ITEA Magazine

Country focus: **the Netherlands**

ITEA Success stories: **APPSTACLE & PS-CRIMSON**

Smart city challenges: **Moving to a data-driven Tampere for citizens**

ITEA4

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ITEA is the Eureka Cluster on software innovation

Dear ITEA Community,

As I am writing this editorial, the traditional Dutch Carnival festival is taking place again for the first time since the pandemic when two years ago COVID 19 struck the Netherlands during the same festival. Let's hope this signals an end to the pandemic and gives us the freedom again to move and meet soon, which is so important for the creation and development of innovations, innovative communities and collaborations. Such as the PPPs, as Wilbert Schaap explains, that are at the heart of Dutch industry and innovation policy where success stands or falls by the "Top Team" effort.

This magazine shows some great examples of how innovations result from close cooperation, a culture of openness and possibilities to meet and connect. For Arda Güreller getting in touch with people from different R&D units and organisations within the ITEA Community has offered him a "landscape of opportunities" leading to new ideas and unexpected viewpoints. Besides the real need to meet face to face again, Arda acknowledges that we must also innovate and exploit new ways of interacting online. So far, ITEA has been able to adapt quickly to the circumstances and deploy online tools to keep activities running and facilitate a smooth and seamless transition to ITEA 4. Well done to the ITEA Office team!

ITEA stands for connectivity on a human level as well as technology level, with great impact achieved by projects like APPSTACLE and EMPHYSIS. New forms of connectivity, cloud solutions, exchange of models and simulation environments have led to the development of new standards and paved the way for innovative applications, leading to productivity gains in the automotive sector, for example.

ITEA 4 aims to extend and intensify its customer-oriented activities by increasingly involving users and customers in their projects. Assar combines professional expertise as architects and urban planners with the insights and desires of users, neighbourhood residents and institutions enabling co-creation in urban development. The ITEA Community is working hard to create better cities for the future, with the involvement of customers.

Seppo Hatajaa (City of Tampere) of our Smart City Advisory Board stimulates and supports exchange and interaction between cities and our project partners. Read the article about how Tampere is anticipating its future as smart city. And how the integration of data in one platform enables the Dutch and Canadian partners of PS-CRIMSON to create cities in which our lives can be more secure and safe. The first results are already being applied in the Dutch city of Hilversum.

In response to the 'Emergency on Planet Earth', the 90's classic album by Jamiroquai, driven by the urgency to tackle pandemics, wars and climate change, ITEA and its Community is fully dedicated to actively deliver a response to the different challenges we face together with the whole Eureka Community. We are currently joining forces with our fellow Clusters in the Eureka Clusters Joint Call on Sustainability. Go to the website https://eureka-clusters.eu/sustainability.html. I hope to see good and innovative projects submitted.

Jan Jonker

Focus on the Netherlands

With ambitious mission-oriented strategic frameworks

Wilbert Schaap is programme coordinator at the Directorate for Enterprise and Innovation at the Ministry of Economic Affairs and Climate Policy (EZK). As well as promoting the Netherlands as a country of enterprise with a strong international competitive position and an eye for sustainability, the Ministry is committed to creating an excellent entrepreneurial business climate by generating the right conditions and giving entrepreneurs room to innovate and grow.

New mission-driven approach

"Public-private partnerships for innovation and knowledge development are becoming increasingly urgent for tackling societal challenges in areas such as climate and health," Schaap says, "and for increasing the size of the economy and strengthening our competitive position." Since the end of 2019, the business community, knowledge institutions and the government have been working together to realise social missions that contribute to the growth of the Dutch economy as well as offer valuable solutions to major societal challenges. "This is a really new angle. We do this with the mission-driven top sectors and innovation policy (MTIP). The Dutch cabinet has drawn up missions for four themes with ambitious targets, such as a 49% reduction in greenhouse gas emissions by 2030, five additional healthier years for every person living in the Netherlands in 2040, and climate-neutral agriculture by 2050." As Schaap pointed out in 2018 (see ITEA Magazine article Country focus on the Netherlands, issue 30, July 2018), since 2011, the business community has focused on nine innovative sectors (the "Top Sector Policy"): Agri & Food, Chemistry, Creative Industry, Energy, High Tech Systems & Materials, Life Science & Health, Logistics, Horticulture & Propagation Materials and Water & Maritime. "ITEA comes under the High Tech Systems & Materials, which accounts for more than half of all business R&D in the Netherlands. So that's a really important sector."

Top Team

The Dutch cabinet has appointed a 'Top Team' (consisting of an ambassador, a scientist, an SME representative and a top civil servant) for each sector and consults with them about their agendas for knowledge and innovation, human capital and internationalisation. The MTIP has at its disposal resources and instruments from EZK and other departments and knowledge institutions. This set of tools enables solutions to social challenges to be developed within the 'Innovation Helix'. Schaap

explains: "We do this through a public-private partnership (PPP) structure whereby the interests of companies are increasingly becoming more parallel with the major societal challenges. We know that ITEA has similar priorities in terms of these challenges. Central to this PPP approach is the combination of economic opportunities and societal challenges, the key technologies that contribute to this, the application of the new knowledge, and the associated social and societal aspects. This is also closely linked to European programmes such as Eureka and Horizon Europe. We can see that very clearly in evidence in the ICT and software innovation focus of ITEA in domains like (smart) health and energy."

Good early signs for MTIP

Two years on from the launch of the MTIP in 2019, a first interim evaluation was conducted in 2021 and it showed that the participants value the MTIP for three reasons. "Firstly," says Schaap, "it ensures more cross-sectoral and public-private collaboration on research and innovation projects, which makes it easier to form a consortium. Secondly, like the conductor of an orchestra, the missions orchestrate the deployment of resources and ensure joint agendas along with a more programmatic approach. Finally, private co-financing is generally significant, which creates a leverage effect that allows more to be achieved with public funds." This Dutch approach is also the recipient of fulsome international praise. The Organisation for Economic Co-operation and Development (OECD) compares innovation missions in a growing number of countries and calls the Dutch approach "among the most ambitious mission-oriented strategic frameworks", especially because it brings together economic sectors and social missions.

Eureka Clusters – evaluation and reform

Of course, the approach stands or falls by the players that contribute to the 'team' effort, such as the Eureka Clusters. Schaap is pleased to note

the very good news that "a Dutch evaluation of the Eureka Clusters in 2020 revealed a positive picture about the effectiveness of the Eureka Clusters. Companies that participate in the Clusters, including ITEA, indicate that participation in the Eureka Clusters promotes and advances more and better international R&D collaboration, the acquisition of new technological knowledge and a faster turnaround time for innovations." During the Dutch Eureka Chairmanship from July 2019 to July 2020, the Eureka Clusters were reformed, undergoing a number of major improvements. "No easy task," says Schaap, "because of all the different players and diversity of input. But well worth it in the end. For example, the revamped Eureka Clusters Programme (ECP) continues to focus on fostering international collaboration in trusted innovation ecosystems while providing greater flexibility (as in the Joint Eureka Clusters AI Calls) to address emerging societal and economic challenges as well. ITEA is clearly very well positioned to play a leading role in this new Eureka Clusters setting."

ITEA showcases PPP benefits
Participation in ITEA offers unique opportunities for partnering with other national and/or European companies and academia in strategic, pre-competitive RD&I projects – opportunities that are not so readily available in other parts of the world. "In the United States, for example, this kind of collaboration does not really exist. In Europe, however, there is a clear understanding that we need this type of international cooperation in order to remain economically strong and competitive," Schaap explains. "In the Netherlands we have a fairly unique structure of many large companies that operate in a global market and work together with innovative SMEs. Through ITEA, these SMEs can gain access to project consortia that would otherwise most likely be closed to them. This vast wealth of knowledge and expertise, also from university and research institute participants, as well as business and market acumen can generate

Through ITEA, these SMEs can gain access to project consortia that would otherwise most likely be closed to them.

a pool of resources that results in a significant gain in efficiency and effectiveness that can go beyond borders. Ultimately, you can go deeper and wider with your research and development and do it more cost-effectively. As I mentioned earlier, the rapid throughput time from innovation to product or service plays a key role since it means that the urgent societal challenges can be tackled faster and lead to a win-win for all, whichever way you look at it. Also from a government perspective."

More information:
https://www.rvo.nl/subsidie-en-financieringswijzer/eureka/eureka-netwerken-en-programmas/itea4#

MEDrecord

focus on patient-centric care

Jan-Marc Verlinden is founder and CEO of MEDrecord, a Dutch 'virtual' SME that has been in the business of healthcare innovations for the past 20 years. Verlinden himself also founded a Living Lab in Leiden. MEDrecord helps startups and innovations in healthcare with funding, a team of developers and the MEDrecord platform. From the innovative idea to the app itself: MEDrecord is with its customers every step of the way. "Our dream is to put the patient in control: every patient should be the owner of his or her own medical data," says Verlinden. "What I have learned in doing 20 years of innovation is that the innovation process always comes down to the same thing. You need to focus on the user to start with." As an experienced teambuilder, he is leading his team to the next step of their journey, one that involves multiple European projects and the ongoing drive for innovative solutions. Jan-Marc has brought 30+ international projects to a successful conclusion and is an expert in patient data security and international innovation.

