A good question,” Alexis replies. “What sets us apart is our ability to combine machine learning and AI with engineering disciplines such as physics, chemistry and advanced process control – this helps to run the results of your machine learning models in the actual production environment. So that’s one thing. Another is our focus on unsupervised machine learning, which is not yet

as established a field as predictive maintenance that uses supervised learning, for example."

Cutting away the undergrowth again? “Yes, we are in a much less developed area at this point in time. But it’s a vital matter for our customers because production downtime can be a very expensive situation for them, in terms of revenue losses. This refers to something that happens to disrupt production that is previously unknown or unprecedented. So you’re not prepared for the problems that arise. The traditional methods of monitoring and predictive maintenance are based on the things you know, what has happened in the past. With our unsupervised machine learning, we are clearing the ground to establish something that could be a real benefit to production processes.”

Yanomaly

Alexis is keen to stress the specialised solution Yazzoom has developed for extracting valuable insights and actions from industrial equipment and production line data. “Machines, systems and devices continuously generate data, for example from sensors, that is rich in information about performance, condition, usage and other metrics. Today such data can be collected from fleets of machines or thousands of devices spread over the world and analysing this data can provide valuable insights. However to get to this value is no trivial matter,” he explains.

Yazzoom has built a powerful reusable and extendible technological solution on top of open source technologies combined with proprietary machine learning algorithms. It has some unique capabilities like process mining, the ability to learn automatically from data statistical models that describe how the machines, devices and systems have been used and which process steps were executed by those systems. Then there is context dependent anomaly detection, or the ability to detect in real-time anomalies or abnormal process execution and complex events in both numerical data and log files, while taking into account the context in which the system operates. “Essentially,” Alexis sums up, “Yanomaly’s main use cases are continuous real-time monitoring of assets for operations and maintenance teams of production companies, and faster diagnostics and root cause analysis for service and support teams of equipment manufacturers.”

Benefits of collaboration

Of course, being a small company the need to keep abreast of the latest developments cannot be understated. Publicly funded research projects offer the perfect opportunity, as Managing Director Jan Verhasselt suggests, “to mix with different people and organisations to work on solving relevant challenges that none of us can solve on our own. In R&D, of course, there is always a substantial risk that the ultimate solution will not be found, so such programmes and projects help spread the risk in terms of both effort and funding.” Furthermore," Jan goes on to say, “our main objectives as a technology provider are to get a chance to test and further develop our ideas and technologies on the real use cases provided by the problem owners in projects and, in doing so, to (hopefully) create reference success stories that show the value of our technology.”

Success story

The ITEA project Reflexion is one such success story where technology was developed to generate test suites indistinguishable from real-life user tests, opening up the potential to make systems (and therefore users) safer against threats for which no data currently exists. Ultimately, lower development, maintenance and troubleshooting costs mean a better price-to-quality ratio for customers. Yazzoom is currently involved in iDev40, an EU ECSEL project that is geared to using digital twins for accelerating the time it takes to create new products from development, over planning to manufacturing throughout the value chain. Yazzoom also participates in Flemish R&D programmes like ICON. “An obvious difference here,” Jan explains “is that local Flemish projects typically have smaller partner consortia. Among the European research projects, ITEA requires less work for reporting and the portal is very handy. So for an SME like us, that’s a real bonus.”

> "Publicly funded research projects offer the perfect opportunity to work on solving relevant challenges that none of us can solve on our own."

More information

www.yazzoom.com

ITEA PO Days 2019

'Mix between speed dating and a hackaton'

On 3 September, the ITEA 3 Call 6 opened with the ITEA PO Days 2019 in Amsterdam. This lively 2-day brokerage event was already fully booked weeks before and gathered a record number of 310 participants from 15 countries. With 50% returning participants and 50% newcomers, this event clearly shows the strength of the ITEA Community, which values its existing members and is open for new members at the same time.

PO Days – promising perspective
On Tuesday, 57 project ideas were presented in the poster session and 44 ideas were pitched during the parallel pitch sessions while one additional idea was even born during the event. The following brainstorm sessions resulted in 15 intermediate-results presentations on day one and 12 final-results presentations in the closing session on Wednesday.

The project ideas were clustered by 7 societal challenges, i.e. Safety and Security, Smart cities, Smart communities, Smart engineering, Smart industry, Smart health and Smart mobility. Although each challenge was well covered, the number of Smart mobility project ideas was remarkably high (14), showing the impact of this year's ITEA Customer workshop on this topic. Another notable topic this year was Artificial Intelligence (AI), covered by 27 of the 58 ideas. ITEA's ambition is to transform AI into impact on industry, and not just do advanced research. In addition, simulation is everywhere, leading to digital twinning; it is the heart of the digital transition and a tool for many purposes like design & optimisation, training, command & control and preventive maintenance.

A new ITEA Office Director
As Jan Jonker took over the reins as the new ITEA Office Director per 1 September, these PO Days were also an excellent opportunity to introduce Jan to the ITEA Community. He succeeds Fopke Klok who has been leading the ITEA Office since 2007. Jan Jonker made his debut on the PO Days stage and stated he's eager to strengthen ITEA further. In this magazine, Jan also introduces himself.

ITEA best practices - Awards of Excellence 2019
During the PO Days, best practices were shown by the three ITEA projects that received the 2019 ITEA Award of Excellence. They presented their impressive outcomes and impact during an interactive panel session moderated by ITEA Vice-chairman Philippe Letellier. This year's awards winners are:

- **ACOSAR** specified a communication protocol, enabling efficient integration of distributed real-time systems and simulation environments. This is termed as the Distributed Co-simulation Protocol (DCP).

