# ITEA Magazine 38

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ITEA 3

Focus on Portugal

ITEA Success stories
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# Editorial

Dear ITEA Innovation Community,

There are many definitions of innovation with some common phrases in each, such as: a new idea, added value, related to customers/end-users. Building innovative solutions requires:

- **courage** to dream new ideas and accept the challenge of the unknown,
- **technical knowledge** to build added value beyond the State-of-the-Art, and
- good understanding of your **customer needs and requirements**.

Within the ITEA Community (in addition to the properties above), a positive attitude (factor of **happiness**) and the willingness for **collaboration** are the other main properties for ITEA's impactful results.

In the Success stories of the FUSE-IT project and the 3DPathology project, you can read which challenges are tackled in cyber security and healthcare respectively and which innovative solutions have been created to build added value for their end-users. You can read **courageous** stories of FUSE-IT, which focuses on smart and secure buildings, and 3DPathology that moves pathology into a digital world.

The ITEA Community has presented its strong **technical knowledge** on AI in its projects over the past years. This knowledge base created many project ideas that resulted in 11 ITEA-led projects in the Eureka Clusters AI Call 2020. And a new Call on AI has been opened on 1 March. I would like to kindly invite the ITEA Community to contribute to this new Call.

Another aspect of innovation is **end-users**. ITEA is getting closer to end-users in order to support the innovation within its Community. Therefore, the ITEA Cyber Security Day has been organised with a set of customers and ITEA project partners. You can read the event report in this magazine. Furthermore, the MOSIM project explains the added value to its customers in the **end-user happiness** article.

Building successful international partnerships is always a challenge for SMEs. Within the ITEA Community, there are many examples of international **collaboration** resulting in economic growth for SMEs. The stories of Evoleo and Clevernet will show you their experiences from the perspective of an SME. And Raúl Santos De La Cámara from the Spanish SME HI Iberia Ingeniería y Proyectos shares his experience in ITEA as a Community member.

These successes are more than a coincidence but rather are based on continuous analysis and support. In the article covering the Viewpoint on Mentorship, you can read how the ITEA Community supports each other through coaching and mentoring. And in the article on the SotA Highlight, you will find the analysis of a set of IoT projects written by the Vice-chairman of ITEA.

Building up innovative communities can only be achieved by having long-term plans and continuous and agile short-term actions. Focusing on Portugal in this magazine shows us how a successful innovative national strategy is developed. The ITEA Community is stronger with the increasing support of ANI and the Portuguese partners.

I am very happy to share the successes of ITEA projects and its partners in this magazine again.

I wish you all a joyful read.

Zeynep Sarılar

# ANI – a new generation framework to drive Portugal into the future

Portugal's progress over the past decade in the *international innovation* rankings shows the effort of public and private investment in science, R&D and innovation activities. Today Portugal has excellent scientific and technological infrastructures worldwide, a favourable framework for technology-based entrepreneurship with a strong connection to the scientific and higher education system, as well as companies *and startups* that compete globally. A *new generation* National Innovation Agency ANI (Agência Nacional de Inovação) supports technological and business innovation in Portugal, contributes to consolidating the National Innovation System (NIS) and strengthens the competitiveness of the national economy in global markets.

# Focus on Portugal

**Committed to R&D and innovation**

With Portugal about to assume the chairmanship of Eureka this summer, Rita Silva, Senior Innovation and Entrepreneurship Consultant at ANI, is joined by Miguel Bello (CEO) and Emir Sirage (COO) of the Atlantic International Research Centre (AIR Centre), an international collaborative framework to address global challenges and local priorities in the Atlantic Ocean. Here they consider the current state of the software industry and innovation landscape in Portugal along with its ambitions in this area and its drive to help position Portugal in the group of highly innovative European Union countries by the beginning of the next decade.

"When we look at the main ICT industrial cluster in Portugal," Rita begins, "the fact that the sector mobilises the highest rate of private investment, with almost 1000 million euros of private investment on R&D, is a clear statement of ambition for this sector that is dominated by SMEs (only 0.3% are large enterprises). As far as public support to R&D in ICT is concerned," she continues, "in the period between 2014 to 2020, we funded 420 R&D projects involving a little over 555 million euros of investment, corresponding to 319 million euros of public support. This accounts for 34% of the overall public support to R&D and innovation in Portugal." However, while Portugal performs below the EU average in terms of human capital, the improvement in the basic level of digital skills and a greater proportion of ICT graduates is evidence of a growing impact and progress in the ICT industry.

**ePortugal**

Of course, in the advent of the Coronavirus pandemic and the need to support the economic recovery, Portugal has taken a large number of initiatives to minimise contagion and to support the health system as well as accelerate and reinforce digital service infrastructures to deal with higher demand. "Like rapidly digitising the public administration mainly through the ePortugal portal and offering new services like online registration of births," Rita explains. "For the economy, digital platforms were set up in order to support SMEs that have stayed open during the crisis and several initiatives have provided support to digital home schooling, with national and regional tele-school channels created mainly to support students without internet access or equipment."

**Addressing digital skills**

Looking further ahead, post COVID-19 crisis, Portugal is advanced in the deployment of Very High Capacity Network (VHCN) and is above EU average in the provision of digital public services, although it lags behind in assigning the radio spectrum for 5G and needs to tackle its weak performance in the digital skills indicators. "But," Rita says, "we are implementing the national initiative on digital competences (INCoDe.2030) as well as launching the second phase of the Industria 4.0 national strategy for the digitisation of the economy, dedicating 600 million euros in total funding over the next two years. In addition, two relevant strategies on Artificial Intelligence (AI) and Advanced Computing have been launched with a strong focus on improving advanced digital skills. In our pursuit of a National Strategy for the Digitisation of the Economy, we have recently established Portugal Digital to address and overcome the challenges in the digital transition in Portugal."

**Portugal Digital**

Portugal Digital is founded on three pillars: i) training and digital inclusion of people, ii) digital transformation of the industrial sector, and iii) digitalisation of the public administration. The general digital transition strategy for industry called 'Industry 4.0 Programme' (i4.0) that was established in 2017 has three main goals: to accelerate the adoption of i4.0 by the Portuguese business fabric, to promote Portuguese technological suppliers as i4.0 players, and to make Portugal an attractive hub for i4.0 investment. The implementation and monitoring of the strategy is overseen by COTEC Portugal, a Portuguese business association for innovation, as well as by its Strategic Committee composed of representatives of both the public sector and the private sectors, who finance the programme.

**Transformation**

"Initially, the focus was on mobilisation and raising awareness," Rita explains. "The second phase of the programme, launched in April 2019, has ambitious transformative goals and aims at placing Portugal in the leading group of countries driving the digitalisation of European industry. Currently, there are four Digital Innovation Hubs, two in the North focusing on manufacturing, one in Coimbra targeting the health sector and one in Lisbon specialised in the agricultural sector." Furthermore, Portugal is also finalising its National Strategy for AI, which has already been presented and discussed with AI companies, the research community, uptakers and public administration. AI is one of the main priorities for future investment. All in all, overall investment in areas connected with digitalisation are expected to surpass 918 million euros.

**Software opportunities**

Rita continues: "More specifically in terms of software and software innovation, Portugal's national priorities lie in the areas of artificial intelligence, advanced computing, 5G and

cyberspace security. The Portuguese Association of Software, Assoft, believes great opportunities exist for Portuguese software companies if they can overcome a number of challenges. Firstly, technological: The growing use of mobile solutions, cloud computing, big data, the internet of things, Artificial Intelligence, Blockchain and crypto coins – these are some of the key trends that require the redesign and rewriting of applications currently in production. Secondly, human resources. Given the "brain drain" phenomena of ICT graduates in Portuguese universities to foreign markets, resulting in the scarcity of qualified people for the needs of the market which is witnessing a growing penetration of multinational and outsourcing companies.

Emir Sirage adds: "Actually, in Portugal we have three unicorns (companies whose value exceeds 1 billion US dollars) that are Portuguese founded and a good number of other high-value companies that have good international exposure. Their centres of competence – or the brains of these companies – are still based in Portugal, which pays tribute to the quality of the engineering in the various institutes and institutions we have here."

**Strong innovator**

Assoft is working hard to conclude cooperation protocols with government authorities and other foreign associations - namely in Angola, Chile, the UK and the USA - and with several European government organisations and NGOs. "And, of course," Rita adds, "ANI is supporting technological and business innovation in Portugal and strengthening the competitiveness of the national economy in global markets. We pursue policies and initiatives to promote private investment in R&D, collaboration between R&D entities and enterprises for an effective transfer of knowledge to the market as well as promote the internationalisation of Portuguese innovative companies and R&D institutions through supporting participation in Horizon 2020 (future Horizon Europe), hosting part of Horizon Europe's NCPs network, as well as other international networks such as Eureka. For the first time, Portugal has joined the group of Europe's 'strong innovators', showing the best performance improvement in relation to the other members states, with an increase of 21.5%. In addition, Portugal, for the second consecutive year, leads the category 'innovation in small and medium-sized enterprises (SMEs)'," Rita says proudly. ANI has also launched a Call for the classification of entities as *Digital Innovation Hubs* as part of the Portugal's Action Plan for Digital Transition. The aim is to create a National Network of *Digital Innovation Hubs* that allows for the growth and faster digital transition of companies, particularly SMEs, and Public Administration.

**Platform for the Eureka Chairmanship**

A good platform when taking up the chairmanship of Eureka in the summer, an event that Miguel Bello is looking forward to. "In our last Eureka presidency, in 2008, we championed the expansion of Eureka Clusters so we were pleased to see South Korea join a year later and more, such as Canada and South Africa, since. We believe that expanding the outreach will bring great benefits, and this will be one of our lines in our forthcoming chairmanchip. We will be taking up this role during COVID-19 and will be leaving, in all probability, post-COVID-19. One of our priorities will be to foster innovation through international collaboration to meet the challenges, where areas like Earth Observation from Space are a technological enabler to tackle climate change, ocean sustainability, health and energy that have been pushed into the background by the pandemic. So our motto is 'innovation for a greener, digital and healthier planet through a collaborative approach'. During our chairmanship we will also be overseeing the implementation of the new Eureka governance model related to the revitalisation of the Eureka Clusters. So we have lots to do, and we're looking forward to the challenge."

**Business incentives**

There are a good few incentives for Portuguese businesses to get involved in the Eureka Clusters, such as the SIFIDE tax incentive system and grant-based incentives for industrial co-development R&D projects led by companies in collaboration with R&D institutions or so-called Mobiliser programmes in which strategic R&D projects involve industry clusters and impact its value chain with the creation of new products, processes or services with a high technological and innovative content. In addition, the Interface Programme is geared to strengthening knowledge transfer between academia/R&D entities and businesses.