Human process

Inside any innovation process, Verlinden suggests, the starting point is the customer journey and in MEDrecord's case this means the patient/doctor journey. "In the clinical workflow you need to understand the human process before starting to throw in all kind of technical innovations." Of course, that's not to say that technology and software, and the innovations taking place in these areas, are not essential building blocks of the solutions created by MEDrecord but, as Verlinden points out, "in all of our research proposals we have to take care to avoid the innovation only existing on the researcher's desk and the 'not invented here syndrome'."

Open platform

"Healthcare is bogged down in its current processes. And this is just as true for e-health. The financing model is holding back innovation. If you save on staff, for example, you get less funding because of payment per minute that staff actually spend on the patient, and not minutes that are saved. This is called 'system failure'. While innovation can be much more effective there, especially with the current AI solutions. But here too, broad acceptance of AI is a problem. We can use AI to diagnose epilepsy patients, achieving 94 percent effectiveness. A neurologist can't beat that, but often claims that he can. This leads to a very conservative type of care and holds back the impact that

service pluggable architecture. We apply the platform in all projects. Thus we ensure that the systems we build can connect to other systems around the world with our open APIs."

Nutritional behaviour modelling

In the ITEA Food Friend project, which runs until 2023, MEDrecord is working alongside 16 partners from 5 countries with the goal of collaborating on defining a global generic framework and ontology for nutritional behaviour modelling. It aims to deliver a complete toolset that can automatically measure a person's food intake by using a tube system (medical device) with a minimum of required user-input and turn it into personalised and actionable feedback. By measuring very precisely what people eat and what happens in their metabolism, you can determine exactly what the influence of nutrients is on health. For example, we discovered that it is not the patient who makes false claims about his food intake, but that nursing staff should be better informed about the use of food tubes. Instead of squeezing the food through the tube in fifteen minutes, the patient needs to absorb the food very slowly, in about three hours. Fun for your metabolism. This makes the human being the central focus in healthcare, in all kinds of ways. Ultimately, this targets the prevention of malnutrition in nursing homes and in patients using tube feeding and the nutritional trans-mural care of chronic diseases like obesity and type 2 diabetes. The Food Friend toolset consists of both hardware, in the form of sensors, and software, in the form of an application or web-portal built on MEDrecord's API and companion interface MedSafe. Together they automatically monitor a person's food intake while barcode scanning automatically detects the nutritional content of food packages with a minimum of required user-input and provides relevant and timely feedback to the user, their coaches and food/meal providers.

MEDrecord platform

"By focusing on patient-centric care, whereby the patient is the owner of his/her data," says Verlinden, "we flip the current system where data is

fractioned and lives in the hospital or doctor's software without any form of standardisation. This led us to create the MEDrecord platform with open APIs that is the basis of all our innovations. as well as a fully certified (ISO/NEN and FHIR) digital safe for the patient. We also developed our spin-off Club Diabetes on the basis of the white label model of our MEDrecord platform."

Besides ITEA, where MEDrecord has been involved in five projects to date, the SME is also a participant in various other national and European research projects, ranging from the EU's Horizon 2020 programme at TRL 1-3 level to the Eureka Eurostars (TRL 4-6) where the EEG4STROKE project targets the development of a new product that enables paramedics to accurately triage patients with a suspected stroke in situ, whether in the ambulance or wherever the patient is located. This helps decide, within the golden hour, to which hospital the patient should go. Saving time, saving lives.

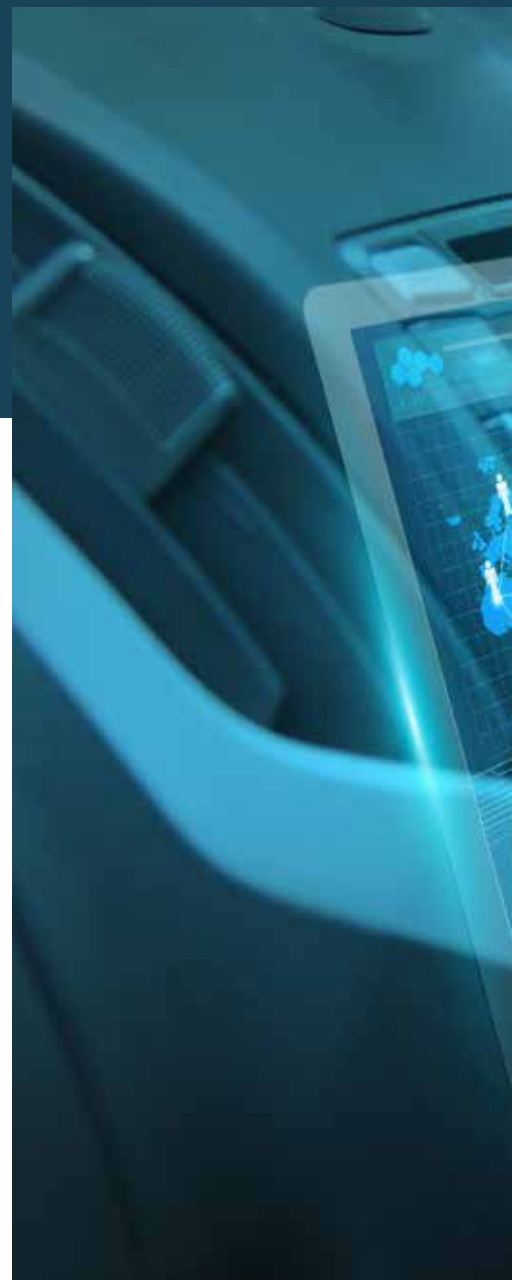## Beating metabolic diseases without the drugs

In all its proposals for the coming years, MEDrecord will focus on measuring a person's metabolism and, based on that, provide precise and personalised advice geared mainly to preventing many of the metabolic diseases that people face nowadays. "What we are aiming for," says Verlinden, "is to measure what goes in with either exhaled breath or, for instance, sweat analysis, or what goes out with urine analyses. The main advantage of these techniques as opposed to the state of the art like MRI or blood samples is time. MRI and blood analysis are always one or two weeks later, and sweat, urine or exhaled breath analysis could be done real-time. Lab on a chip. And using this data, we want to develop AI that could lead to precise and accurate advice to the patient about what to eat and drink, what exercise to do, how to sleep and improve handling stress. In other words, personalised medical advice ... without the need for medication." The patient is where innovation starts.

More information:
https://medrecord.io/

innovation could and should have. One of the main reasons we sit around the table with health insurers is to change the funding of healthcare. The only way to solve this financing problem is in large international projects where you can show the power of innovation. You demonstrate system failure by doing things differently, and integrally. That way, you also show what the savings are. Our role as MEDrecord is to act as integrator and standardisation expert. Always from a basic platform, a micro-

APPSTACLE

Vehicle connectivity for novel applications

The automotive industry is undergoing disruptive changes in terms of structure, players and products. One of the key pillars of the transformation will be increasing connectivity. As an open-source project and ecosystem for connected vehicles, the APPSTACLE project provides open source implementations for standards and functionality required to realise automotive connectivity solutions, thereby helping to shape this transformation.

In the automotive domain, there is an increasing demand for software related to services like location, media and driving assistance. Although high-end cars now contain hundreds of millions of lines of code, development takes place in silos belonging to each manufacturer or OEM. To meet consumer needs at this high level of complexity while avoiding 'walled' proprietary solutions from a few monopoly players, a secure, open car-to-cloud and cloud-to-car platform is needed.

The ITEA project APPSTACLE, hosted at the Eclipse Foundation and gathering 21 partners from Finland, Germany, the Netherlands and Turkey, has created such a platform, connecting cars and transportation vehicles to the cloud using hybrid communication technologies for V2X (vehicle-to-everything) communication. Eclipse facilities have been used to build an open ecosystem in which security, privacy and identity requirements can be met,

allowing the platform to be used in a wide range of vehicles. Standard interfaces use Internet of Things (IoT) connectors to link in-car data to the cloud, allowing for software updates and the upgrading of application systems, software solutions and services.

As a vehicle-to-cloud ecosystem, the APPSTACLE project has enabled the vehicle connectivity infrastructure and added functionalities to connect to an open-source environment for developing, deploying, maintaining and monitoring in-vehicle applications. For vehicles without in-built connectivity, an open-source dongle (hardware) can be used to access the vehicle data. Data on aspects such as speed, temperature and driver behaviour can be fed to the outside world, where it can be applied in new and existing market sectors. Additionally, the consortium has adopted an ontology standard [1] which enables the

interoperability of the implementations between vehicle manufacturers and unified data models for in-vehicle signals and data-intensive application development.

Several use cases have been implemented and verified with end-to-end functionalities in order to demonstrate the software developed in the APPSTACLE project. Driver authentication, for instance, can be used by municipalities to manage public transport drivers, who must provide fingerprint scans to open the engine control system. Roadside assistance, meanwhile, is based on the vehicle's Electronic Controller Units (ECUs) and uses algorithms to automatically analyse these ECUs when a problem is detected. If a software patch is already available, this can be downloaded to pre-emptively correct the issue. Another use case was created by a set of partners in which artificial intelligence was leveraged to characterise personal driving styles. This data is used for services during the ownership or use of a vehicle, including insurance, rental, parental control, etc. The APPSTACLE project provided 15 demonstrators involving various vehicle-centric use-cases.

