ITEA Magazine

July 2021 – Number 39

Enhancing from established roots

ITEA 3 measured in milestones

We are ready *4 the future*!

ITEA Success stories: ASSUME & Reflexion

ITEA 4

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ITEA 4

ITEA is the Eureka Cluster on software innovation

eureka

Dear ITEA Innovation Community,

This is a joyful and happy moment for all of us. This special edition of the ITEA Magazine celebrates the launch of ITEA 4 in the Eureka Clusters Programme (ECP).

ITEA 4 is now more than a plan, it is a real, continuous research and innovation programme that has one purpose agreed by all stakeholders: to create impact to enable Sustainable Growth through Innovation. I am very grateful to our dedicated ITEA Community and the Public Authorities for their continued and inspiring support and valuable contribution to make ITEA 4 happen!

ITEA 4 is the Eureka Cluster on Software innovation in the Eureka Clusters Programme (ECP), a renewed Eureka instrument. And collaboration, which has always been an important ambition of ITEA, has a new concept with ECP: collaboration among Eureka Clusters through Joint Calls. Frans Verkaart and Jan Jonker tell you more about the ECP and how it is designed to make stronger connections among Clusters for greater impact.

At the start of ITEA 4, we would like to cherish the impact of ITEA created by the ITEA Community over more than 20 years. Yes, ITEA 4 will build on ITEA's strong roots. 'Enhancing from Established Roots' reflects on the great achievements of ITEA projects on 19 different aspects, and the 'Success stories' of Assume and Reflexion reinforce this impact. Additionally, important ITEA 3 highlights have been presented in this magazine in the overview 'ITEA 3 measured in milestones'.

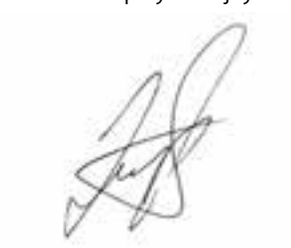
Moving from ITEA 3 to ITEA 4 is an important moment for us and for the ITEA Community. That's why a new ITEA 4 style has been designed presenting flexibility, dynamism, freshness and openness. I hope you will enjoy this new design and I invite you to find out the story behind it in the article 'ITEA 4 styling'.

By having continuous dialogue with Public Authorities, the ITEA 4 impact plan is designed to facilitate a better response to the requirements and needs of countries. And interaction with industry identifies the urgent needs of industry. It is at the meeting point of the industry and Public Authorities that this impact plan was built. This magazine presents a summary; the complete version will soon appear on our website.

Several new concepts developed for ITEA 4 have already been launched before its start. For example, the Smart City and Cyber Security Advisory Boards were established to strengthen ITEA's customer orientation. And the new challenge, Smart Energy, that was introduced was also the focus of this year's international customer workshop. Summaries of these initiatives can be found in this magazine as well.

ITEA 4 is an exciting new beginning for all of us and we are very happy to share this memorable moment with you. ITEA has been creating impact since its beginning. As Sustainable Growth is an ambition of ITEA 4, this ambition also applies to ITEA itself, too. The sustainability of ITEA can only be made possible thanks to your continuous support and sharing the joy of creating impact together.

I hope you enjoy the celebration of ITEA 4 in this magazine and I wish you all a good read.



Zeynep Sarılar

Enhancing from established roots

We are very pleased that the Eureka High Level Group approved the new Eureka Clusters Programme (ECP) and the participation of ITEA 4. ITEA 4 will further build on its strong legacy from ITEA 3, which has proven successful in spawning excellent research and innovation projects by the ITEA Community. We take a look at the key achievements and successes which show the progress made on the ITEA 3 Challenges and illustrate the impact of ITEA 3 on the economy and society.