**Promoting internationalisation**

"Together with CELTIC-NEXT, ITEA 3 provides an excellent channel for the internationalisation of our companies and research centres. In fact, these two Eureka Clusters have the largest Portuguese participation," Rita points out. "The opportunity also to collaborate beyond Europe, on a truly global stage, is one of the major benefits. The recent growth of the ITEA Community, with countries as far and wide as Turkey, Canada, South Korea, South Africa and Chile, provides a real incentive and complements our own efforts to promote internationalisation, as I said earlier." In terms of funding and participation in ITEA projects, 14 projects have been financed by the Portugal 2020 Notices (since 2017), with a total eligible investment of around 9.5 million euros and a total incentive of 5.9 million euros.

The Portuguese entities most represented in ITEA include Evoleo Technologies, SISTRADE Software Consulting, S.A., Instituto Superior de Engenharia do Porto (ISEP), University of Porto, Polytechnic Institute of Porto and Instituto de Telecomunicações.

**Game-changing, high-tech innovations**

"The collaborative environment provided in such networks as ITEA has helped Portugal become the nest for some high-tech innovations that have changed the world we live in today. For example, the Multibanco network, one of the more sophisticated banking networks in the world; Via Verde, the first closed system of automatic highway tolls in the world; and the Pre-Paid Mobile Phones, which quickly became the foundation for the mobile revolution we have today. Portugal is also one of the European countries with the highest FTTH penetration, 46% of all households, and has been in the forefront of the 3G and 4G infrastructure investment." In this context, Portugal is not only a market open to innovation, but also the best gateway to ICT companies in the Lusophone markets (where Portuguese is spoken). Ready for the next phase along with the forthcoming Eureka chairmanship.

**More information**

https://www.ani.pt/en/international-promotion/global-network/eureka-eurostars/

# EVOLEO Technologies

## Daring to dream

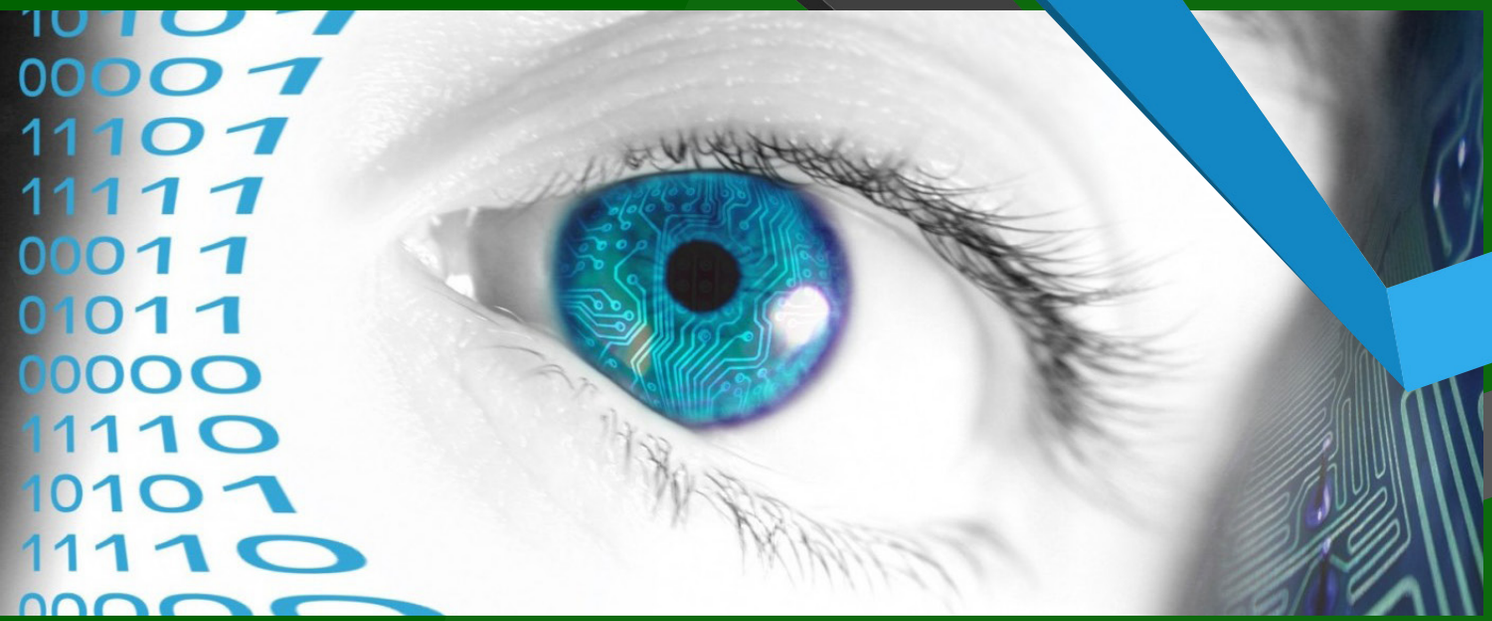
**EVOLEO Technologies was created 14 years ago in January 2007 in Maia (Porto), Portugal. The company of some 20 people is dedicated to the design and integration of small/medium size solutions that focus on reliable electronics, electromechanical and software systems. The company also holds EVOLEO Technologies GmbH in Munich, Germany, as part of the growing strategy. "Embedded and computational solutions, to be precise, in the B2B market" says Rodolfo Martins, founder and CEO.**

**Raison d'être**

The company's key business areas are: Space (computer systems, embedded design), Infrastructures & Railways (monitoring, knowledge extraction for decision support) and Industrial Test Machines (quality control, test and automation systems), which Rodolfo describes as looking like 'an ugly but effective fridge'. The root of EVOLEO's activities lies in electronics and embedded systems. "Our anchor is that EVOLEO is very horizontal with a multidisciplinary technical team that gives us a rare capability to adapt, be flexible and meet the specific needs of our customers and partners. It also helps us to participate and, especially, be useful in a very wide range of projects and topics, as long as they involve engineering. This is our main selling point. Not many companies do what we do – it's an approach that involves risks and makes it much harder to grow vertically. But," Rodolfo adds, "the reason we exist is to be useful, to our people, the community we interact with and, if possible, to accomplish dreams! And for me, the tool to realise dreams is engineering."

**Software – the new goldmine**

As for how important software innovation is, Rodolfo is in absolutely no doubt. "Everything we do – from machines to embedded systems for Space or Railways – requires software. Being an SME that focuses on the Cyber Physical Systems, computer systems in which a mechanism is controlled or monitored by computer-based algorithms, we simply can't go around the software, whether embedded or applicational. It has a growing impact on the performance and features of the different products and services we develop," Rodolfo explains. "So, it is highly relevant for us



to participate and follow such developments. Even in areas not directly covered by ITEA projects, like Space, software is becoming the new gold mine with the democratisation of access to space and the easier recurrence of development, update, correction and implementation of AI and microelectronics. Hardware is very expensive to develop and implement physically. Software costs much less. But there is still some distrust of software, especially among 'conservative' industries, yet they can't escape the need for it. After all, you can't just send up a truck full of maintenance engineers to fix a glitch or a hack in space. Back on Earth, there are critical infrastructures where reliable software is essential. Software innovation plays a vital role, but we still have a very long way to go."

**The value of publicly funded research**

For SMEs like EVOLEO publicly funded research projects are particularly relevant and contribute to knowledge transfer between universities, R&D centres, SMEs and larger enterprises, something that would otherwise not be possible. Rodolfo explains. "As an SME, it is difficult to allocate the resources we need to promote relevant research and innovation projects using private funds. The public funding allows resources to be dedicated to promoting such activities which are relevant for companies to continue to innovate their products and services. If it weren't for this, companies and even universities would have many fewer ongoing projects and most of them would probably be abandoned along the way. This is particularly relevant for low TRL and disruptive projects, where small companies cannot afford to risk their funds. But it is precisely such disruptive ideas that, when successful, have the most impact on and for society."

**The ITEA benefits**

EVOLEO has been involved in a number of ITEA projects in the past, from automotive to energy domains, representing the diversity of its own business areas. Why become involved? "For the reasons mentioned. It gives us access to public funding and to the knowledge of universities and research centres. But it offers more besides. We benefit from business collaborations in the projects as well as the network of the ITEA Community. Through this we build up relationships and partnerships that can become long-term. It is also an environment in which we learn a lot, not only from a technical perspective but also in gaining insight into the trends in industry and society – what's likely to be happening in the next three to five years."

**Public funding landscape**

EVOLEO Technologies participates in various national and European research projects and has coordinated several H2020 and national funding projects in recent years. "If we compare the landscape, we can see both benefits and drawbacks in the ITEA programme. For example, although the ITEA projects can often be more complex to manage, the consortia are usually larger in terms of number of entities and demonstrators. This has the advantage of allowing several partners to contribute their specific perspective for the same need and expertise, which boosts the critical mass for that project. With participation from industry and end users, small companies can learn and benefit from the experiences from their ways of working. On the other hand," Rodolfo says, "having to go through two stages of proposal (PO + FPP) plus the national application phase is a complex and delaying process, which minimises the chances of good cooperation if funding approval comes at very different timings. This has been our experience in the past, and is the main reason why we have not participated in the latest round of ITEA projects. But we are aware that landscapes change and we would certainly be open to participating again, if the process enables us to do so. Because we know the rewards can be really beneficial. And because we know that collaboration is key to helping us fulfil our dream, our vision, of changing people's lives for the better."

**More information**

http://evoleotech.com/

ITEA Success story

# FUSE-IT

## Enhanced connectivity and security for building management at lower costs

Imagine that a malicious hacker is taking over the heating, ventilation and air conditioning system of a hospital, changing the temperature in such a way that diseases can easily spread in a place where people are actually supposed to be healed. A bit of a scary scenario, but with all of the equipment and facilities becoming more and more connected in order to make the systems smart and save a lot of energy, this has become a serious threat that needs to be taken into account. Should we be afraid to go to hospital now? Luckily not, as cyber security is also becoming increasingly successful in addressing these issues. And one of these success stories can be found in the FUSE-IT project, which was led by Airbus CyberSecurity and ran from October 2014 until December 2017. This ITEA project gathered 20 strong partners from France, Belgium, Portugal and Turkey. Airbus CyberSecurity acted as the project coordinator and pilot site for France while Gazi Technopark in Turkey, Imec's HomeLab in Belgium and Centro Hospitalar São João in Portugal acted as pilot users for demonstrations performed in an operational environment in 2017.

FUSE-IT addressed the need for sustainable, reliable, user-friendly, efficient, safe and secure Building Management Systems in the context of Smart Critical Sites. From a site management perspective, it solves the dilemma of efficiency and security in intelligent buildings. At the user level, a smart unified building management interface enables the daily monitoring and control of a building, while a full security management interface enables the supervision of both physical and logical security throughout the premises. And at the end-user level, this can save both energy and lives.


**Smart Secured Building System**

To achieve this, the project developed a Smart Secured Building System resulting from cross-domain innovation between energy and security activities that are traditionally very segmented. The system can be deployed as standalone components, as a fully-integrated system or as a service. The innovation proposal of FUSE-IT resides in five key capacities which were demonstrated with striking progress beyond the State-of-the-Art of the application areas of energy, facility, ICT and security.