On 30 November 2019, the project announced the first release of the Eclipse KUKSA platform that unified the technologies across the vehicle, IoT, cloud and security domains to provide an open-source ecosystem to developers which addresses the challenges of the electrified and connected vehicle era. The platform is supported by an integrated development environment as well as an app store where device owners can select and install applications. Eclipse KUKSA is an open-source project and is available for download from the Eclipse Foundation [2].

Dissemination of the APPSTACLE project demonstrators and the open-source Eclipse KUKSA platform (https://www.eclipse.org/kuksa/) amongst developers immediately attracted 38 contributors to increase the platform's development capabilities and functionalities through complementary open-source

software libraries and components. This led to several external collaborations, including a connectivity gateway proof-of-concept with industry partners and traffic simulation with Eclipse SUMO [3].

APPSTACLE 2022 and beyond
Today (2022), the KUKSA project, initiated by APPSTACLE partners, is still being actively developed and utilised in various contexts and new spin-off projects. For example, it has recently been used in a system that demonstrates how to detect tampering in the exhaust cleaning system of trucks [4].

KUKSA is continuously being updated to support changes to the Vehicle Signal Specification (VSS) [1], an industry-wide effort between OEMs, TIER 1 and other suppliers to standardise vehicle data. This has recently also been adopted by Amazon AWS, making it a publicly available, open-source implementation of that specification. By continuously providing VSS-compliant software components, KUKSA continues the vision of APPSTACLE to provide open standards and implementations for connected car ecosystems.

Besides software, APPSTACLE also created the KUKSA PiOBD Raspberry-Pi 3-compatible open-source hardware that can be connected directly to the diagnostics (OBD) port of a vehicle. Version 2 of this hardware is currently under development by the KUKSA project, which will provide more computing power and two CAN FD interfaces, allowing even better access to vehicles and enabling low-cost entry to the development of in-vehicle applications and work with in-vehicle data.

Additionally, Eclipse KUKSA is targeting the industrial sector and offering non-manufacturing companies in the automotive domain the opportunity to access new markets and business models, such as allowing rental companies to track the status of their vehicles and optimise their turnaround management. As an alternative to OEM proprietary solutions, this is also a means for SMEs to enter the field of vehicle connectivity (currently worth USD 14.5 billion).

Academic dissemination is another key result of the project, with APPSTACLE having so far played a role in 10 Masters of Science and 14 PhDs across Europe. The consortium has also organised three Eclipse KUKSA-related courses and summer schools which were attended by around 150 students in total. KUKSA should therefore become an asset in teaching and research for automotive IoT end-to-end frameworks.

Vehicle Signals Standardisation is ongoing and includes a generic, extensible data model specified by
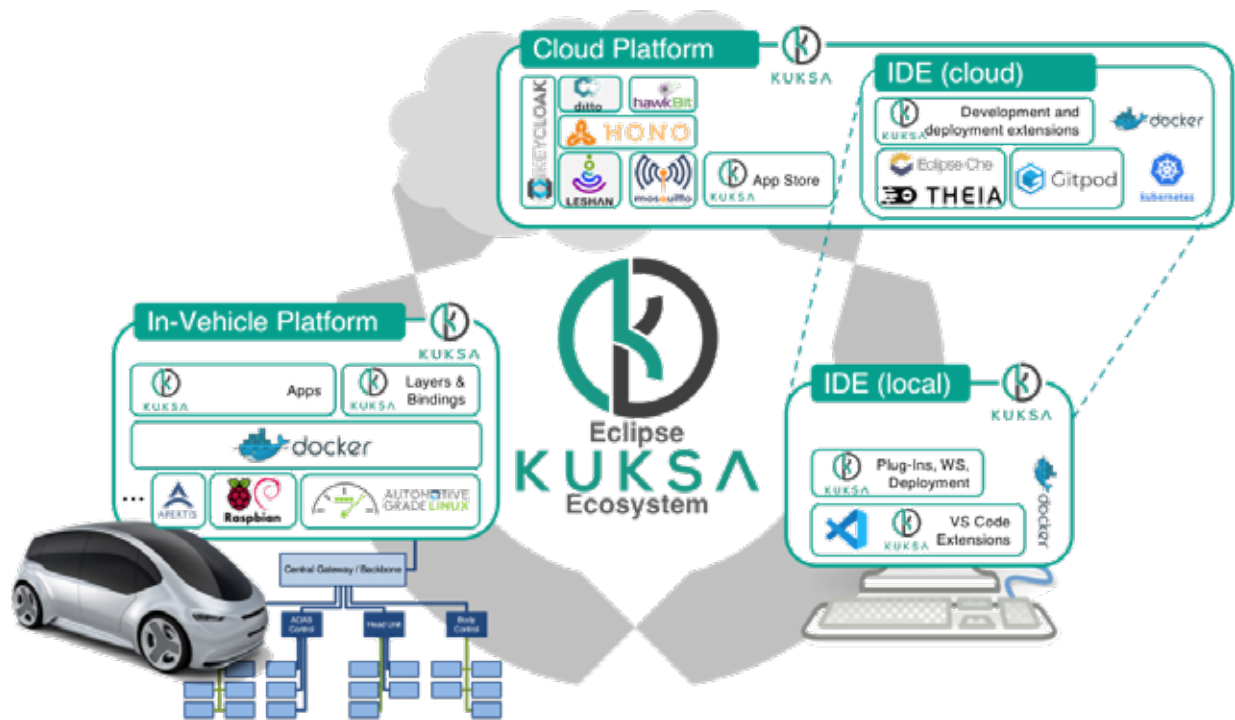
the W3C [5]. The World Wide Web Consortium (W3C) is an international community that develops open standards to ensure the long-term growth of the web.

In the long run, Eclipse KUKSA will make disruptive changes to the automotive value chain. One aspect is the emergence of new forms of connectivity: street infrastructure (e.g. streetlamps, traffic lights) hold the potential to become information base stations to enable data processing near to the car rather than in the cloud. Most importantly, however, is that Eclipse KUKSA shows large companies that there is more to be gained from sharing data than from protecting it within proprietary solutions. As more vehicles become connected, more applications and services will emerge. Companies can therefore enhance the business domain while increasing the size of their own share.

In the research and education domain, KUKSA is currently shaping itself towards a de facto mobility research platform for managing data around transport, smart mobility and vehicle, driver & passenger data-intensive use-cases. The University of Oulu's software engineering research unit, M3S, has adopted KUKSA software components for test vehicle data pipeline instrumentation, vehicle-to-cloud data management and V2X instrumentations around new smart mobility use-cases related to the evolving 5G test network in the Oulu region. In regard to 6G [6] wireless network technologies and the cloud & edge computing continuum, meanwhile, the KUKSA platform allows for empirical research on the future needs of the automotive vertical, which is expected to set a new requirement for 6G radio networks and traffic infrastructure systems and services. In 6G research, KUKSA also has an

important role as a platform for live demonstrations and university student exercises around software-defined vehicle concepts and technologies around cloud & edge computing and continuous/secure software deployments in the automotive domain.

At Dortmund University of Applied Sciences and Arts, KUKSA enables research regarding the virtual validation of cloud-native mobility services. The KUKSA cloud platform is therefore used to run mobility services based on microservices, while simulation tools continuously generate data for the proper validation of a service's functionality and the fulfilment of non-functional requirements.

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Community Talk with **Arda Güreller**

A real (ITEA) family man at heart

Arda Güreller graduated with a BSc in Mathematical Engineering from Yildiz Technical University in 2000 and followed this up with a Business Information Systems Master programme from Bogazici University in Turkey. Last year, he took on the role of External Public Funded Relations Leader at Ericsson in the Swedish capital Stockholm.