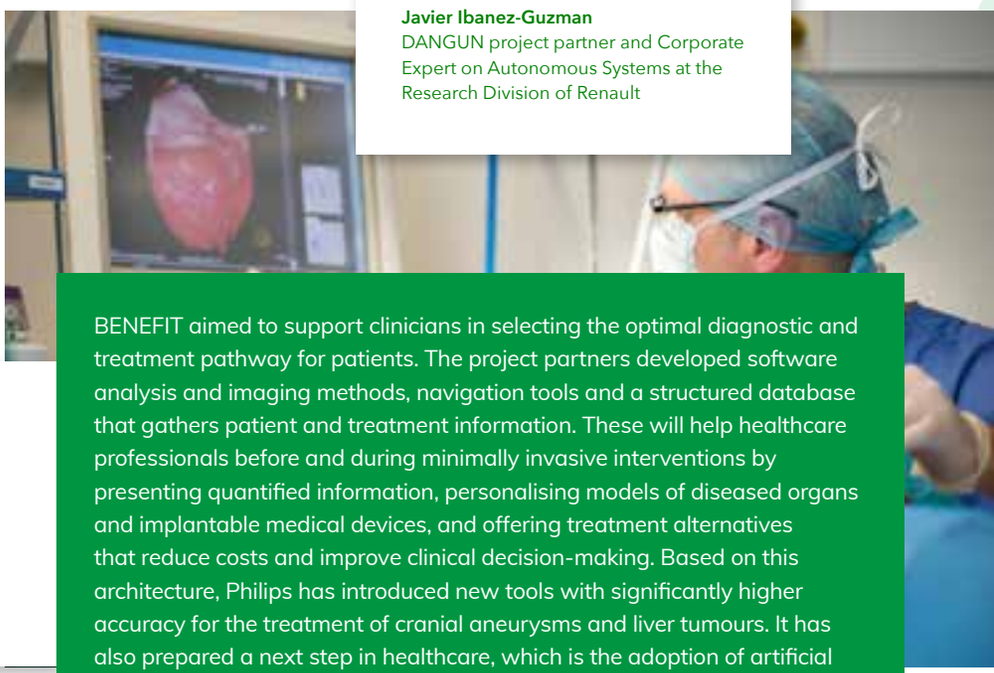
DANGUN

DANGUN developed a Traffic Jam Pilot function with autonomous capabilities and the technological deliverables have already been integrated into two experimental Renault ZOEs, which were transformed into computer-controllable automated driving vehicles. In February 2019, Hanyang University and LG demonstrated a self-driving car smoothly manoeuvring its way through the busy streets of Seoul, aided by and broadcasted live on a 5G network. By 2035, the first robotaxi businesses are expected. Many companies are working on this, but work by Renault on DANGUN has laid the foundation by using the Tele-Operation System to control a driverless vehicle from the other side of the world – the first-ever remote driving of this nature.

Smart mobility

"The results of DANGUN are an important component for the deployment of autonomous vehicles in the long term. Today, the technologies are part of our long-term intelligent vehicle perspective, included in the company's roadmap in the domain."

Javier Ibanez-Guzman
DANGUN project partner and Corporate Expert on Autonomous Systems at the Research Division of Renault



BENEFIT

"I am convinced that the worlds of surgical procedures and image-guided minimally invasive treatments will ultimately converge, enabled by innovations in real-time imaging systems, smart devices and software."

Bert van Meurs
Business Group Leader Image Guided Therapy at Philips

BENEFIT aimed to support clinicians in selecting the optimal diagnostic and treatment pathway for patients. The project partners developed software analysis and imaging methods, navigation tools and a structured database that gathers patient and treatment information. These will help healthcare professionals before and during minimally invasive interventions by presenting quantified information, personalising models of diseased organs and implantable medical devices, and offering treatment alternatives that reduce costs and improve clinical decision-making. Based on this architecture, Philips has introduced new tools with significantly higher accuracy for the treatment of cranial aneurysms and liver tumours. It has also prepared a next step in healthcare, which is the adoption of artificial intelligence based on such quantified clinical data.

Smart health

FUSE-IT

FUSE-IT addressed the need for sustainable, reliable, user-friendly, efficient, safe and secure Building Management Systems in the context of Smart Critical Sites. The project solves the dilemma between 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. Thanks to FUSE-IT, a malicious hacker wanting (for example) to take over a hospital's heating, ventilation and air conditioning system can be stopped and both energy and lives can be saved!

Safety and Security

"Airbus CyberSecurity strives to be at the leading edge of innovation in fields which combine safety and security. Award-winning projects such as FUSE-IT show that we are moving in the right direction."

Steve Rymell
Head of Technology at Airbus CyberSecurity

ACOSAR

ACOSAR has developed the Distributed Co-simulation Protocol (DCP - a global standard), which focuses on the efficient integration of distributed real-time systems and simulation environments. The range of applications is wide and can, for example, reduce set-up and configuration time. The ACOSAR results have significant implications for the automotive industry and will lead to a shorter and considerably more flexible modular system development process for numerous industrial domains, as well as enable the establishment of new business models. Evaluation by means of demonstrators indicated vast potential savings; sports car manufacturer Porsche estimates that within a period of five years, the introduction of the DCP could save them between five and seven million euros.

"I'm very proud to see the main project outcomes successfully implemented in the form of an industrially-accepted open Modelica Association Standard. The ITEA framework, with its well-implemented project initiation and execution processes, substantially helped ACOSAR to deliver on its promise."