1. **Secure shared sensors, effectors and devices:** smart interoperable sensors, easily deployable on legacy building infrastructures, enabling the measurement of efficiency and security-related indicators in real time for improved management in enhanced security conditions.
2. **Trusted, federated energy and information networks:** enabling the conveyance of these measurements under time-sensitive constraints through unified network infrastructures while ensuring end-to-end data protection.
3. **Core building data processing and analysis:** a scalable data processing capacity, enabling the extraction of real-time performance and security indicators from vast amounts of heterogeneous building data.
4. **Smart unified building management interface:** a user-friendly building management interface providing live indicators and alerts on highly realistic 3D building models as well as historical data and statistics for improved facility management and energy optimisation.
5. **Full security management interface:** an integrated security supervision Human-Machine Interface (HMI) enabling the management of blended cyber and physical threats and decision support to responders in charge of building and network protection.

**A pioneer project with impressive results**

On the back of the project results, Airbus has successfully filed a patent on a method for securing and authenticating telecommunication. Overall, the project has led to the acceptance of four patents. Notable results of the FUSE-IT project have been brought to standards within the following groups: buildingSMART, CoAP, LWM2M, IPSO, oneM2M, Zigbee, Z-wave, Wirepas, Enocean, Alljoyn, semantic BIM and IFC data formats.

Airbus CyberSecurity has also been awarded a €740,000 contract to fulfil risk assessment surveys on 14 sites of Airbus Defence and Space in Spain, France, the UK and Germany and a contract worth €500,000 to secure a data centre organisation against cyber and physical threats. In addition, Airbus CyberSecurity has been awarded a multimillion-euro contract with an important gas transportation company, an integration contract for the protection of a large data centre's infrastructure and several contracts with large energy production utilities and distribution system operators in the UK, France and Germany.

In Q2 2018, the French SME VTREEM launched a new SaaS product named 'BIMValue' to enhance, control and manage sensitive data using semantic BIM (Building Information Modelling). Thanks to this development, VTREEM was acquired by Catenda in 2019. This Norwegian software editor is specialised in BIM. One of the project participants is now involved in developing innovative integrations with SaaS and mobile applications for BIM at Catenda, while another joined Railenium (the French Research Institute for Railways) in October 2020 to develop open BIM standards for sustainable infrastructures.

The Turkish consortium members have acquired a contract for monitoring buildings as well as for the remote monitoring of several solar plants. Contract negotiations are ongoing, with a hospital and pilot installations being tested for several government organisations.

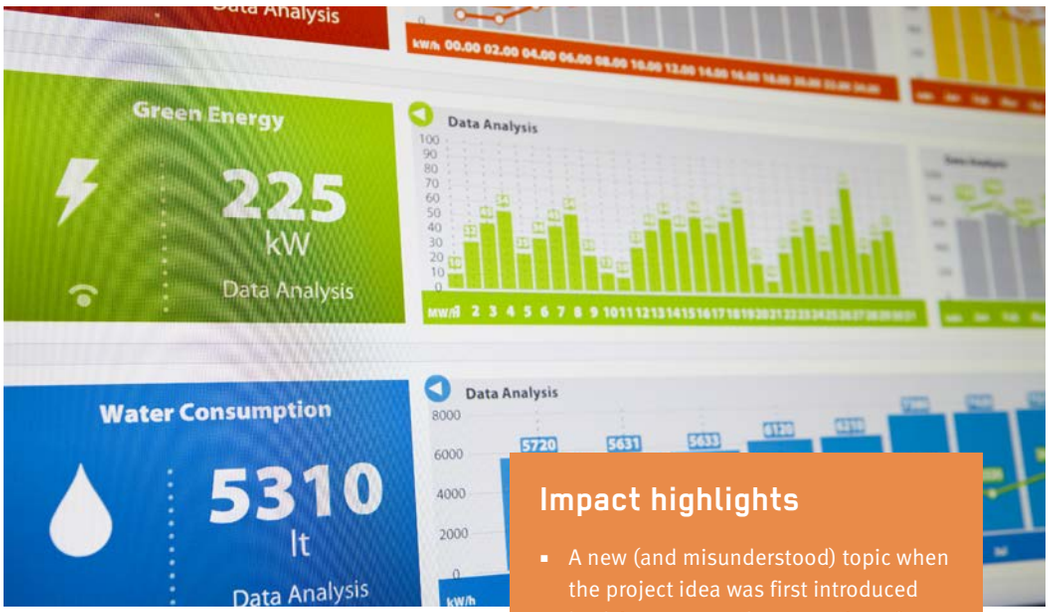
For the Belgian consortium, Niko has created the next-generation Niko Home Control platform NHC 2.0 (https://www.niko.eu/en/products/niko-home-control), which now has more open API interfaces (https://www.niko.eu/en/our-products/home-automation/partners). Additionally, all of their new wireless products will be based on the open standard Zigbee instead of only proprietary protocols. All of these changes will make Niko Home Control more open and available for fast and smooth integration by third parties. The FUSE-IT project has helped Niko to create a new architecture and move to said open standards, allowing them to grow

faster and to become more attractive to other companies. The team is still growing and has had double-digit growth during the last five years.

The FUSE-IT Portuguese consortium (GREEDi) built a prototype for a hospital, which is a critical form of infrastructure providing care to the population, especially during the COVID-19 pandemic. The prototype allowed the demonstration of demand-response participation in critical buildings, ensuring cyber and physical security. The Portuguese consortium will continue in a national project with exploitation projected to come at a later stage. Using the knowledge and developments of FUSE-IT, the Portuguese consortium was able to create a new solution for intelligent building management focused on a semantic-based approach to fault detection in cyber-physical environments. The C2C (Click to Control) solution is now entering TRL 8 after having been demonstrated in an operational environment. Moreover, the alarm and warning mechanisms developed in FUSE-IT were integrated in a commercial product by IPBRICK targeting critical buildings. EVOLEO developed a middleware solution that allowed it to interface with the legacy control systems of the building, including HVAC, oxygen and room pressure, thanks to up-to-date IT systems to implement new functionalities and optimisations. These developments are of great importance for EVOLEO as several legacy systems can be turned into smart systems without the need for replacements or very demanding customisations or retrofits.

In summary, about €48 million in revenue has been reported in direct relation to the project results since 2017. The most striking commercial successes include:

- a total of 17 system integration/managed operation contracts in the field of smart building management and optimisation;
- a total of 25 contracts won in the field of critical infrastructure protection against cyber and physical threats for external customers from the aeronautic industry, oil & gas, electricity production, electricity distribution, healthcare, air transportation, rail transportation and maritime transportation;
- the successful market introduction of three smart building sensor network solutions, one sensor authentication and lightweight encryption solution, one identity and access management solution, one piece of sensor placement optimisation software, two forms of interactive smart building management, one form of building lifecycle management and two pieces of security supervision software;
- the successful market introduction of a start-up company delivering SaaS platform services for enhanced control and management of sensitive building information; and
- the deployment of a permanent full building micro-grid supporting sustained academic, industrial or research collaboration on matters of security and efficiency in smart buildings.




A new (and misunderstood) topic when the project idea was first introduced back in 2013 was the protection of smart infrastructures against combined cyber and physical threats. This now appears in the top three areas of investment by public and private actors. From this perspective, FUSE-IT has been a pioneer project, enabling the consortium members to take a strategic lead.

**More information**
https://itea3.org/project/fuse-it.html

## Impact highlights

- A new (and misunderstood) topic when the project idea was first introduced back in 2013 was the protection of smart infrastructures against combined cyber and physical threats. This now appears in the top three areas of investment by public and private actors. From this perspective, FUSE-IT has been a pioneer project, enabling the consortium members to take a strategic lead.
- Since 2017, about €48 million in revenue has been reported in direct relation to the project results.
- The project has led to the acceptance of four patents.
- Airbus CyberSecurity has been awarded a €740,000 contract to fulfil risk assessment surveys on 14 sites of Airbus Defence and Space in Spain, France, the UK and Germany and a contract worth €500,000 to secure a data centre organisation against cyber and physical threats. In addition, Airbus CyberSecurity has been awarded a multimillion-euro contract with an important gas transportation company, an integration contract for the protection of a large data centre's infrastructure and several contracts with large energy production utilities and distribution system operators in the UK, France and Germany.

# A Deep Learning project – PAPUD's lessons learned

Today, companies are generating a huge amounts of data through their activities. Without an adapted analysis, these large amounts of heterogenous data go to waste.

The aim of the ITEA project PAPUD is to help companies to exploit their large amounts of heterogenous data. Within a platform based around a shared architecture, the project has developed models and algorithms for data analysis with a particular focus on Deep Learning. By tailoring the analyses of both structured and unstructured data to different domains, PAPUD provides a competitive advantage for companies in the targeted markets.

The project outcomes proved the efficiency of the Deep Learning techniques applied to the following fields: e-commerce, call centre operation, human resources, e-government and HPC prescriptive maintenance. In a recent publication by PAPUD project leader Cornel Crisan from Bull Atos Technologies, some of the key lessons learned are shared. The experiences of the PAPUD project are exchanged including valuable insights about areas such as hardware platforms, infrastructure, libraries commonalities, inference through web applications and the experience of a Deep Learning collaborative project.

The story is a message to industry as a whole: it is becoming significantly easier for companies to benefit from data analytics. Use of the PAPUD platform and the creation of domain-specific Deep Learning tools allow businesses to bypass huge organisations which have dominated the field, saving them time and money while also allowing them to tailor resources more specifically to their own internal or commercial needs. This should then provide a competitive advantage over companies which fail to make the most of Deep Learning. You are encouraged to read the full article to integrate or evaluate the Deep Learning techniques for all kind of projects, especially for research projects using or generating large amounts of data.

**More information**
https://itea3.org/project/papud.html

# Cost-Efficient Smart System Software Synthesis


IoT devices account for a €40 billion market and are essential for important European industries such as automotive and manufacturing. Within the ITEA project COMPACT, partners from Austria, Finland and Germany managed to develop and prototype advanced model-based methods to generate embedded software automatically, especially the lower levels of firmware. COMPACT demonstrated that these methods enable a quantum leap in productivity increase with no performance or area penalty. Even better results are feasible.

The COMPACT technology automates about 10% of the embedded software development effort, which is about 45% of the overall development effort of a System-on-a-Chip (SoC).

Using the COMPACT approach allows one to generate about 90% of the addressed code, which leads to a 20-70% reduction in software development costs. As a side effect, software migration time can be reduced to 40-65% as well. The effort to build a generator is simply writing the code once, i.e. the generator technique pays off already with the second use. Another benefit worth mentioning is that the generated code executes as well as handwritten code – if not better, and uses the same memory space – if not less.

If you are interested in learning more, please contact Wolfgang Ecker (Wolfgang.Ecker@infineon.com) or Andreas Vörg (voerg@edacentrum.de).