Drawing up a career roadmap

"I started my career in an e-learning company, the Kavrakoglu Management Institute, in 2002. These were early days for the internet," Arda recalls, "but our founder, Professor Ibrahim Kavrakoglu, was very confident about the potential of e-learning and now, during the pandemic some twenty years later, we can see how much foresight he had. It was also during that period that I became involved in my first international R&D project in the sixth EU Framework Programme, together with my manager Alper Elicin. This project, along with the respective technologies, proved to be very informative for me and it helped me a lot to think more about futuristic technologies that can help the world to become a better place. I was not aware that I was entering a career path that would affect rest of my life. Since the Kavrakoglu Management Institute was also working actively in management consultancy, I gained the opportunity to better understand how organisational improvements can enable companies to become more successful. Those first years helped me a lot to structure my future career roadmap. When I joined the Ericsson family in 2010, together with Dr.
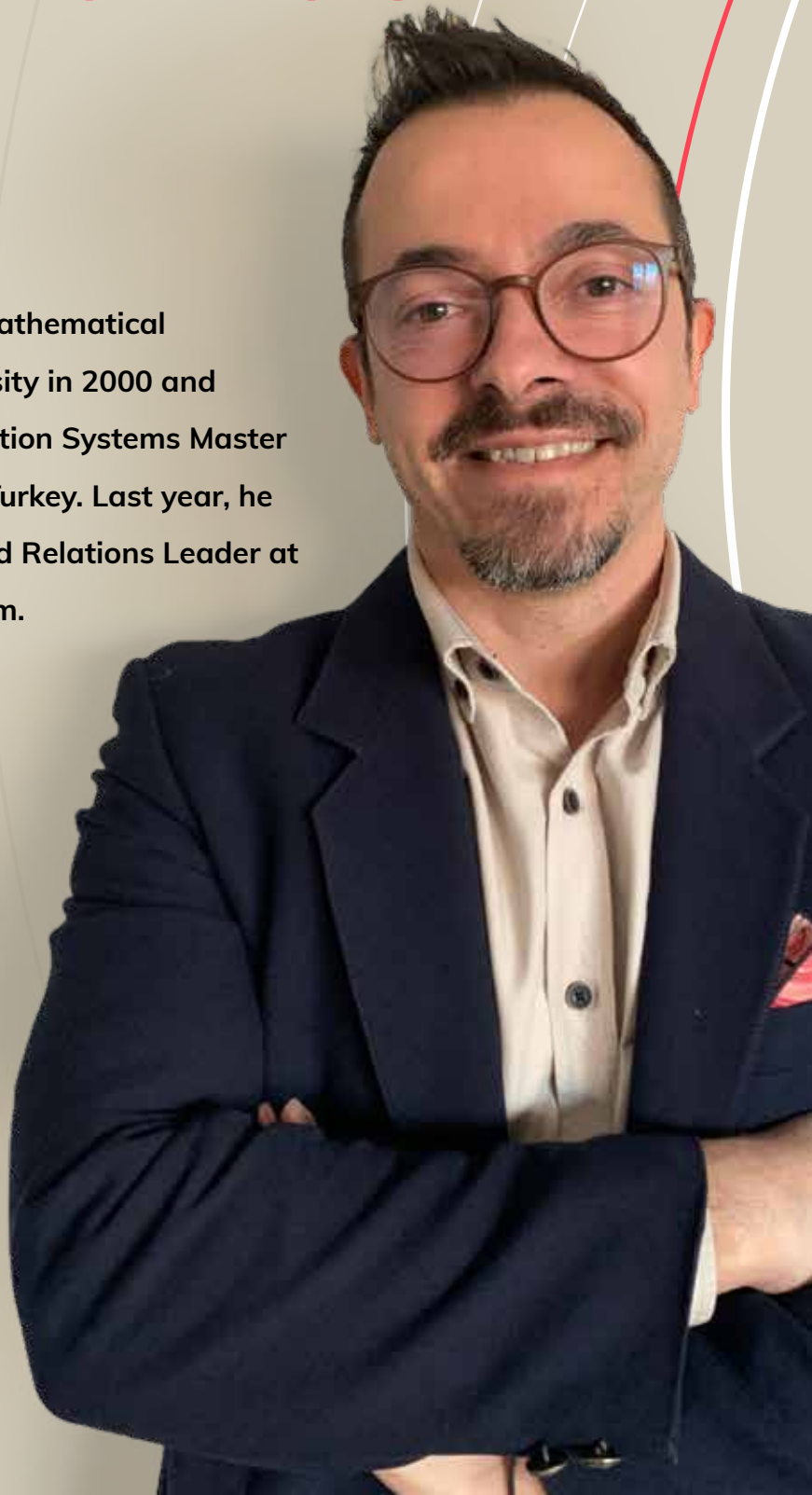
Ozgur Gungor and Fatma Ozdemir Canverdi, I got involved in the management of different internal and international R&D projects, including ITEA. I have joined many ITEA project discussions with many colleagues around the world. While I continued to contribute to the ITEA community, in 2018 we set up the Ericsson Research Turkey branch and I worked with Dr. Henrik Almeida to establish the first private research lab focusing on Telecommunication Networks and Security before moving to Sweden in 2021."

In addition to being my second family, ITEA has also provided me with a landscape of opportunity.

Ever-present
Arda has been actively involved in the ITEA Community actively since 2013. "From the outset I have been a loyal supporter of this family. I've hardly missed a PO Days event since 2013 and during those years I had chance to meet some very important R&D figures from academia, SMEs and industrial players. To be able to discuss and hear different opinions among experts from throughout the EU, Korea and also Canada has been a real privilege for me. While I continue to be part of the ITEA project discussions, I started to support my colleague Anders Caspár in representing Ericsson in the ITEA Steering Group, a role I continue today and which helps me to grasp the high-level vision of the EU's prominent institutions and their approach towards technology and its realisation."

Like a family
"As I have already mentioned, ITEA is like a big family. Starting from the first phase of projects to the closure of the projects you interact with different organisations for three or more years, during which time lots of things change that can affect your project. You need to find good ways to deal with those changes together with the consortium, and by doing so you strengthen your relations with partners locally and globally. In ITEA projects you can always interact with different partners from different parts of the world, which not only enhances your understanding of technology and solutions provided by partners but can also lead to new sub projects that can extend year after year."

Technology and culture
Arda points out one important aspect of ITEA projects, namely the flexibility compared to most other funding mechanisms. "You can alter the number of participating partners, change the use cases and adapt technologies that are targeted for the project during the life cycle of the project. This all helps the partners target a product output from the project. But I think the best part of the ITEA projects is reserved for the gatherings for the project related management meetings, technical process meetings and review meetings. Before COVID-19, you could meet with the project team in different cities and, besides discovering new cooperation possibilities, discover the culture of those cities while achieving good technical outputs at the same time."

Compensating for COVID-19
While COVID-19 has reduced the opportunity to gather, it has had the benefits of cutting the CO_2 travel footprint Arda has to admit. "I get to spend more time than ever before with my family. Still, I do miss my other family at ITEA. The pandemic has challenged us to innovate in our communication. And I think this is something that ITEA also has to bear in mind. Knowing how important the face-to-face communication moments are, are there ways that we can compensate for this lack within our Community while the pandemic lasts? Perhaps that should be addressed. Because, when it comes down to it, it's the people that make the Community, and it's the contact that is the glue. ITEA has always been good at embracing change – it is a dynamic and flexible programme, so I have every confidence that ITEA can tackle this communication issue. I have been part of many changes in ITEA, and all the changes targeted good purposes."

Landscape of opportunity
For Arda, there are plenty of positives in being part of the ITEA Community family. "When a new ITEA project is initiated from scratch, we try to invite as many contributors as possible. Because ITEA projects have very fruitful project discussion sessions where suddenly a comment from a partner can turn your project idea into a totally more comprehensive and effective concept for you and your company. Besides that, ITEA projects give you an opportunity to collaborate with new faces outside your organisation and can bring your engineers and development teams a fresh perspective. Also when they travel for projects, they can visit the R&D centres of different institutions and also start discussing new collaborating possibilities. Having been part of many ITEA projects, I also took the chance to visit the most prominent EU R&D centres. In addition to being my second family, ITEA has also provided me with a landscape of opportunity. I look forward to the moment when we can get together again in person and explore and exploit this landscape together."

PS-CRIMSON

A one-look overview of the city in 5 seconds

Success story

Nowadays, cities are digitalising more and more services, like data gathering for mobility, safety and communication with citizens. This data is required to be able to govern an increasingly complex and dynamic city. However, authorities still need to tackle information fragmentation caused by separated data per department and a lack of common platforms and toolsets. The ITEA project PS-CRIMSON, a collaboration between six academic and industrial partners from the Netherlands and Canada, developed a unique 3D smart digital model that combines all of the gathered data on one common platform. With this platform, public safety and disaster management can be improved, as pilot projects in Eindhoven and Vancouver have shown.

One-look overview of the city

The PS-CRIMSON consortium has delivered a platform that serves as a single entry point for city representatives. This facilitates data collection, sharing, management, analysis and dissemination from public and private urban infrastructures and resources. This single entry point to a smart city platform provides access to the information of different types of systems from different departments. It saves city representatives a lot of time and money and gives them one view of all of the data they are gathering, enabling them to combine these and act upon them quickly. A focus lies on the public safety and disaster management domains, where the platform's benefits are extremely important.

The cities of Eindhoven and Vancouver were involved from the start, providing input on the design and implementation.

This resulted in two technology demonstrators in two use cases, also focusing on public safety and disaster management. The following scenarios illustrate the possibilities.

Improving public safety

For public safety, a city representative responsible for video surveillance might currently need to monitor up to 60 live screens in the control room. In addition, (s)he may receive dozens of calls during the day from local citizens and officers regarding suspicious events. Thanks to the PS-CRIMSON results, this person could now work with one single screen and, once logged in, take a virtual walk through a 3D model of the city and see everything which is happening in a single view.

In the background, software is monitoring all of the city data and filtering out relevant events

that require attention. This pre-processed information allows the city representative to make split-second decisions, see connections between the different data and, most importantly, feel in control. For example, when someone sends a mobile picture to the police, the search engine can determine where the incident is taking place to an accuracy of 10 meters thanks to AI image technology developed by project partner Eindhoven University of Technology. This technology was also applied to human re-identification, which allows the system to detect individuals in a certain area and connect the walking routes of these individuals using cameras distributed throughout the city. Walking routes can be made visible either forwards or backwards in time.