  Philippe Letellier: *"ACOSAR achieved excellent results on Co-Simulation that will have a high impact on the automotive market. It is impressive how ACOSAR managed to standardise the Distributed Co-Simulation Protocol under the roof of the Modelica Association."*

- **OpenCPS** focused on the development of standards and open-source solutions for the integration of models from various engineering disciplines, enabling collaborative, model-based Cyber-Physical Systems development.

  Philippe Letellier: "*OPENCPS is unique in dealing with the complexity of large Cyber-Physical Systems. The use of open standards and open-source solutions to integrate different kind of models to design complex CPS, will democratise the usage of modelisation, especially for SMEs. The good examples of exploitation, in particular with Saab and Siemens, are remarkable."*

- **Reflexion** has succeeded in converting data from testing and validation, real-time and continuously, into useful knowledge in order to gain better control over the production process, the product and its future design. This 'digital loop' is applied in several high-tech system domains.

  Philippe Letellier: *"Reflexion is particularly appreciated for the different cases of full digital loop from the design, instrumentation of products and services, data acquisition, data analysis to the feedback provided to the design team. This is actually the full path of digitalisation that ITEA is committed to. All in all, extremely remarkable results."*

ITEA congratulates all 2019 ITEA Award of Excellence winners for their impressive results with great benefit for the industry!

PO Days 2019 in numbers

- 310 participants from 14 different countries
- 70 project ideas uploaded in the Project idea tool before the event
- 57 project ideas were presented during the poster session
- 44 pitches during the parallel pitch sessions
- 23 final project ideas presented

Evaluation

Each year the ITEA Office evaluates the PO Preparation Days to identify what worked and what did not work well, and where there is room for improvement. This year 27% of all attendees shared their evaluation and their suggestions with us. We highly appreciate the feedback received, and we will take your comments and suggestions into account to further improve the PO Days. With a 3.9-score on 5-point scale, the event was again highly appreciated. Among the highlights were the Project idea tool, the set-up of the programme, the poster session, the location (Amsterdam) and venue (Okura).

Overall, there was again a very positive and constructive atmosphere during the event. Patrick Mandic from Mavennet, Canada: “The PO Days event is an opportunity to do what I call a mix between speed dating and a hackathon at the same time, to come up with an idea that we wouldn’t be able to come up with ourselves.”

ITEA 3 Call 6

Already during the PO Days event, the 7 first Project Outlines for ITEA 3 Call 6 were initiated in the Community website! At the deadline of 31 October, 36 Project Outlines had been submitted, with a total effort of 4095 person years.A first look shows that Arteficial Intelligence (AI) is present in about 90% of the submitted project outlines. Currently, all these Project Outlines are being reviewed. On 5 December the projects will be informed whether they will be invited to submit a Full Project Proposal.

Eureka Stakeholder Conference

Creating ecosystems for innovation

On 5 September the Dutch Eureka Chairmanship team organised the Eureka Stakeholder Conference in the beautiful DeLamar theatre in Amsterdam. During this event, the Eureka Community had the opportunity to make its voice heard on how to organise Eureka innovation instruments in the future.

An impressive laser show immediately caught the attention of the audience that was then treated to a notable set of keynote speakers in turn.

Mona Keijzer, Dutch State Secretary for Economic Affairs and Climate Policy, highlighted the outcomes of ITEA project SoRTS as a great example of what can be achieved within the Eureka Programme. She also underlined Eureka's ambition to be able to develop activities to deal swiftly and flexibly with new technological challenges.

The dedicated (and catchy) Ales Cantarutti, State Secretary for Economic Development and Technology of Slovenia, noted that in the rapid transformation of our economy "new technologies bring new solutions, as well as new responsibilities. The right skills and knowledge are sought internationally and partners with the right expertise are sought worldwide." Dutch Prince Constantijn van Oranje, Special Envoy of StartupDelta, future TechLeap.NL, followed with his remark that "technology and the ability to apply and scale it has become a global strategic play in which Europe needs to be much more assertive in defending and defending its own interests, as well as building its capabilities and assets." He also clearly expressed his advice to simplify things for the clients, which might be different from simplication for governments.

Next, the audience was informed about the Eureka Clusters and the Eurostars programme in two parallel sessions.

After a break, again two parallel sessions took place in which the audience was able to exchange feedback and opinions on related topics using the highly interactive Mentimeter tool. One session focused on the recommendations for the new Eurostars programme, while the other session gathered input for the restructuring of the Eureka Clusters. The following main recommendations were then presented in the closing wrap-up session:

- SMEs should remain in the lead of Eurostars projects
- Eurostars should also facilitate the support to SMEs to take the next steps to the market, including through coaching and mentoring, the link with large companies and funding for commercialisation
- Technology innovation is outpacing the decision timelines
- Clusters need to become highly visible
- The Eureka programme should make room for flexible, bottom-up, multi-technology, InterCluster or outside-Cluster, industry-driven projects

The feedback gathered during the conference will be presented to Eureka policy makers. The results will be used to create a powerful set of innovation tools that will contribute to the creation of innovative ecosystems for the future.

At the end of the event there was room for matchmaking with innovative SMEs and industry representatives from Europe and beyond. ITEA was present with an InterCluster booth to inform attendees about the opportunities for R&D&I within the domain of Software Innovation.

Colophon

An online version is available at https://itea3.org

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