**More information**
https://www.edacentrum.de/compact/

VIEWPOINT ON MENTORSHIP

# Mentoring is

… sharing knowledge, skills and life experience to guide another towards reaching their full potential; it's a journey of shared discovery. [1]

**ITEA Chairwoman Zeynep Sarılar speaks with Andy de Mets (Barco) and Asli Tanriverdi (Philips) about their views on and roles in mentoring within the ITEA Community. What does it mean to be a mentor in a project? What would they advise new mentors on mentorship? What do they enjoy most as mentors in a project? And would they recommend the role to others? Zeynep kicks off the discussion by underlining the importance of mentorship in the ITEA Community and asking the two mentors how they define their roles.**

**Go-to person**

Asli gets the ball rolling: "Mentoring is an important element in our Community. You can really make a difference, especially with regard to new project leaders. For me a mentor is a go-to person for both the project leader and the consortium as a whole. Someone who looks at matters through the lens of a reviewer and can give direction, guidance and advice when needed at any phase of a project. From ideation to implementation."

This is a perspective Andy shares: "And, of course, mentorship goes beyond the reviews. I see the role extending to a, shall we say, more informal space whereby project participants can contact a mentor for practical or informal questions, for example: How do you deal with specific practicalities? Of course, the ITEA Office knows all the rules, processes and criteria but it can sometimes be more 'comfortable' to just be able to consult someone who has actually gone through – experienced – what you are about to confront. As Asli said, a go-to person. If the project is in the hands of more experienced leaders, then the mentoring role is likely to be

[1] *What is Mentoring? | Mentor | Mentor Support Network*

less prominent. Nonetheless, as mentors we can still enable the innovation, the State-of-the-Art and other key aspects of the project to come to the foreground in the review process. We can help those developing the technology to highlight the usefulness of that technology. Also if we, as mentors, can point to an anomaly in a project, this comes across as much less 'threatening' than a reviewer's comment. A kind of confidante whose goal is to help a project succeed as best as it can."

**Liaison**

Asli adds, "I completely agree with everything Andy says and particularly in the ideation phase, it's very important in a platform such as the one ITEA offers, full of opportunities and ideas, to sit down with everyone and really consider which ideas have the biggest chance of making an impact. How do we develop this and what stages do we need to plan over the next year or two? This is where the mentor can play a supporting role in enabling the right choices to be made – what projects can showcase the ground-breaking innovations that will create the most business impact? So the mentor has an important role in guiding the right proposals to be submitted. Furthermore, the mentor acts as a kind of intermediary or liaison officer in bringing the feedback from the steering committee or Public Authorities to the project consortium and ensuring that this feedback is taken up and addressed."

"Indeed," Andy replies, "while we don't actually have a very active role in the actual reviews themselves, we are present during the post-review discussions with the reviewers. This is beneficial since we are able to clarify the reviewers' comments – where do they come from, what are they based on? In essence, we can provide the kind of insight that will help the consortium to address the issues in the right way."

**Reward**

Andy also cites the value of having a mentoring system, recalling a Call 2 project a few years ago that encountered the dropout problem in which a number of companies and countries in a consortium were unable to continue, leaving just a few smaller companies to pursue the work. A very daunting prospect, especially with the loss of specific expertise. Or so it seemed. Andy was asked at the time to contact the Belgian project leader and following a few conversations, the project made some adjustments. While it did not retain all the goals that had been set out at the beginning, this steering intervention nevertheless helped to reshape the ambitions and produce a set of very impactful results. "For me this was a very rewarding thing to do. I know that I made a contribution to the success of the project, not in a technical way but as a collaborator."

"That's right," says Asli, "as a mentor you can still feel like you are an integral part of a project even though you are not part of the technical development. You are engaged through guiding and supporting and so feel part of the success. That's the real reward you get as a mentor."

**Open line**

Zeynep is fully convinced of the value of mentors in ITEA projects. "When I see the successes of our projects, very often the golden touch of a mentor is evident. Whether that's in a technical, management or human way. The projects feed off the valuable input from mentors. So let me ask you, what would you say to anyone who intends to become a mentor? If I were a newbie, what advice would you give me?"

Asli: "The first important thing is to get a good understanding of the project, its goals, the participants and people involved. Get hold of the feedback and regularly check in on progress. Be open and accessible to the project leader. If you can do that, you can offer value."

Andy: "Run! But joking aside, one of the tasks that we have as mentors is to demonstrate, especially to newbie project leaders with little experience in ITEA, that we are a Community. We are there for each other. Show them that the strength of ITEA – our flexibility and collaboration – is there to help them. And interact. This is particularly vital during the initial phase of a project when changes tend to occur. Help them see beyond the problems to find opportunities to have successful innovation and impact. And, as Asli alluded to, it's important that project leaders are aware that it's an open line to you as a mentor."

**Third eye**

Asli: "The intensity of that contact will, of course, depend on the experience a project leader has and you have as a mentor. Where the project leader is experienced, the focus of the mentor is often on acquiring a helicopter view to keep a good eye on what's happening and where things are heading. Of course, with a new project leader your role will be more to guide and direct, and invest a bit more time."

"I agree," says Zeynep. "Having an engineering background myself, I am well aware of getting so wrapped up in the technical detail that there

is a danger of missing the mission – the reason why you began the project in the first place. So I am very much in favour of a third 'objective' eye in the whole process. So, even whether you are an experienced or inexperienced project leader, the value of this third eye cannot be underestimated. But if we look at the flipside of the coin, a new mentor also faces challenges, wouldn't you agree?"

Andy de Mets
*Barco*

Asli Tanriverdi
*Philips*

Andy: "Absolutely. But what certainly helped me when I became a mentor for the first time was that I had already been involved in ITEA for quite a while. I already had experience as both a project participant and leader. Being a relatively familiar face in the Community also helped, that's for sure. I faced challenges but when I think back on the projects I have been involved in as a mentor, we always managed to turn things around when problems arose. As I said earlier, there's a tremendous amount of satisfaction you derive from this. It underlines your value and demonstrates how worthwhile it is to take on such a role. In addition, you gain the benefits of acquiring knowledge from a range of domains that, as a mentor, may not be part of your daily work. This is a big plus."

Asli: "Well I do get satisfaction from the value we provide being recognised. I recently talked to a project leader about the comments received in a review and he said how useful it had been to actually discuss the comments in detail. That kind of feedback reaffirms your value as a mentor. Another thing that makes me feel good about my role is, as Andy suggested, the knowledge you pick up. All the amazing things being done throughout our Community. And what's really great is that you get insight into beyond State-of-the-Art. But if I had to say what the most rewarding thing is, it's the final review when the project presents its achievements. And you know that you have been part of that process."

**Signals and feedback**

"So," Zeynep asks, "you obviously have certain expectations of the project leaders when you engage in your role. What are these?"

Asli: "First and foremost, you expect your project leader to have and keep the project objectives – innovation and results – firmly in focus throughout the course of the project. To be the spider in the web, as it were."

"I think this might be an obvious one," adds Andy, "but I also expect them to be open to us. We can only do our job effectively if they are open to us about issues that are at play, for instance. And that's my experience – they are as open to us as mentors as they are to the project participants. But that shouldn't be so surprising actually since one of the main strengths of the ITEA Community is the openness that pervades." Asli confirms this. "That's right, we engage in mutual trust building. We are transparent towards each other." In fact, Zeynep suggests that the mentorship role fulfilled by Andy, Asli and others goes beyond just mentorship – that it also has a family-building effect.

As ITEA Chairwoman, Zeynep is also a beneficiary of the mentoring work of Andy and Asli, among others. "I remember Andy whispering in my ear about spotting a new project leader as a 'rising star'. I think that is also a very valuable contribution mentors can make. They bring awareness to us. They enhance the connections in our network." Andy: "It also works the other way around. By being a mentor and picking up signals from project leaders and participants, we are also able to bring feedback to ITEA that can help us to improve the programme."

**To be recommended**

As a parting shot, Zeynep asks both why they think someone would or should get involved in mentoring. Andy goes first. "Would I recommend it? Yes. For all the reasons we have already referred to. But I also think they should be aware that it can take up quite a bit of your time. Despite that, the appreciation of your efforts by the consortium and ITEA is very rewarding." Asli is again in full agreement here. "Of course, handling your time can be quite a challenge at times, especially when you are engaged in mentoring several projects at the same time, but when you realise the value you bring, then you also realise how worthwhile it is. It's a win-win situation. Professionally and personally." On this very positive note, Zeynep expresses her own appreciation for the valuable work and commitment of ITEA mentors in general and of Andy and Asli in particular, who offered even more of their precious time to share their views and perspectives here.

# IoT: where do we stand?

*By ITEA Vice-chairman Jean-François Lavignon*

**I encourage you to read the I2PANEMA State-of-the-Art (SotA) to discover the current status of many technologies used by IoT devices.**

IoT is a very important and active piece of technology that has the potential to positively impact business, economy and society. We see applications in different domains such as industry automation, improved healthcare, more efficient working environments and smart homes. IoT is a pervasive technology that has great potential if we can handle challenges such as easy integration of new devices, IoT safety and security, efficient software for resource-limited devices, maintenance and continuous upgrade, and cost-effective production and management.

To tackle these challenges and to develop a healthy IoT ecosystem, you need to promote some shared visions on how the IoT devices will be integrated and will interact with the IT infrastructures. Currently, there are two main types of IoT reference architectures: generic ones and industrial ones (**IIoT**). In the port sector, which is the focus of the ITEA project I2PANEMA, the industrial reference architectures are more relevant but in their SotA you will find the complete picture.

**This SotA covers many important topics such as:**

- IoT Reference architectures
- International Data Spaces
- IoT Cloud provider platforms
- IoT Communication
- IoT Interoperability
- IoT Data management
- IoT Operational workflow
- IoT Visualisation
- IoT Security & Privacy

**It contains among others:**

- A discussion about some of the proposed reference architectures.
- A comparison of IoT Application Layer Protocols.
- Information on Sematic Sensor Network Ontology.
- The status of ongoing IoT projects,
- A comparison of tools to handle IoT application workflow.
- Guidelines for designing a secure IoT solution.

By reading this very high-quality SotA you will learn a lot about all the technologies needed to develop IoT applications. You will understand the options for integrating the IoT devices in a global IT infrastructure. Furthermore, you will see the current solutions provided by big cloud companies (Amazon, Microsoft, IBM, Google, Oracle) and how the complete software stack can be organised. The document also provides some insights on how to integrate the data provided by the sensors in a common platform and on the current solutions to build visualisation tools. The crucial topic of IoT safety and security is presented with some guidelines for designing a secure IoT solution.

If you are interested in IoT, **you can also look at the new SotA produced by the ITEA COMPACT project**. It will help you to understand novel solutions on software generation for IoT devices with ultra-small memory footprints and ultra-low power consumption. You will learn how model-driven design approaches can help you to generate very efficient and optimised codes for devices with limited resources.

Have a good read of these SotAs and exploit them well to push new innovation involving the use of IoT devices.