Disaster management

The west coast of Canada is vulnerable to the huge earthquake fault running down the coast. Always upgrading their plans to protect Vancouver, a city of 2.5 million, city officials worked with project partner Esri Canada on using the strata plans to create a 3D smart model. The PS-CRIMSON application and model showed the effect of an earthquake of 6.9 on the Richter scale on the densely populated downtown. The application and model simulated the different scenarios and enabled the city to predict and pre-assess the damage with a much greater level of detail and accuracy. No longer looking at a census block level of 5-10 buildings, they can now see the effects down to the level of interior units in the

Project start
September 2016

Project end
March 2020

Project leader
Egbert G.T. Jaspers,
ViNotion BV

More information
https://itea4.org/project/ps-crimson.html

damaged buildings and the different levels of flooding that would follow.

One team, one goal

The PS-CRIMSON partners showed a unique complementarity in their collaboration: Atos and Esri Canada offer the integrated platform, ViNotion and Sorama are experts on sensors, Esri Canada created the digital twin for indoor city modelling, Cyclomedia is responsible for the photorealistic 3D texturing and the Eindhoven University of Technology supports this with innovative solutions on AI. Together, they cover the full value chain for a smart city solution, integrating the different silos of data and technology together in one common platform. In addition, a subsequent ITEA project called SMART has been set up with a number of the consortium partners.

First commercial global successes

By offering a complete smart city solution which is valued by cities, the project has already had its first commercial successes: they won a tender for Smart City Hilversum, which is now being deployed to create insights on traffic. Hilversum also intends to use this to monitor the social distancing of crowds to control the COVID-19

pandemic. They are now the first adopters of the PS-CRIMSON platform to share valuable public data between different departments.

Similar projects are being tendered by other cities in the Netherlands, Germany, Belgium and Canada, where the partners are offering all or part of the PS-CRIMSON results. Atos is in the lead for a smart city project in Germany and ViNotion has sold PS-CRIMSON results to other cities, including Amsterdam, 's-Hertogenbosch and Bruges.

PS-CRIMSON's offerings enable the platform's users to detect suspicious situations, localise them, follow the subjects involved and intervene before escalation takes place. Thanks to the project's world-class technology results that can be extended to many other domains, this can now all be done with a high performance and accuracy which is two to three years ahead of the market, making cities a better and safer place to live in!

"The PS-CRIMSON project showcased enhanced value streams and created new products that don't exist in the emergency management realm. These value streams provide enhanced visualisation above and below ground, demonstrating impacts to our built environment. This allows emergency managers to derive detailed information at the building level, supporting response efforts."

– Kristopher Hayne,
Emergency Management Analyst,
Vancouver Emergency Management
Agency

Calendar

4-13 APR 2022

ICST 2022
Online event
https://icst2022.vrain.upv.es/

7 APR 2022

ITEA Smart Systems Engineering workshop
Online event

2 MAY 2022

PO Submission deadline Eureka Clusters Sustainability Cal 2022
https://eureka-clusters.eu/sustainability.html

4-5 MAY 2022

World Summit AI Americas 2022
Online event / Montréal, Canada
https://americas.worldsummit.ai/

30 MAY - 2 JUNE 2022

Hannover Messe 2022
Hybrid event / Hannover, Germany
https://www.hannovermesse.de/en

14-15 JUNE 2022

Forum Teratec 2022
Palaiseau, France
http://www.teratec.eu/gb/forum/

22-23 JUNE 2022

Eureka Global Innovation Summit
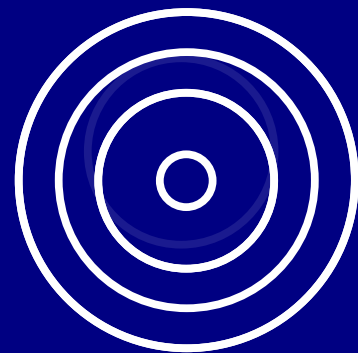Lisbon, Portugal
https://www.gis2022.org/

SAVE THE DATE

13-14 September 2022
ITEA PO Days 2022
Helsinki, Finland

ITEA Smart Systems Engineering workshop

On 7 April, ITEA will organise the ITEA Smart Systems Engineering workshop 2022. The aim of this workshop is to bring together researchers, (future) project leaders and developers from several disciplines to share their experiences and discuss the latest advances and innovations in Smart Systems Engineering with application to the development of smart systems. The overall objectives of the workshop will be:

> To increase the understanding of problems of Smart Systems Engineering
> To benefit from the experience of ITEA projects
> To identify important challenges that could lead to new research projects

The one-day workshop will be structured in three interactive sessions and topics include (but are not limited to) the following:
> The complexity of applications
> Standardisation
> AI application development – dataops versus devops

The workshop will be highly interactive: in addition to the invited panellists and short presentations, there will be several discussion sessions.

Join us and register now!
Join us at the ITEA Smart Systems Engineering workshop, block your calendar on 7 April and register now (free of charge). For more information and registration, visit https://itea4.org/smart-systems-engineering-workshop.html

assar

Where diversity and inclusiveness are keys to co-creation

Assar architects is a unique player in the Belgian market. Founded in 1985, assar is an abbreviation of ASSociation of ARchitects and, following a series of mergers during the current millennium, today the company comprises 158 colleagues, with offices in Belgium (Antwerp, Brussels and Liège), Luxembourg and, since 2020, in Paris. In 2020, following a group restructuring into a holding company with five operational subsidiaries and 27 active partners, the group now functions around four business lines: corporate, institutional, healthcare and urban development. Geert Bekaert and Thomas Goossens explain what makes this SME tick.

Care Campus Kortrijk ›

© assar - image by Infunctievan

© assar - image by Nanopixel

© assar -Robbe Theunis

^ Villa Madiba

^ The Wings

Shared vision

"Collaboration and teamwork – these are the keys to enabling us to create an architecture that can evolve over time," Geert begins. "We organise each project around specialised and complementary teams of architects, interior architects, urban planners and technicians who can share their expertise and knowledge of specific local customs, mindsets and practices to respond to the challenges of building a sustainable world." The assar credo is that to achieve high-quality designs, rationality must go hand in hand with creativity. By combining professional expertise as architects and urban planners with the insights and desires of users, neighbourhood residents and institutions, a shared vision is co-created: architecture for everyone that is deeply rooted in the present while looking to the future. "As architects," Geert says, "we consider the needs of people at every stage of their life, and by putting people at the heart of each project, the essence of inclusive architecture manifests itself naturally."

Diversity and scale

Designing places and spaces for each individual's activities, meeting their aspirations, while respecting the environment and integrating technologies and safety standards are only possible through co-creation. This spirit is at the heart of the success of the assar approach. "Having offices in the three Belgian regions, where the language, culture and traditions differ gives us a significant pool of experience, information and resources on which we can draw," Geert explains. "Another important benefit in having this scale is that we can learn a lot from the different situations. It enriches us as architects and opens up a whole range of perspectives."

"The fact that we have been involved in a successful ITEA project has an impact. It gives us more credibility. We can actually demonstrate innovative success on a European level"

© assar - image by Infunctievan

"You see how everyone has a particular way of doing things," Thomas adds, "and as architects it is essential to be aware of this in designing buildings that have to be constructed by contractors that operate according to specific traditions and use specific materials. So your design is dependent to a large extent on where you are, the purpose for which you design and the people you design for. So while we have scale and diversity as a company, the local situation actually determines how and what we design."

Need for standardisation

With that diversity and scale, the role of software is central. One of the main issues in architecture is the problem of standardisation, or rather the lack of it, and it's a worldwide problem. Whether that is the language of communication, building and safety regulations or choice of materials, the need for standardisation is ever-present. By using the same software, assar is able to gain a kind of standardisation for sharing and exchanging data and information, and software developments and innovations, from early CAD (computer-aided design) to state-of-the-art BIM (building information modelling). This enables assar to compensate, as it were, for certain differences. Thomas explains: "In a building a particular element may be called this or that, depending on the language, the tradition or regional variation. But if that particular element is assigned a number, let's say 22, everyone, from supplier to contractor and client, is able to recognise

it as the same element. That's essentially the purpose of standardisation. The software helps us do this. Of course, this is a simple example but that's what standardisation is all about, enabling the process to be clear and simple – no room for errors and misinterpretation."

Co-creation

Software doesn't stand still. Innovation is a constant and this generally comes through collaboration in (publicly funded) projects, as in the ITEA project BIMy, recipient of the ITEA Award of Excellence for Innovation in 2021. The co-creation afforded by such projects parallels the assar philosophy and, as Geert notes, "BIMy has opened the door
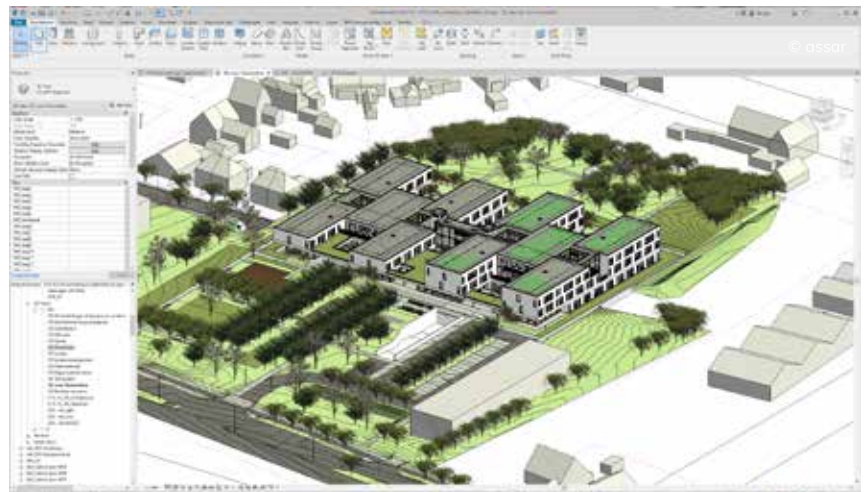
∧ BIM model of Care Campus Kortrijk

© assar - image by Infunctievan

< ^ Care Campus Kortrijk

for integrating BIM models in e-tendering for construction projects. It reduces information barriers and allows for better collaboration between architects, engineers, contractors and clients." Since smart city planning involves multiple players and encompasses diverse domains, as a generic, open intermediary, BIMy enables collaboration between existing BIM platforms and provides a secure working environment and digital marketplace for storing and sharing BIM models and model data. Ultimately, BIMy's cloud-based solution lowers entry barriers for new tech adopters and enables companies to set up new business cases in the European BIM and GIS markets.