# Community Talk with:

# Raúl Santos de la Cámara

## The rewards of being part of a strong Community

**Raúl Santos de la Cámara is R&D Project Manager for HI Iberia Ingeniería y Proyectos, a Madrid-based SME. Originally from Cádiz in southern Spain, Raúl's fascination for computers and engineering led him to move to Madrid to study for a university degree in Telecommunications Engineering at Universidad Politecnica de Madrid. He now calls Madrid home.**

**A world of difference**

"After a couple of years at university, where I started my PhD *(still pending, he adds!)*, I was tempted by the industry and started working at Telefónica R&D on avatars and other then-novel HMIs. It was there that I learned much about EU research, participating mainly in FP6 projects. But after six years in large industry, I switched to HI Iberia looking for a new, SME focused challenge where I have remained, having broadened the scope of technologies to embedded systems, Artificial Intelligence and health applications. Telefónica was not so much a large industry, more of a whole country. The culture of the company is something that you always have to be aware of because it can really have an influence on what you do and how you work. It can start to grind you down after a while. So eventually I wanted to go to a smaller 'world' and discovered HI Iberia, an SME whose research department had only been going for a few years. The opportunity to focus on my work I found very refreshing – instead of being a cog in the big machine, I was actually able to have an influence on the work and direction of my new company."

**Making acquaintance**

"However, my first notion of ITEA came in my Telefónica years, where I participated in a few activities of an ITEA 2 project, but I was more in the technical aspects and never got to know the Community. Our real involvement started in the PO Days in September 2015. We were trying to

broaden our R&D horizons at HI Iberia and after seeing the results presented in the March 2015 ITEA/Artemis Co-Summit in Berlin, we realised that there were many similarities between what we were doing and what was happening in the ITEA Community. So when I returned to Madrid I began lobbying within the company to find out more about the way ITEA works and we decided to attend the PO Days and learn a bit more. We cautiously became involved in a proposal and, in typical fashion for us, eventually ended up coordinating it until the end of the project last year. With the extra experience in subsequent years we got involved in many more ideas, eventually growing a considerable portfolio of projects. If you attend ITEA events there is a good chance you will see me around because I'm usually the one who attends the events."

**Digital waves instead of shaking hands**

"Of course, the past year has been a very different experience for everyone. I must admit that my experience of online events before March this year had not been very positive but the way that ITEA has tackled the situation and made use of the technology we have at our disposal has changed my mind. I feel the contacts, despite the lack of a physical presence, have been very successful. That comes partly from the fact that it's created a level playing field – we all have to do it this way. In my project meetings online I have been pleasantly surprised. There has been a tremendous amount of efficiency and the meetings have been very productive. Of course, I miss the shared coffee, the informal conversations, moments that can often produce some great ideas. Personal contact is irreplaceable and I can't wait to start mingling again. Mind you, I don't miss the travel. That has been a big plus for me. All in all, I think we have not suffered as an ITEA Community. Rather, we have risen above the challenges and shown what we are capable of."

**Perfect for SMEs**

"From an SME perspective, I think programmes like ITEA are essential for research ideas to transition from a very preliminary drawing board to near commercial products. I particularly like the general size of consortia in ITEA: not so small that they feel limited but also not that big that they become a patchwork of small groups of people working on their own. The typical 10-12 partners in an ITEA consortium need to work together, which I believe is essential in the production of results that build on each other's strengths. But with the strong Community behind it even that 10-12 partner group feels way stronger: you rely on the community for things such as dissemination, cross-application of results and also continuation of ideas in future projects. In terms of impact on industry and society, I feel that ITEA projects contribute to our ability as an SME to transfer results into products and services. We see, for example, in projects like SoMeDi how the Smart City Madrid initiative has been able to incorporate what we have been doing to benefit the citizens."

**The growing world of ITEA**

The introduction of new countries in ITEA has very quickly transitioned from being an exotic add-on to a truly essential part of the Community. "In the beginning," Raúl says, "it felt unusual to have partners from South Korea or Canada in your prototypical international consortium, but over the years this collaboration has strengthened and now it is completely normal to have them. This, of course, has broadened our horizons with new ideas about markets and user needs very different to what we're used to in other programmes. I think that ITEA has been very proactive in promoting these changes and that the events organised (from the PO days to the Innovation Days) really help in building a cohesive community."

**Part of the bigger picture**

"HI Iberia has benefited greatly from participating in ITEA. Several key technologies for us, from Natural Language Understanding to health monitoring applications and Smart City systems, have drastically improved from what we have done in the ITEA projects SoMeDi, ESTABLISH and SCRATCh. We have built an excellent network of like-minded companies in previously unexplored markets for us, from Finland to Romania. Personally, I think many of my favourite projects in the past years have been part of ITEA and for sure my favourite events are ITEA's by quite a distance, from both the professional and personal perspectives. It is always a great feeling to go to the event and immediately start seeing familiar faces and truly feeling part of the bigger picture there. It comes down to the people, of course, and happiness comes as much from the social side of things as the success of the work. I find the mix of people really enriching."

# ITEA project results enhancing people's lives

## Digital human simulation helps manufacturers improve productivity and safety

Even in today's age of automation, the assembly of vehicles and other manufactured products still requires significant manual work. Much about the production planning process can be improved, as workers' tasks are typically not visualised in 3D but described in text. Additionally, validation for these tasks occurs on hardware prototypes. Simulation can make this experience more efficient but generating a process simulation is time-consuming and requires tools for experts.

As the production of cars, trucks, buses, etc. become increasingly complex and competitive, the need to maximise efficiency is paramount. At the same time manufacturing companies are looking for new ways to design safe and ergonomic workplaces.

Reliance on physical testing and optimisation not only hinders productivity and inflates costs, but often leaves manufacturers lacking confidence in their operational efficiency.

The ITEA project MOSIM created an open-sourcef framework for digital human simulations that can simulate different manual assembly actions and scenarios comprehensively. This dynamic simulation of humans in production – based on predefined motion units with a standardised interface - has the ability to simulate assembly worker tasks in minutes rather than weeks. From identifying ergonomic opportunities during the assembly process to improving worker productivity, safety and training, MOSIM has enormous potential to impact numerous stages of production.

Companies can improve production planning, increase worker productivity and safety, and reduce risks and costs. The main benefit for the workers is that digital human modelling helps to identify work-related risks in scenarios that are difficult to assess with traditional approaches. The approach helps by eliminating working conditions that negatively impact safety and worker well-being.

**ITEA project MOSIM**

**End user happiness** MOSIM

# Calendar

*1 March 2021*
**OPENING EUREKA CLUSTERS AI CALL 2021**
https://eureka-clusters-ai.eu/

*16 March 2021*
**ITEA SMART CITY DAY 2021**
Online event
https://itea3.org/itea-smart-city-day-2021.html

*17-18 March 2021*
**CYBER SECURITY & CLOUD EXPO VIRTUAL 2021**
Online event
https://www.cybersecuritycloudexpo.com/virtual/

*12-16 April 2021*
**VIRTUAL ICST 2021**
Online event
https://icst2021.icmc.usp.br/

*12-16 April 2021*
**HANNOVER MESSE DIGITAL EDITION**
Online event
https://www.hannovermesse.de/en

*13-20 April 2021*
**INTERNATIONAL DIGITAL ENABLEMENT WEEK 2021**
Online event
https://esi.nl/events/2021/idew-2021

*19–21 April 2021*
**WORLD SUMMIT AI 2021 ONLINE GLOBAL MEET-UP**
Online event
https://americas.worldsummit.ai/

*11–12 May 2021*
**INTELLIGENT HEALTH UK 2021**
Online event
https://london.intelligenthealth.ai/

*18-20 May 2021*
**THE EUREKA GLOBAL INNOVATION SUMMIT**
Hybrid event, online and Graz, Austria
https://www.eurekanetwork.org/about-us/chairmanship

*1-2 June 2021*
**14TH GRAZ SYMPOSIUM VIRTUAL VEHICLE (GSVF)**
Graz, Austria
https://www.gsvf.at/

*22-23 June 2021*
**FORUM TERATEC 2021**
Palaiseau, France
http://www.teratec.eu/gb/forum/

*25-27 June 2021*
**DISTRIBUTED AI FOR RESOURCE-CONSTRAINED PLATFORMS (DARE) WORKSHOP**
Crete, Greece
http://www.aiai2021.eu/dare/

*28 June 2021*
**SUBMISSION DEADLINE EUREKA CLUSTERS AI CALL 2021**
https://eureka-clusters-ai.eu/

## ITEA Success story

# 3DPathology

### A digital pathology solution for more effective and efficient treatments

**We all know pathology, thinking of the healthcare professional examining a tissue section under a microscope, looking for evidence of cancerous cells. Many years ago, this process was digitalised by capturing the glass slides with a scanning device to provide a high-resolution digital image that can be viewed on a computer screen or mobile device, facilitating the acquisition, management, sharing and interpretation of pathology information. This way pathologists can engage, evaluate, and collaborate rapidly and remotely, and thereby improve efficiency and productivity, as views, analysis and workflows are improved, while errors and turnaround times are reduced.**

In 2015, the digital pathology market was set to multiply by more than five times within five years. This growth, coupled with declining numbers of qualified pathologists, represented a tremendous challenge for pathology departments of clinical and pharmaceutical organisations and increased the urgency for higher-quality diagnostic information to enable more effective and efficient treatments.

Digital images were becoming increasingly accurate in rendering 3D shapes of objects, as seen in some medical imaging techniques. Organ structures and contents were already revealed in 3D distribution, but this was not yet the case for tissues, which require microscopic spatial resolution to develop 3D analysis. The main bottleneck to achieving efficient 3D imaging of tissues was to provide a quantitative and global analysis at microscopic resolution.

The ITEA project 3DPathology, headed by Barco and Philips along with knowledge partners and university hospitals from six countries, set out

to create a 3D digital pathology solution, based on a combination of multiple existing pathology modalities, for same-day diagnosis and much more personalised treatment of cancer.