Credibility

The benefits of working in this Europe-wide ITEA project as well as in national research projects in Belgium are manifold. Thomas stresses the role of publicly funded research projects on the capability of assar to develop innovations in the long term. "They help us make the innovation leaps we need to achieve. Without them we would not have either the time or money to do this. What we learn and gain from such collaboration we can put into our projects, for example, for healthcare assets like a community centre in which there are so many different functions and aspects. We can use what we have learned." But it is not only the knowledge on the technology front but also the contacts that both inspire and enrich assar. In terms of business opportunities, Geert stresses how influential it can be to go in with

© assar - erarge
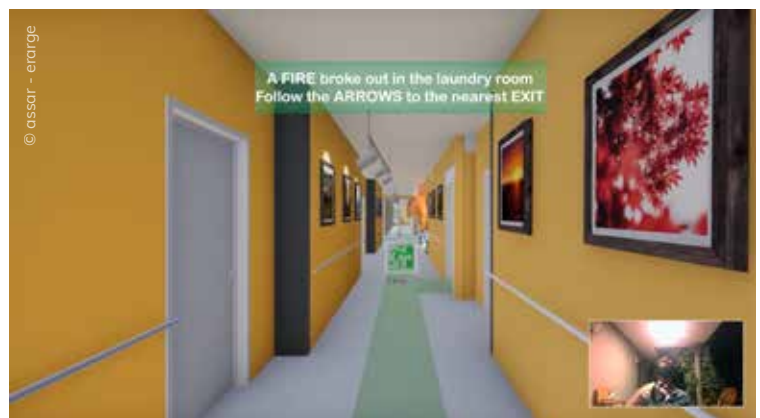
^ VR fire safety simulation of Care Campus Kortrijk

the ITEA 'label' when making a business proposition. "The fact that we have been involved in a successful ITEA project has an impact. It gives us more credibility. We can actually demonstrate innovative success on a European level."

More information

http://www.assar.com

By and for end users

EMPHYSIS
eFMI: get on board or risk missing out

The ITEA project EMPHYSIS (EMbedded systems with PHYSical models In the production code Software), which finished in 2021, targeted the development of a new standard eFMI (Functional Mock-up Interface (FMI) for embedded systems) to exchange physics-based models between modelling and simulation environments with software development environments for electronic control units (ECU), micro controllers or other embedded systems. In addition, it provided prototype implementations for the whole tool chain from physics-based modelling environments to production code on electronic control units.

Power of collaborative research

In the words of Jean-François Lavignon, ITEA Vice-chairman, "not only did the EMPHYSIS project achieve several outstanding results, such as the automatic generation of efficient code for embedded devices, it also showed the power of collaborative research projects to drive the adoption of a new standard and to generate significant productivity gains for the industry."

Christoff Bürger of Dassault Systèmes and project leader of the Modelica Association Project eFMI, explains how "this ITEA project provided the diversity and scope within the value chain to generate code, test and

approve it with the help of our project partners that are experts in the embedded software domain, something we could not have achieved without such a project." Furthermore, the project allowed the whole eFMI workflow to be demonstrated and, as Johannes Ultsch of the German Aerospace Center explains, "utilising the eFMI workflow enables a flawless toolchain for the integration of models and model-based controllers from high-level modelling languages into embedded targets."

The value of OEMs

"What makes us proud as a team is the fact that this success has been recognised not only by our business partners and the

What we achieved in EMPHYSIS is being taken further in the eFMI Modelica Association project and this is key to exploiting the 'proof'

© DLR

© DLR

^ DLR eFMI controller use case in experimental validation

OEM Advisory Board representing the voice of the customer, but also by the ITEA organisation in winning the ITEA Vice-Chairman Award of Excellence," says EMPHYSIS project leader Oliver Lenord of Robert Bosch GmbH. "We believed in the importance of getting OEMs on board and convinced ITEA of the need for this. While we had Renault and Volvo, we lacked a German OEM, so we established an OEM advisory board, which provided the opportunity for involvement without the bureaucratic hassle and obligations. Although it took a lot of effort and persuasion, from Mercedes-Benz Group AG there was clearly a bit of a pull. And I think we're both glad that the meeting of minds happened."

Lucky strike
The initial fear of bureaucracy was overcome and Mercedes-Benz Group AG even generated technical reports. So, in that sense, this was a lucky strike, so to speak. Having convinced the respective departments at Mercedes-Benz Group AG of the value of a use case, Zdenek Husar of Mercedes-Benz Group AG got the green light to become involved. "One of the advantages was that we started a very good cooperation with Christoff at Dassault. Not only was this a big factor in the progress we made in the Mercedes-Benz Group AG use-case," Zdenek

says, "but it is also something that I am keen to continue in the future. During the project, we had direct contact with the developers, and I see this as an enabler. It is also our motivation to continue in the eFMI Modelica Association project. We use the results of this collaboration with Dassault on a daily basis, so you could certainly say that the results in the end certainly outweigh the challenges encountered in the beginning."

Game-changer
Of course, EMPHYSIS has not resolved all the problems but has gone far in providing the solutions it set out in its objectives. Christoff: "If we take the Daimler use-case, there are still some problems we have to solve but if we do, that will be a real game-changer. So it's important that you don't get left behind. The message has to be to get on board or run the risk to be hit by missing a disruptive technology. We are able to show this with such prominent use cases that are proof of the pudding." To which Oliver adds: "What we achieved in EMPHYSIS is being taken further in the eFMI Modelica Association project and this is key to exploiting the 'proof'. We did the technical groundwork, showing what is possible, having the tools that actually work and solving real problems. Once there is awareness about a new open standard and a process around this is defined, this will create a market demand."

More information
https://emphysis.github.io/
https://modelica.org/
https://efmi-standard.org/

ITEA news

SAMUEL optimises Additive Manufacturing industry workflow with ML-based technology

The ITEA project SAMUEL (Smart Additive Manufacturing – an AM Platform) is already yielding tangible results, for both the Belgian and Canadian consortium members. The project targets some of the very real challenges the AM (Additive Manufacturing) Intelligent industry faces, and addresses them with innovative and multidisciplinary tools and solutions.

Cr3do, an AM SME in the architecture market, already sees the value of the SAMUEL project in their day-to-day workflow. They use machine learning to reduce the amount of failed 3D prints, which allows them to reduce their lead times and deliver their products faster, with better results than before.

SAMUEL helped their Belgian partner Materialise to integrate AI into their roadmap and, so far, this has led to the introduction of some proofs-of-concepts (POCs), which are scheduled for production. It is expected that implementing these POCs will lead

^ AI-powered build defect detection

to more automatic and faster build preparation as well as less waste.

3DSemantix, backed with the expertise of Investissement Québec - CRIQ, Fusia, FZ Engineering and Tekna, is introducing two new solutions. The first is a Manufacturing Partner Search application which identifies the manufacturers with production experience related to a targeted design/material. 3DSemantix has created an AI model that leverages the AM production experience of each manufacturer to

match them with the user's reference 3D model to be printed. The second is an AM costing assistance application that finds all relevant past 3D printed parts and their related production information. This application not only helps to sift through the vast amount of historical production data, but also presents a great opportunity for companies to organise their data.

Sirris published a paper based on their work on the project: Data-Driven Divide-and-Conquer for Estimating Build Times of 3D Objects. The paper was presented at the 2021 IEEE International Conference on Data Mining.

The SAMUEL project is in its home stretch. The partners are looking for AM parts manufacturers to test their Partner Search application and the costing assistance applications. If you are interested, please contact Philippe Charette of 3DSemantix: philippe.charette@3dsemantix.com.

More information:
https://itea4.org/project/samuel.html


< AM Partner Search result page

VMAP analytics drives industrial manufacturing using Smart digital twins

The ITEA VMAP analytics project is a cooperation between SWERIM, Fraunhofer SCAI, Ovako, Gränges, Prevas, Gemit and Morgårdshammar and is supported by Vinnova. The project involves the development of suitable digital twins (DTs) based on physics and data science for deeper understanding of the steel manufacturing processes. The project brings process modelling and simulation, sensors and measurement data, data science tools and domain knowledge together into a smart digital twin platform for industrial use cases.

The use case 'Optimisation of the thickness profile of hot rolled sheets' for the steel industry uses two physics-based DTs (FEM Finite Element Models and beam theory) to better analyse the effects of different parameters on profile variation. The results of the two approaches are compared with each other and with production data. Appropriate connectors and programming interfaces will be developed to transfer data from IBA files into data analysis software.