**Unique 3D multiple imaging**

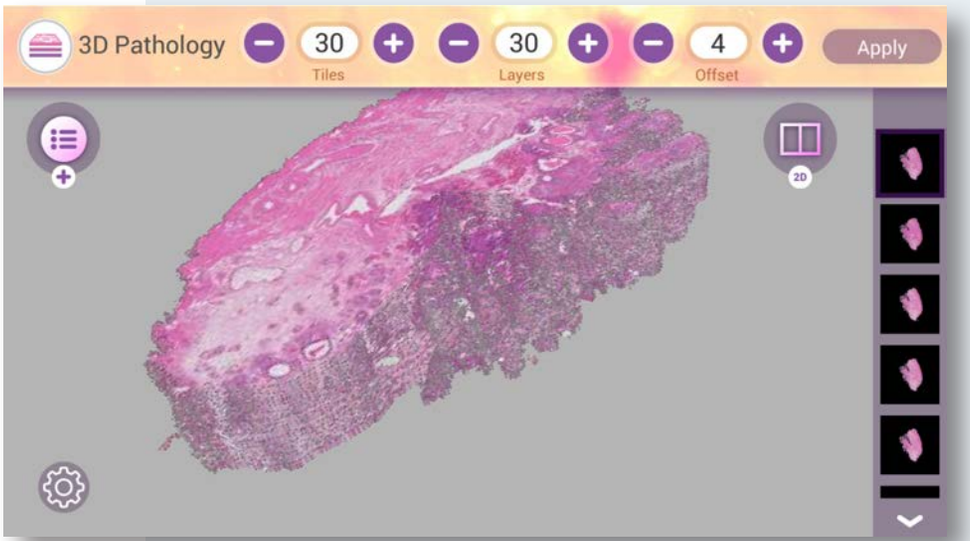
In order to overcome the anticipated challenges and to achieve this multi-modal 3D quantitative pathology analysis platform, the project had to come to terms with solving five major technological challenges:

1. The first was the 3D acquisition of data using multiple imaging modalities in a fast and automated way.
2. Secondly, the acquired data of some modalities had to be reconstructed and aligned from actual 2D images of pathologic slices into 3D images, combined with different modalities (size, resolution, storage format, spectral bandwidth), including the incorporation of techniques like alternating co-registration, light- or molecule channel-based slide alignment and reconstruction.
3. Then the aligned 3D data from different modalities had to be analysed to improve the quality of diagnosis. This was achieved by extracting and combining the relevant data, using techniques such as quantification, segmentation, machine learning and data mining.
4. Furthermore, the project came up with the development of new 3D visualisation and interaction technologies (equipment and algorithms) optimised for multi-modal 3D pathology.
5. And finally, an IT backbone was created to deal with data of tremendous size, produced by the individual imaging modalities (data sets in the range of Tera- to Petabytes).

A 3D multi-modal pathology demonstrator, the first of its kind in the world, enables unique features such as access to the microscopic organisation of tissue sub-structures in 3D, providing complete chemical information and access to unexplored dimensions of histology. By scaling up 3D microscopic images of bio samples, a better understanding is gained of the relationship between the morphological structures and the molecular, biochemical and metabolic information of tissue while the extraction of quantitative data enhances the molecular/chemical parameters ratio with respect to the structured components of a tissue. Finally, the 3D visualisation of, and interaction with, the relevant data from multiple imaging modalities optimises the presentation of the relevant views and parameters and allows the huge amounts of data (e.g. storage, transfer, processing, rendering) to be handled.

**Impressive high-impact results**

The 3DPathology project has had a significant impact on JPEG XS standardisation, which focuses on near loss-free, low-latency coding of high-resolution data. Intensive collaboration between imec, ETRO and VUB resulted in the launch of a new extension of JPEG 2000, namely part 15 High-throughput JPEG 2000 that particularly reduces the computational complexity and memory footprint of the EBCOT component of the JPEG 2000 standard, which makes it very interesting for the pathology use case.




In the field of dissemination, the project partners also achieved incredible results. Virchows Archiv European Journal of Pathology has awarded the unique 'Virchows Archiv prize for the best paper of the year 2019' to the paper 'Deep learning for automatic Gleason pattern classification for grade group determination of prostate biopsies' co-written by one of the project associates Dr. Marit Lucas of the Academic Medical Center of the University of Amsterdam.

In addition, by exposing pathologists to more efficient workflows and faster learning, their knowledge and experience increase, enabling them to be more efficient. Increasing the accuracy in pathological examination practice and interpretation has a significant impact on improving quality of life due to personalised treatment, limiting re-occurrence as a result of better treatment outcomes and a reduction in the cost of healthcare from fewer readmissions. Thanks to the insights and results, the Academic Medical Center of the University of Amsterdam reported a 10% reduction of re-occurrences/ readmissions, considering the cost for a typical re-occurrence/readmission for bladder cancer diagnostics is 2 to 3k euros every 6 months. Added benefits of workflow efficiency are a lower burden on pathology labs and mitigation of the lack of qualified pathologists in the future.

In respect to exploitation, Philips has been given FDA clearance in the US to market its IntelliSite Pathology Solution for primary diagnostic use there. Philips expects the results of the project to help bring new pathology scanners to market and an innovative multi-layer bright field imaging solution to increase its market share of the bright field pathology. Increased usability range and robustness will address the needs for both small labs and large medical centres.

Prodrive Technologies will support Philips to increase market share and secure Philips' position in the Pathology market. As a result of the 3DPathology project, Prodrive Technologies finalised the scan engine design and the production tools, which are now available. This emerging technology project will provide better patient care. Furthermore, it will result in significantly higher revenue and contribute to a healthy and stable business relationship. In parallel, the 3D functionality will be improved and released. After finalising the 3D functionality, Prodrive Technologies will resell the 3D camera and parts of the scan engine technology in other application areas.

Slimmer AI, formerly Target Holding, gained a lot of experience in image handling and analysis from 3D molecular image alignment. This has been applied in different customer cases and proofs of concept (PoC), such as cooperations in optical (infrared) product inspection, change detection in sewer levels for water authorities (multi-modal: satellite, aerial photograph, on-spot), in aerial photographs for the land and land-use registration authority, and in technical drawings. It also was a starting point for the successful participation in the ITEA Medolution project.

Currently, the AI-based image analysis line is combined with Slimmer AI's Natural Language Processing developments to form the PoC version of an innovative data-room tool, in co-creation with a launching customer. This tool might become Slimmer AI's next product, leading to a 20 FTE-spin-out within 5 years. Slimmer AI developed the prototype of the 3D Digital Pathology IT backbone infrastructure and provided it to the consortium for the secure exchange of (anonymised) medical data. The blueprint is still in use for high-security data exchange with clients.

Barco has developed optimised display systems that address a variety of pathology lab needs for review and positioning of samples but also for diagnostic purposes. Several hundred of those displays have been sold already worldwide, and in the next few years Barco is expecting a large increase in sales of display systems for Digital Pathology. In addition, Barco prepared a White Paper for the Medical Imaging Working Group of ICC describing the importance of colour

> "By exposing pathologists to more efficient workflows and faster learning, their knowledge and experience increase, enabling them to be more efficient"

calibration for medical imaging and perceptual colour calibration. The White Paper is a first step towards the standardisation of medical colour imaging.

PS-Tech has developed masking technology for extractions within volumetric datasets. This technology, which has now been commercialised in Vesalius3D, is used for preoperative planning in various cardiovascular procedures. Applications for lung and tumour extractions are under development. The technology developed for zooming within large datasets is still under further development and will be included in a Vesalius3d release.

Imec, formerly iMinds, contributed to the standardisation of formal evaluation methodologies to assess the performance of visually loss-free compression systems for still images and video sequences and for high dynamic range content as part of JPEG's AIC activity (ISO/IEC 29170-1 and ISO/IEC 29170-2). These methodologies can be used as a basis to design a clinical validation test for the compressed 3D pathology data, in cooperation with Barco.

For the Korean partner Xavis, the ITEA 3DPathology project will result in bringing to market new 3D X-ray Microscopy Instrumentation capable of high-resolution, non-destructive imaging and analysis for the quantification of internal structural parameters at submicron to nanometre scale. Although the global and domestic investments have decreased because of the COVID-19 pandemic, XAVIS exerts all possible efforts at continual marketing to a number of medical facilities and national research institutes by sample test reporting and online meetings.

In addition to these strong results, 3DPathology was the first project in ITEA to involve Taiwan with the active participation of Academia Sinica and Bio Ma-tek, who strengthened this project as a solution provider for nano-biomaterial characterisation and analysis.

The novel disease diagnosis mechanism of cell units is expected to be investigated by the nano-biomaterial X-ray microscope system, which is not available in the conventional X-ray system. On the basis of the novel X-ray microscope system, nano-scale medical devices will be adjustable not only for the new disease diagnosis methods but also for the new cancer cell detection methods. As a result, the nano-biomaterial X-ray microscope system is expected to be an innovative development for medical and diagnostic services that contribute to improving the healthcare system on a global scale.

## Impact highlights

- A 3D multi-modal pathology demonstrator, the first of its kind in the world, enables unique features such as access to the microscopic organisation of tissue sub-structures in 3D, providing complete chemical information and access to unexplored dimensions of histology.
- The Academic Medical Center of the University of Amsterdam reported a 10% reduction of re-occurrences/ readmissions, considering the cost for a typical re-occurrence/readmission for bladder cancer diagnostics is 2 to 3k euros every 6 months.
- Barco has already sold several hundred optimised display systems that address a variety of pathology lab needs worldwide, and in the next few years Barco is expecting a large increase in sales of display systems for Digital Pathology.
- Slimmer AI combines the AI-based image analysis line with its Natural Language Processing developments to form the PoC version of an innovative data-room tool, in co-creation with a launching customer. This tool might become Slimmer AI's next product, leading to a 20 FTE-spin-out within 5 years.
- Philips has been given FDA clearance in the US to market its IntelliSite Pathology Solution for primary diagnostic use there.

**More information**
https://itea3.org/project/3dpathology.html

SME IN THE SPOTLIGHT

# Fast, efficient, secure

## The intelligent way to transfer data

**Clevernet is a Barcelona-based company with an office in Silicon Valley, California, whose explicit mission is to make the internet better by providing a faster, more reliable and secure way to transfer data. How did this mission, and indeed the company, come about? It's a fascinating story. Clevernet's Oscar Chabrera explains.**

**Get what you pay for**

"It all began in 2014 when our co-founder, Mario Nemirovsky, was working in Barcelona and was trying to transfer a large file to California. He noticed the file was taking an unusually long time to send. Even when he increased his bandwidth to 600MB per second, the file was still only being transferred at 1/10th the bandwidth his company was paying for! So, Mario started to analyse what was happening together with co-founder René Serral. They found that the TCP protocol was the bottleneck and would allow a maximum transfer speed of between 40 to 60MB per second. It really seemed like paying for 600MB was a waste! Right there and then, the company was started as Mario vowed to solve this issue and create a platform to make the internet better."

Basically, the Clevernet software solution improves the performance and security of public and private WAN connections by leveraging Simultaneous Multi-Path connections. Clevernet revolutionises how organisations use the WAN, driving measurable outcomes and improving the end-user experience. "In essence," Oscar says, "it's about helping our customers get the most out of their paid network connections and, at the same time, creating a more efficient and secure environment for data transfer."

**Many roads lead to Rome**

Oscar uses an analogy to illustrate the unique Clevernet approach. "We are the only company in the world that understands the whole network topology. We are like an enhancement of Google Maps for the network – using time and distance as our main criteria, our AI technology finds a range of options to enable traffic to get from point A to point B. The software analyses all the potential paths to go from one place to another and then selects the best options. Before sending a transfer, Clevernet splits the flow of information along the different paths and sends them out at the same time. Think of this as a tour group that arrives at an airport and instead of being transported by bus, each person is sent on their own motorcycle along different routes, thus arriving at the hotel more efficiently. It makes for a much faster and more secure transfer of data."