Another case of interest for the steel industry is furnace optimisation: 'Upgradation of Furnace Optimisation and Control System (FOCS)'. To address current limitations in the analysis of skid marks during rolling, the analysis system 2D SteelTemp is enhanced with 3D FEM and phenomenological models, which will be validated by real measured data.

A third use case involves the monitoring of bars on the cooling
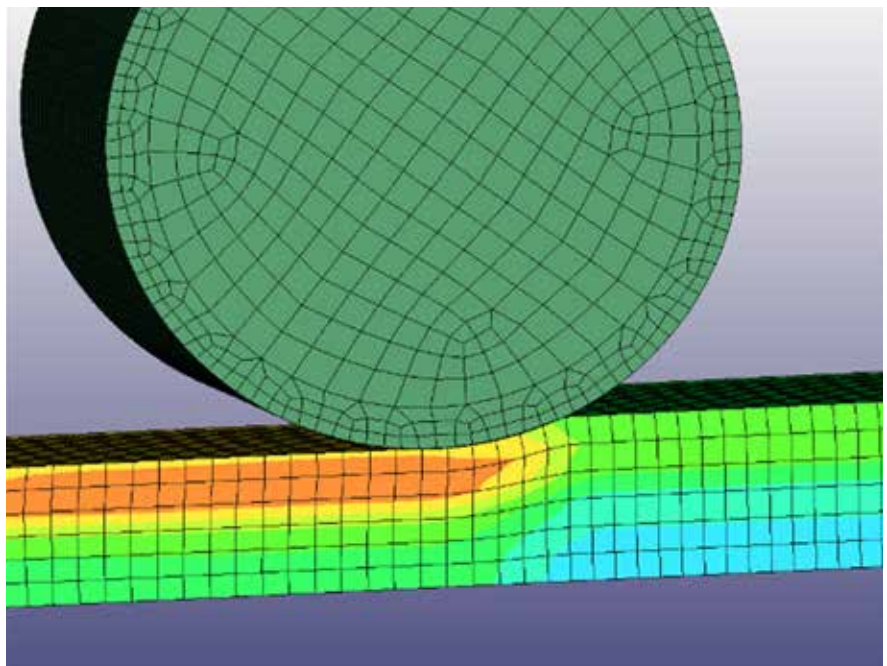
∧ Digital twin for reversible rolling

bed. The bars falling on top of each other on the cooling bed affect the availability of the plant. Camera-based image analysis has shown promise in helping operators make decisions. This technology is now being extended to use more cameras.

VMAP analytics works on an open database management concept that covers the different application classes and data types. First, the different data sets (raw data and models) are identified and the required metadata descriptions collected. The extension of manufacturing ontology modules from

Fraunhofer SCAI enables semantic metadata management that maps the interdependencies of the process participants. Connectors to the platform tool aCurve and the persistent databases enable seamless integration of the assets into the digital twin.

More information:
https://itea4.org/project/vmap-analytics.html

Global Innovation Summit 2022

Creating a sustainable Atlantic

Portugal has been hosting the Chairmanship of Eureka since July 2021. With an inspiring motto 'Innovation for a Greener, Digital and Healthier Planet through a collaborative approach', the Portuguese Chairmanship wishes to contribute to the success of Eureka by building on the work done by the Austrian Chairmanship. On 22 and 23 June, the Portuguese Chair will organise the Global Innovation Summit 2022 (GIS22) at the Estoril Convention Center in the city of Cascais.

2-day journey across the Atlantic

The Global Innovation Summit 2022 will be a journey across the Atlantic by connecting other Oceans to uncover innovative and collaborative ways to build a more sustainable future. The venue will be full of features, stages and collective spaces. Entering the event means starting a journey that allows attendees to discover innovative projects happening in several areas. In the venue a two-day full-scale conference programme will be organised with three stages and some common areas covering the geographies of Portugal and Europe, Africa, North and South America, Asia, and the Atlantic.

GIS22's objectives are:
> to emphasise the importance of the Ocean and its regions, creating new collaboration dynamics with countries in Africa and Latin America and pursuing the sustainable development goals (SDGs);
> to support the innovative developments towards green and digital transition and the associated importance of the role of policy;
> to create the compelling environment for a structured exchange of innovative ideas;
> to increase national and international visibility of the Eureka network; and
> to highlight the significance and impact of internationally oriented bottom-up initiatives.

Event focus

The Global Innovation Summit 2022 will focus on promoting Green Technologies for a sustainable future and on prioritising a smooth transition towards a carbon-neutral circular economy, tackling the challenges imposed by climate change on our planet, making it more resilient for future generations. During GIS22, the collective action of governments, companies (large industry, SMEs and

Topics & Stages

Tech for green

Building a Sustainable Future

Space-Ocean-Earth: interactions sustainability

Mobility and Future Cities

Cleantech

Startup Pitches

Digital Transition

Creating a Digital Twin Earth

Reshaping business through technology

Beyond Technology: Digital Strategy, Leadership & Culture

Startup Pitches

Strategy & Policy-Making

Funding, Collaboration and Active Dialogue

Post-pandemic recovery: the key is collaboration

Funding Opportunities

Industrial Policy

Special projects from Research Centers

Atlantic Lounges - Eureka Meets the Atlantic

Spaces for meetings and serendipitous interactions, with practical workshops, meeting booths, lounge areas

selected research organisations and outstanding individuals will be showcased.

Another major theme of GIS22 will be the 'new normal' that has been reached due to the pandemic, enhancing the imperativeness of the digital transition, as several societies are re-shaping their ways of governing and working. Innovation is at the centre of the political discourse at national, European and international levels. Digital transition and transformation, and the innovation that entails, is reshaping industries by disrupting existing businesses, value-chains and operating models. However, it is also having a profound impact on society, presenting a series of opportunities and challenges for businesses and policymakers.

Furthermore, linking and highlighting the importance of dynamic and agile strategies and policymaking that support the innovation ecosystems is going to be a central part of the GIS22.

The Eureka Clusters at GIS22

All Eureka Clusters, including ITEA will contribute to this year's event as well. An exhibition area at the heart of the venue will be the place to explore success stories from the Eureka programmes and to get advice on the international funding landscape and the tools and instruments available to businesses.

Networking and collaboration

The Global Innovation Summit 2022 willl offer a unique possibility for selected businesses, innovation agencies, research organisations, international funders and stakeholders from all over the world

to network, exchange ideas and develop business opportunities. In addition, Ministries responsible for Eureka, government entities (e.g Embassy representations in Portugal) and policy related officials will be invited, as well as high-level officials of the Eureka network.

Participation

Participation in this event is free of charge and as many participants as possible are encouraged to attend in person. For all the above-mentioned foreseen participants an invitation to attend the GIS22 will be sent. However, other participants interested in attending (from national or international locations) and that are not invited will have the possibility to register and follow the event online.

More information

More information will be shared with you shortly via e-mail and the website: https://www.gis2022.org/

Smart city challenges

Moving to a data driven Tampere for citizens

As the Director of Smart City Development at Business Tampere, Seppo Haataja knows a thing or two about making cities a better place to live. In May 2021, Tampere – the industrial centre of Finland and the Sauna Capital of the World – was one of eight international cities to join the ITEA Smart City Advisory Board in which cities and technology developers can share challenges, solutions and best practices. Such continuous dialogue will play an important role in the successor to the Smart Tampere programme, where Internet of Things, machine learning, artificial intelligence and mesh networks will come together to improve mobility, safety and much more.

© Photo: Visit Tampere/Laura Vanzo

A vision on open data

Through a combination of environmental sources (such as in-road sensors) and data from individual citizens, an ever-increasing amount of information is available in the modern city. "The question is," asks Seppo, "how can we use this data in the best possible way, using both analytics and AI while also taking into account privacy and a human-centric approach? What new services for citizens combine various data sources? In this context, we need public-private-people partnerships. Data enables cities to offer individually targeted services to citizens, city operations to be further developed and organisations to become data-driven."

New business based on open data has been one of the key visions for Tampere for some time now: as long ago as 2012, the city kicked off a six-year strategic programme called Open Tampere. At the core of this was the creation of new applications, products and services that benefit citizens, businesses and the public sector. "From an economic standpoint, an important element of the vision was that open data will provide new business opportunities for companies," Seppo explains. "We believe that open data, combined with open interfaces and platforms, is the key element to successful ecosystems and to the development of new innovations. We have been promoting this view nationally and internationally, and the next step for Tampere is to go 'From Smart City to Data-Driven City for Citizens'."

∧ Seppo Haataja
Director of Smart City Development at Business Tampere

Building on an ecosystem

Within this new programme, Tampere aims to utilise advanced data and AI to boost both citizen wellbeing and regional success and to create a Data as a Service (DaaS) model for organisations and civilians. Successful implementation should result in a better understanding of how data and AI can be applied, as well as an improved user experience for citizens and improved efficiency through targeted services. Crucial to this is continued collaboration with an ecosystem of companies, universities and research institutions, which ITEA is proud to facilitate.