Clevernet leverages all of a customer's paid internet connections/ISPs to significantly reduce downtime, protect data in motion, and more effectively use all of its paid available bandwidth. The customer can add up the total

bandwidth and use all of it — when a file is transferred, flows are sent simultaneously via the paths from all the connections/ISPs, significantly increasing the file transfer speed. This "Simultaneous Multi-Path" steers traffic through the optimal tunnels, ensuring that the best available connections are being utilised all the time. "What's more," Oscar adds, "this means that if you have two or more connections /ISPs, and one of them goes down, your end-users' connections are automatically steered to an available one so end users never experience downtime."

**Adapting to a new world**

And in the current COVID-19 climate, such solutions have become more essential than ever. "We see that people have to work from home and fortunately our solution allows them to be very productive while putting data in motion safely first. Clevernet has two different software solutions, the first one, *Clevernet Boost*, is implemented site-to-site, site-to-cloud or cloud-to-cloud. An example of the former is a clinic with doctors located across multiple geographical sites that needs to ensure online patient profiles are backed-up daily to various private data centres. Normally, this process can take several hours, but installing Clevernet saves time, where time is essential. The software can help save patients in critical conditions while ensuring confidential patient data-in-motion is secure. Meanwhile, our site-to-cloud solution enables companies to maintain part of their service infrastructure in the cloud, thereby making businesses more dynamic."

When the Clevernet team saw what was happening last February in Italy, the company decided to accelerate its second solution, *Clevernet Remote*, based on the same patented WAN optimisation technology as Clevernet Boost. "We realised that employees working from home tend to have less bandwidth capability and corporate VPN connections are often ineffective since they significantly slow down the internet. *Clevernet Remote* is several times faster, more secure and reliable than any traditional corporate VPN. Additionally, COVID-19 changed our approach to R&D since we realised we needed to be more versatile and adaptable to changing circumstances. The whole world has had to adapt."

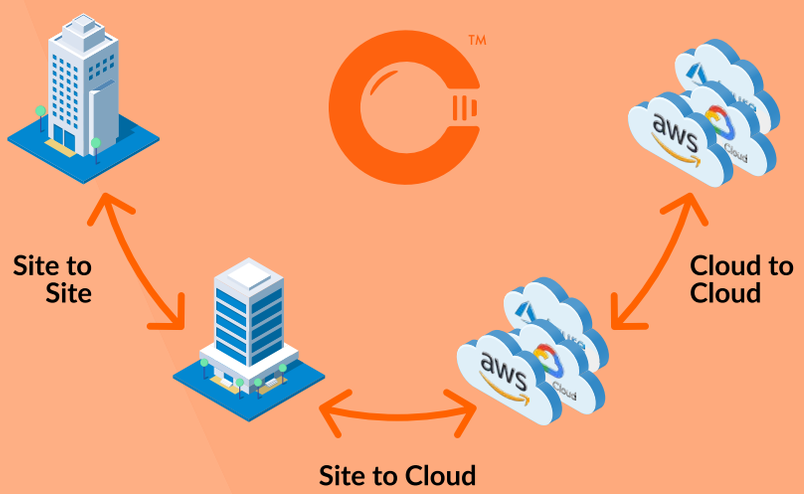
**Circular Economy and Sustainability**

ICT and the Internet sector are one of the largest global carbon emitter industries. By leveraging the use of existing internet lines to their maximum bandwidth capacity, Clevernet minimises the need to install new infrastructure.

**ITEA3-CDTI POLDER paying off**

The past year has been a time for innovation and research, in which publicly funded research programmes were central to Clevernet's development as a company. "Central in two ways," Oscar suggests. "First, we received funding from the Public Authorities. In Spain this is based on the results produced. Second, and more importantly, participating in European projects gave us an opportunity to connect with our future customers who validate that our research is heading in the right direction." Clevernet participates in various Spanish and European projects as well as the ITEA3 POLDER project that has yet another year and a half to run. The POLDER project aims to design, develop and deploy a software tool-suite to support government, city councils and related organisations in the elicitation, design, application and validation of policymaking. With recent advances in technology, from wireless sensor networks to big data processing and analysis, urban policymaking can benefit from these emerging technologies with new supporting tools and an optimised process.

"We were invited to contribute our expertise in optimal network deployment," Oscar explains, "and this involvement is certainly paying off. We get the opportunity to interact with our partners and feed off of each other. Everyone has something different to offer and the collaboration has helped us accelerate our development of a network traffic analyser. This analyser looks at network characterisation, app identification, user profiling and network monitoring capabilities in both Service Providers and SME's. Currently, hotel chains in Lloret de Mar (Spain) are helping us validate our analyser results, which will help hotels to better understand their own customers. Not only will society benefit from our technology and products, but so too will the hospitality, healthcare, hybrid cloud and countless other industries."




**More information**

www.clevernet.io

# AI Call 2020 ITEA projects

## Diverse and promising innovations improving AI

**Over the past few years, Artificial Intelligence (AI) technologies have become increasingly important in ITEA projects in order to solve challenges defined by (business) needs. Several successes have already been achieved on creating better care, traffic flow and safety and, in our last two Calls, AI was even present in a majority of project proposals. In addition, the Eureka Clusters CELTIC-NEXT, EUROGIA, ITEA and PENTA-EURIPIDES² perceived a common cross-domain interest in developing, adapting and utilising emerging AI within and across their focus areas. These Clusters, together with a number of Eureka Public Authorities, launched a Call for innovative projects in the AI domain. The aim of this Call was to boost the productivity and competitiveness of European industries through the adoption and use of AI systems and services.**

The Eureka Clusters AI Call 2020 attracted a lot of interest: by the deadline of 15 June 2020, over 40 project proposals had been received, of which 35 indicated ITEA as the main Cluster and another had ITEA as a secondary Cluster. As 8 proposals were not eligible, 27+1[1] proposals from 17 different countries were evaluated with a total of 1450 Person Years, resulting in 12+1 labelled AI projects under ITEA.

These projects confirm the pervasive nature of AI methods, which continue to be applied in many new sectors. Within this Call, we see projects that will work on bringing AI methods to fields such as smart electricity grids, photovoltaic power plant management, robotics, agriculture, semi-conductor production and transportation systems. In each of these domains, there is the potential to extract quality data and to build more capable systems with new AI features. We also see more generic projects aimed at developing the next generation of AI systems. The AI field lacks human experts, so it is important to develop a platform that will ease the use of AI methods and contribute to its diffusion. Another important challenge is to efficiently execute AI applications, which are often computing-intensive. New accelerators have been designed to speed up execution and these must be properly used. The hybridisation of AI methods with other methods, such as Digital Twins, is another promising direction that will be explored by one project. Last but not least, a project will work on the interaction of software engineering and AI. On one hand, the development of AI software calls for the adaptation of software engineering methods and, on the other hand, AI can contribute to more efficient software engineering methods.

Globally, this Call has generated a set of projects that are diverse and very promising for both cutting-edge innovations in some sectors and the improvement of AI methods.

**ITEA AI Call projects overview**

Due to lack of funding in the main countries, projects ESSENCE-AD and SENSAI have recently been cancelled. The remaining labelled AI Call 2020 ITEA projects can be organised across the different challenges as follows:

| Challenge | Projects |
|---|---|
| **Smart engineering** | AMPlify, ASIMOV, EFICAS, IML4E |
| **Safety and security** | AIS²afe, IML4E, Spectralligence |
| **Smart health** | RoboNimbus, SHERPA, Spectralligence |
| **Smart industry** | AISSI, AMPlify |
| **Smart mobility** | AIS²afe, SHERPA |
| **Smart cities** | AIDEMS, AI4PV (ITEA as secondary Cluster) |

*Table 1: Challenge landscape of the 2020 AI Call. Some projects have multiple challenges.*

*[1]27 projects with ITEA as the main Cluster and 1 project with ITEA as the secondary Cluster*

We invite you to discover the innovative solutions proposed by the projects that were submitted to ITEA:

### AIDEMS - 20201

**AI-Enabled Demand Side Management for Energy Sustainability**

*Project leader: RISE - Research institutes of Sweden, Sweden*

Renewable electricity networks are strained by the increased demand for high-power charging and the volatility of renewable sources. Demand Side Management (DSM) is a framework that addresses this challenge through information sharing, integrated planning and smarter decision-making across the network. However, DSM implementation suffers from data integration, security and standardisation problems. AIDEMIS' objective is to power DSM platforms with new data models and machine learning algorithms that balance finding optimal solutions (that account for greater parts of the network) with search tractability.

Secondary Cluster: EUROGIA

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

### AIS²afe - 20214

**AI for Safety and Security Assurance of Automated Vehicles**

*Project leader: RISE - Research Institutes of Sweden, Sweden*

Companies are currently investing more in IT cyber security and cyber security management than in cyber security software for vehicles. However, regulatory initiatives are driving Europe to become a first mover in these domains. There is a great need to upskill safety engineers, produce (cyber) security talent and improve the knowledge and cooperation between firms as well as safety and security engineers. AIS2afe addresses this through innovative measures for integrating the safety and security disciplines by developing AI technology and methodologies and tools targeting AI technology.

Secondary Cluster: CELTIC-NEXT

https://itea3.org/project/ais2afe.html

### AISSI - 20212

**Autonomous Integrated Scheduling for Semiconductor Industry**

*Project leader: Robert Bosch GmbH, Germany*

Digitalisation is driving increased demand for microchips and shortening the product lifecycle and the high variety of customer-specific devices is leading to a growing need for high-mix low-volume (HMLV) semiconductor production. The AISSI project - Autonomous Integrated Scheduling for Semiconductor Industry - proposes sourcing, developing, integrating and applying novel AI-based approaches. By applying reinforcement learning and knowledge graphs in a continual improvement framework for autonomous, integrated production and maintenance scheduling, competition can be outperformed in terms of efficiency, cost effectiveness and quality.

Secondary Cluster: PENTA-EURIPIDES

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

### AMPlify - 20220

**AI Modelling Platform**

*Project leader: Software AG, Germany*

For many years, industrial system builders have been collecting product and process data in different formats and tools, but the full potential benefits are often neither analysed nor correlated and utilised. There is a widespread imbalance in the supply and demand of qualified AI experts in industry, which challenges today's technological development. The AMPlify project will create an AI Knowledge Portal to provide guidance on the application of available AI solutions and platforms and support in finding available experts to make AI tools and algorithms applicable and more end-user friendly.

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

### ASIMOV - 20216

**AI training using Simulated Instruments for Machine Optimization and Verification**

*Project leader: Thermo Fisher Scientific, the Netherlands*

With the rise of high-tech cyber-physical systems (CPS) in all areas of industry and society, the user-friendliness and up-times of these systems are becoming increasingly important. Keeping the control parameters of CPS in their correct operating window is a particularly large challenge, such as in electron microscopy, unmanned utility vehicles and pulp & paper process control. ASIMOV will increase the autonomy and self-optimisation of CPS by creating physically realistic Digital Twins of these systems and training innovative AI algorithms for CPS control using these Digital Twins.