"A programme like ITEA can support the development of smart cities by bringing big companies, SMEs and other innovators together to test and pilot new solutions for various city challenges," Seppo notes. "You can learn from other cities and it's also a cost-effective way to develop city services in a scalable manner, not just on a proprietary basis for one city. It's also

possible to get national and EU funding (like ITEA and Horizon Europe) as there are many calls on this theme. Technology providers and developers should be aware that there will be a growing market for various innovations and technology solutions that are scalable, help citizens in everyday life and support cities with their carbon-neutral targets."

A platform for citizens

Looking back on ten years of smart city development, Seppo highlights the Tampere. Finland application as an important tool for involving citizens in decision-making and ensuring that smart city concepts are understood and supported. In addition to providing access to information about services in Tampere (such as on the digital library card, public transport routes and timetables, ticket payment and cultural routes), this serves as a platform to test new applications and receive feedback from citizens. With over 100,000 downloads so far, the app has utilised location

data for the input of a smart street lighting system in a pilot area of the Viinikka district.

Another key result for Seppo has been the CityIoT project, which recently released its final report. "This project organised hackathons and over 30 agile pilots were carried out in Tampere. It was delightful to see how the interested companies attended the project and tested their products and IoT technology in the urban environment. The pilots confirmed that there are several digital solutions currently in the market that work technically and have business potential. These also proved that cooperation and co-development between the city and companies is functional and that agile piloting is a good approach to developing data-driven city services. Based on the project, the city of Tampere has completed a full IoT platform procurement."

The next step
In the meantime, there's a lot to look forward to in Tampere: in addition to hosting the 2022 Tampere Smart City Expo and Conference as part of the Tampere Smart City Week in June, the city will also be using the Tampere.Finland application to support the Ice Hockey World Championship in their brand-new Nokia Arena in May. In summarising their smart city goals, Seppo's message is straightforward.

"We focus on using data to improve the city's functioning, the future of companies and the residents' everyday lives, both ethically and reliably. We want to simultaneously improve our services, save time and effort and create new value. The world is full of data and it's time to make it work for our residents. 'Data-Driven City for Citizens' is the next step in the development of smart Tampere."

Tampere is one of many cities in which ITEA's ecosystem is bringing about smart developments for a higher quality of life. To find out more, take a look at some of our smart city projects at the right side of this page.

C³PO
Collaborative City Co-design PlatfOrm

C³PO has found ways for city planners and designers to consult citizens throughout the urban transformation process and thereby give citizens a better say in urban developments. The aim of the project was to set up a common digital platform that connects all the tools for collaborative urban development. This includes available (open) data sources, 3D models and visualisations as well as opinions and insights from citizens and interest groups.

https://itea4.org/project/c3po.html

SMART
Spatial Modelling Analytics & Real-time Tracking

The ITEA project SMART aims to mitigate traffic congestion and revolutionise transportation within cities. By leveraging 4D spatial technology platforms and real-time vehicle location data, economic and environmental inefficiencies can be reduced and improve quality of life. The same technologies can be used to react to and recharacterise traffic systems in a post-COVID world.

https://itea4.org/project/smart.html

PS-CRIMSON
Public Safety and Crisis Management Service Orchestration

PS-CRIMSON's platform offers geo-localisation, human re-identification, sensor integration, multi-layer analysis and 2D/3D smart digital model data integration for smart city concepts, allowing municipalities to offer more effective services for tracking and maintaining safety and security in cities.

https://itea4.org/project/ps-crimson.html

BIMy
BIM in the City

The ITEA project BIMy learned how Building Information Modelling (BIM) can be used and exploited beyond its normal use, and how the integration of BIM and geographic information systems (GIS) can be improved. It created a shared space for digital representations of construction projects in their environments, enabling collaboration between multiple stakeholders within the Smart City domain and paving the road for new applications.

https://itea4.org/project/bimy.html

Σ eureka

Ready to make industry more sustainable and greener?

Participate in our Eureka Clusters Sustainability Call 2022!

On 1 February, the Eureka network and the Eureka Clusters CELTIC-NEXT, EUROGIA, ITEA, SMART and Xecs launched the Eureka Clusters Sustainability Call 2022 for RD&I projects. The Call will focus on Sustainable industry.

Targeted challenges

In the global context of digital and green transitions, addressing sustainability and tackling energy and resource issues is essential. The Eureka Clusters Sustainability Call 2022 is designed to stimulate innovations in these important areas, through the creation of transnational collaborative RD&I projects.

Within the larger scope of sustainable industry, that is covered by this Call, two areas of interest have been identified specifically by the national funding bodies supporting the Call:

› **Green ICT** – ICT technologies are a key enabler of a green transition for production and consumption patterns in every business and every part of society. However, the digital technologies that are crucial for these ecosystems consist of electronic components, software and systems that can consume a large amount of energy and resources over their lifecycle (from production to installation, use and maintenance to disposal or recycling). Therefore, it is also important to advance research and development towards more sustainable electronic components, software and systems for information and communication technologies supporting sustainable manufacturing. Sustainable manufacturing should implement green ICT solutions in factories, operations, processes, and product planning. Furthermore, to achieve energy efficiency in terms of use of calculation power and related electronic devices, the sustainability idea must also include the design of economical and frugal data capture and processing from the outset.

› **Space-earth-ocean integrated systems for better observation and data exploitation** – The challenge is to create application-based ecosystems that take advantage of the rapidly developing space, ocean and land/aerial monitoring techniques and technologies and to create new capabilities and demand-driven, purpose-built ecosystems that take advantage of the rapid development of digital technologies (e.g. data-driven systems). These new capabilities shall support the move to a net zero emissions economy, contributing to climate control, monitoring and management of natural resources, sustainable food production and societal protection, amongst other opportunities.

More information about possible topics, that are examples of technologies and application areas which could fit within the Call, can be found at: https://eureka-clusters.eu/sustainability/targeted-challenges.html

Participating countries

The Eureka Clusters Sustainability Call 2022 will be jointly implemented between the Eureka Clusters and the Eureka Public Authorities of Austria, Belgium (Brussels & Flanders), Canada, Denmark, Finland, Hungary, Ireland, Luxembourg, Portugal, Singapore, South Africa, South Korea, Spain, Sweden, Turkey, and the United Kingdom. The available budget for this Call will be supported with over € 20-25 million.

More details about the funding information and eligibility criteria per country can be found at: https://eureka-clusters.eu/sustainability/funding.html

Participate in the Eureka Clusters Sustainability Call 2022!

The Call is open for projects that will form innovative ecosystems, with sustainable industry at their core, that will enable advances in the State of the Art and will result in commercial opportunities, economic and societal impact in the application areas addressed.

Participation in the Eureka Clusters Sustainability Call 2022 offers you strong benefits:

> Be boosted to become a frontrunner in your sustainability application area.
> Receive national funding with an expected success rate over 30%.
> Gain access to a large network of organisations from countries in Europe and beyond (incl. Canada, Singapore South Africa and South Korea).
> Be part of a flexible programme with bottom-up and market-driven idea generation, initiated by businesses and knowledge institutes.
> Get coaching and support from experts throughout the development and the execution of your project, with the possibility of having up to two Clusters providing this coaching and support.

Supporting tools and events

Online brokerage tools

If you have a project idea for this Call and are looking for partners, or you are interested in participating in a project proposal given your expertise in the field, the Project idea tool and Partner search can support you. To get access, visit the Eureka Clusters Sustainability Call Brokerage area: https://eureka-clusters. eu/sustainability/brokerage-area.html.

Online brokerage event and national webinars

To support you in setting up your project proposal and consortium, a **Eureka Clusters Sustainability Call Brokerage event** will take place on 23 March 2022. This fully-packed day will provide opportunities to pitch your project idea(s) and/or listen to the ideas of others. During the online break-out sessions, you can discuss and further develop your project proposal and consortium.

To fully benefit from this day, a 1-hour online **Brokerage preparation session** has been set up on 10 March, from 16:00-17:00 CET, providing you with tips and tricks and a demo of the available tools.

Finally, to learn more about the funding opportunities and eligibility criteria of your country and the other countries that you would like to collaborate with, **national webinars** are set up with the involved Public Authorities.

All event dates can be found at: https://eureka-clusters.eu/sustainability/events.html.

Important Call dates – block your agenda!

Upcoming national webinars

Luxembourg: *17 March 2022 - 13:30 CET*
Turkey: *14 March 2022 - 08:00 CET*

Brokerage event

23 March 2022 - Full day

Project Outline submission deadline

2 May 2022 - 17:00 CEST

Full Project Proposal submission deadline

30 September 2022 - 17:00 CEST

All information about the Eureka Clusters Sustainability Call 2022 and video recordings of previous national webinars and the Brokerage preparation session can be found at:

https://eureka-clusters.eu/sustainability.html

Eureka Clusters Call dates

CELTIC-NEXT	14 April 2022	Submission deadline for the CELTIC-NEXT Spring Call	https://www.celticnext.eu/
CELTIC-NEXT, EUROGIA, ITEA, SMART and Xecs	2 May 2022	PO Submission deadline Eureka Clusters Sustainability Call 2022	https://eureka-clusters.eu/sustainability.html
smart	3 May 2022	FPP submission deadline SMART Call	https://www.smarteureka.com/
Xecs	27 May 2022	FPP submission deadline Xecs Call 2022	https://eureka-xecs.com/

Colophon

ITEA4

https://itea4.org

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on software innovation