Secondary Cluster: PENTA-EURIPIDES

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

### EFICAS - 20229

**Energy Efficient Heterogeneous AI-Platform for Smart Mobile and Embedded Systems**

*Project leader: Siemens AG, Germany*

Essentially all mobile applications are severely power limited, which blocks huge business cases. Increasing functional complexity in mobile and autonomous applications impacts the computational load by increasing the power demands of embedded platforms. EFICAS introduces a generic and scalable software platform supporting energy-efficient deployment of AI algorithms on the multicore heterogeneous computation technologies. It supports all technology solutions, including localised and distributed computation settings as well as cloud offloading. It addresses resource allocation at runtime and hybrid coherent operation with optimised task allocation at design time.

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

### IML4E - 20219

**Industrial Machine Learning for Enterprises**

*Project leader: Fraunhofer FOKUS, Germany*

Smart software solutions including AI and Machine Learning (ML) have shown a great potential to automate processes that were not accessible to automation. Since AI and ML differ from classical software development regarding fundamental activities and processes, it is unclear how AI and ML can be integrated into existing industrial-grade software development processes. Addressing the industrialisation of ML development and operations, the IML4E project will develop the IML4E framework, covering methods, techniques and tools dedicated to delivering and maintaining high-quality smart software in efficient, scalable and manageable processes.

https://itea3.org/project/iml4e.html

### RoboNimbus - 20231

**Smart Platform for Robot Management and Coordination with AI powered Cloud**

*Project leader: BYS GRUP Bilişim Sistemleri Danişmanlik Ticaret ve Sanayi, Turkey*

Robots are transforming automation processes across all industries. As robot technologies improve, robots become increasingly capable and cheaper, incentivising their use in ever more sophisticated processes. To capitalise on this trend, the RoboNimbus project envisions an AI-powered, cloud-based, all-in-one robot management platform that will allow the user to connect, monitor, control and maintain robot fleets with ease. RoboNimbus will leverage state-of-the-art technologies including IoT, Cloud Computing, Virtual Reality, Augmented Reality and Predictive Maintenance to create a truly futuristic robot management platform.

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

### SHERPA - 20206

**Smart Human Centered Automation for Professional Applications**

*Project leader: Philips Medical Systems Nederland, the Netherlands*

In various professional and safety critical applications, collaboration between the user and the machine is crucial for the correct and safe execution of tasks, such as with medical imaging equipment and vehicles. The user is part of the closed loop of the system, but information overload and complexity often lead to fatigue, stress or confusion, resulting in errors, safety issues or accidents. The SHERPA project will develop AI-based solutions to assist and automate system operation and make complex Human-Machine Interaction in medical and automotive applications more intuitive.

Secondary Cluster: PENTA-EURIPIDES

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

### Spectralligence - 20209

**Spectral Analysis in life sciences and materials sciences through Artificial Intelligence**

*Project leader: Philips, the Netherlands*

Molecular and Atomic Spectroscopy is a well-established set of technologies that use the electromagnetic spectrum to generate unique fingerprints of molecular structures, with a broad set of applications in chemistry, medicine and environmental and safety services. A significant reduction in dependence on human experts is necessary to bring novel technologies to fruition for ever expanding opportunities. The Spectralligence project aims to demonstrate that cross-domain-validated Neural Networks for spectral analysis (leveraging innovations in micro-electronics and component miniaturisation) can significantly accelerate market growth and technology adoption.

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

In addition, there was also one project that chose ITEA as a secondary Cluster:

### AI4PV - 20233

**Artificial Intelligence for Operation and Maintenance of PV Plants**

*Project leader: EDP N.E.W. R&D – Centre for New Energy Technologies, Portugal*

The Paris Agreement has defined the targets to limit global warming to 1.5° with a massive contribution by renewable energy. Industry has been working to improve the performance of photovoltaic (PV) systems, but unsolved challenges remain concerning reliability and robustness, hindering lean integration in the electrical system. In this context, the main goals of the AI4PV project are to reduce LCOE and increase the operational performance of PV plants through the hybrid use of physical models, AI and Digital Twins.

Main Cluster: EUROGIA

https://itea3.org/project/ai4pv.html

**Join the next Eureka Clusters AI Call 2021**

After the successful Joint AI Call 2020, the Eureka Clusters CELTIC-NEXT, EUROGIA, ITEA, PENTA-EURIPIDES and SMART have launched a new AI Call and fourteen countries have allocated budget to support your ground-breaking Artificial Intelligence innovations.

So do you have an innovative AI project idea? Submit your project proposal at latest by 28 June 2021! For more information visit https://eureka-clusters-ai.eu/.

# ITEA Cyber Security Day 2021

## Understanding and solving cyber security challenges together

**Building further on the Cyber Security topic that was addressed in the Cyber Security customer workshop in June 2020, ITEA organised the ITEA Cyber Security Day on 15 January 2021. This webinar brought together organisations facing cyber security challenges and relevant ITEA project partners to share challenges, best practices and innovative ideas to improve cyber security and overcome challenges in the industry.**

**Sharing challenges and ideas and enhancing collaboration**

First of all, the event was a perfect opportunity to look at how collaboration can be further enhanced by sharing existing challenges and best practices in cyber security. Furthermore, the ITEA Cyber Security Day served the objectives of learning about cyber security-related ITEA results of our running and (nearly) finished R&D projects and discovering the latest trends in the domain.

With nearly 100 registrations coming from 16 countries, the online event showed the relevance of the cyber security topic. After a welcome by ITEA Vice-chairman Jean-François Lavignon, the programme was structured in three sessions:

- **Session I - Exchange on best practices and challenges**
  Cyber security customers addressed the cyber security challenges they experience, shared their best practices and identified gaps that need to be filled.

- **Session II – Showcase of projects' results**
  Project leaders of running and (nearly) finished ITEA projects presented their projects and results to inform cyber security customers about the innovative solutions that are about to become available.

- **Session III - Presentation of project proposal and feedback from customers**
  Project leaders that are preparing an ITEA Full Project Proposal for ITEA 3 Call 7 presented their ideas and approach to inform cyber security customers about the latest innovations that could be interesting when it comes to solving their existing challenges. Customers also had the opportunity to provide feedback on the project proposals or even join a project consortium.

ITEA Chairwoman Zeynep Sarılar concluded the day and informed the participants about the purpose and benefits of the Cyber Security Advisory Board.

**Joining forces to tackle cyber security threats**
Throughout the day, several panellists addressed the transnational nature of cyber security and emphasised the importance of bringing together key actors to join forces to tackle the cyber security threats faced. Jean-François Lavignon, ITEA Vice-chairman and moderator of the event, stated: *"With the digital transition, critical systems are more and more exposed to cyber security threats. Only a collaborative approach can tackle this challenge and provide resilient systems for industry, economy and society. The ITEA Community has the potential to develop innovative solutions for these cyber security issues."*

The same message was emphasised in the recent interview 'A vaccine for cyber security' in which Atos' CTO Sophie Proust stated, *"We have to take the threats seriously and fight the few with the force of the many."*

To progress further, ITEA has established the Cyber Security Advisory Board, where customers can easily meet their peers in an open discussion and directly exchange with the ITEA R&D&I Community in a trusted environment. This Advisory Board and its importance will continue to grow, being part of ITEA's focus on customer engagement and open collaboration.

We thank all participants for bringing their expertise and experience to the table and engaging in a such a fruitful and open exchange.

**Join us at our next online event!**
On 16 March 2021, ITEA will organise the ITEA Smart City Day 2021, where cities that want to be at the forefront of innovation will be gathered together with Smart city-relevant ITEA project partners.

**More information about the ITEA Smart City Day 2021:**
https://itea3.org/itea-smart-city-day-2021.html


# Participate in our Eureka Clusters AI Call 2021!

## Fourteen countries have allocated budget to support your ground-breaking Artificial Intelligence innovations!

After the successful Joint AI Call 2020, the Eureka Clusters CELTIC-NEXT, EUROGIA, ITEA, PENTA-EURIPIDES and SMART have launched a new AI Call. This Call aims to boost productivity and competitiveness through the adoption and use of AI systems and services and provides great opportunities for international collaboration even beyond Europe as the participating countries include Singapore, South Africa and South Korea, next to Austria, Belgium, Denmark, Finland, Germany, Hungary, Luxembourg, the Netherlands, Spain, Sweden and Turkey.

The Call is open to large enterprises, SMEs, RTOs and universities and we are looking for projects that will form innovative ecosystems, with AI at their core, that will advance the State-of-the-Art and result in opportunities for commercial and/or societal impact. Possible application areas include - but are not limited to - AI for Agriculture, a Circular Economy, Climate Response, Cyber security, eHealth, Industry 4.0, Low Carbon Energy, Manufacturing, Safety, Transport and Smart Mobility, Smart Cities, Software Innovation and Smart Engineering.

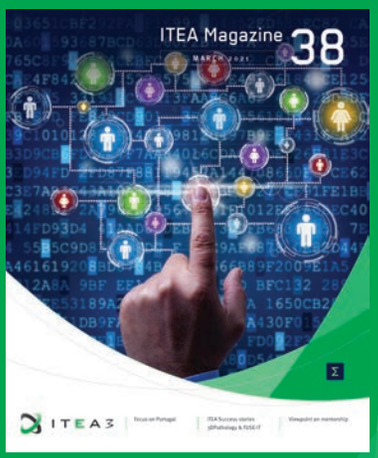
Do you have an innovative AI project idea?Submit your project proposal by 28 June at the latest!

https://eureka-clusters-ai.eu/

## Eureka Clusters Call dates

| | | | |
|---|---|---|---|
| CELTIC-NEXT, EUROGIA, ITEA, PENTA-EURIPIDES and SMART | 1 March 2021<br>28 June 2021 | Opening Eureka Clusters AI Call 2021<br>Submission deadline Eureka Clusters AI Call 2021 | https://eureka-clusters-ai.eu/ |
| CELTIC-NEXT Next Generation Telecommunications | 12 April 2021 | Submission deadline Spring Call 2021 | https://www.celticnext.eu/ |
| eurogia 2020 | 15 June 2021 | Submission deadline Eurogia Green Transistion Call | http://www.eurogia.com/ |
| EURIPIDES² European Smart Electronic Systems | 28 May 2021 | Submission deadline FPP<br>Synchronised Call with Penta | https://euripides-eureka.eu/ |
| Penta | 28 May 2021 | Submission deadline FPP<br>Synchronised Call with Euripides | https://penta-eureka.eu/ |
| smart advanced manufacturing | 24 March 2021 | Submission deadline FPP - SMART Call 4 | https://www.smarteureka.com/ |

# Colophon

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**Submissions:**
The ITEA Office is interested in receiving news or events linked to the ITEA programme, its projects or in general: R&D in the Software innovation and Digital Transition domain.
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