Martin Benedikt
ACOSAR project leader and Innovation Manager at Virtual Vehicle Research GmbH

Smart engineering

ACCELERATE

ACCELERATE took up the challenge of enabling European technology companies to adopt acceleration know-how by focusing on two goals: the transfer of knowledge on a massive scale and the introduction of the so-called validated learning process that systematically searches for a technology-market match. The ACCELERATE project partners created a platform that eases and facilitates interactions between start-ups and investors for business and product ideas or simply ideas that could be marketable. The platform is now the meeting point for 15 investors and 105 users registered as start-ups. The platform is currently hosting over 60 project ideas.

"ACCELERATE was the first ITEA project for BEIA and enabled us to increase the awareness of telemetry systems among the community of start-ups in Romania, including internships for translating ideas from research to the market. Also, BEIA established a digital innovation hub around the ACCELERATE platform with the goal to foster new partnerships and smart communities by expanding its telemonitoring portofolio with IoT solutions for various verticals – GHG emissions, air quality monitoring system incorporating decision-making components, blockchain traceability applications for agri-food, renewable energy and smart cities."

George Suciu Jr
ACCELERATE project partner and R&D and Innovation Manager at Beia Consult

Smart communities

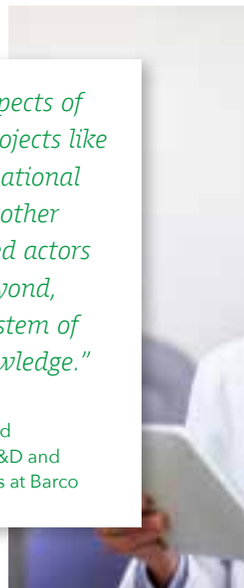
C³PO

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 development. The aim of the project was to set up a common digital platform that connects all of 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. The project was strengthened by the participation of the cities of Brussels, Kortrijk, Kouvola and Oulu and the Municipality of Pendik (a district of Istanbul), which provided the perfect opportunity for trials.

Smart cities

"One of the key aspects of our innovation projects like C³PO is the international cooperation with other innovation-minded actors in Europe and beyond, creating an ecosystem of partners and knowledge."

Andy De Mets
C³PO project leader and Coordinator External R&D and Innovation Programmes at Barco



SPEAR

Smart industry

SPEAR combines real-world production processes with digital twins in a simulation environment in order to accurately measure and optimise energy usage. SPEAR's main technological component is the optimisation platform, which uses algorithms to create an accurate prognosis of the expected energy consumption and is available as either a local application or cloud-based service. By helping companies to optimise their energy usage, SPEAR enables them to manage resources more effectively and increase their productivity in a sustainable manner. SPEAR will allow companies of all sizes to reap such benefits by making its results available as free software prototypes.

"Only thanks to the ITEA project SPEAR were we able to bring together smart minds from five countries to develop the vision of a better energy use and forecasting based on digital twins of energy sources and energy consumption. A particular success is the maturity level (TRL5) reached by the SPEAR platform prototype, with the help of which the project vision can be presented to industry."

Anton Georgiev Strahilov
SPEAR project leader and Head of Research at let's dev GmbH

SEAS

Smart energy

SEAS was at the heart of the energy transition. The project set out to enable the interworking of energy, ICT and automation systems at consumption sites, introducing dynamic and intricate ICT-based solutions in order to control, monitor and estimate energy consumption. It also explored business models and solutions to enable energy market participants to incorporate micro-grid environments and active customers. The SEAS revolution: more cost-effective, more environmentally friendly and more customer-focused energy streams through efficient interactions between providers and prosumers...everywhere.

"SEAS was the first ITEA project on semantics with a big impact but it will not be the only one. M2MGrids and BaaS are two ITEA projects with the same semantics technology as SEAS and the involvement of big players like NOKIA and Siemens. Thanks to this, ITEA can have a big impact."

Philippe Bourguignon
SEAS project leader and senior project coordinator at Engie

MoSHCA

SME success

MoSHCA was led by the Dutch SME Evalan and more than half of the partners were SMEs too. The project was geared towards improving patient-doctor interactions and controlling chronic diseases, developing technological set-ups that significantly improve the self-management of chronic illnesses, promoting communication between the patient and the health provider, and supporting health staff in providing better clinical follow-ups. After the MoSHCA project, Evalan experienced a growth rate of 100% each year. This growth is reflected in all metrics – employees, turnover, profitability, etc. During this period, Evalan added 40 FTEs to its payroll.

"MoSHCA is a project by SMEs and led by an SME which has resulted in a long list of innovations and immediate impact on the market. Evalan sells sensory shoes as a new product to enhance rehabilitation treatment, while CLB and Sound Intelligence are already selling epilepsy monitoring to more than 3000 patients."

Philippe Letellier
Former ITEA Vice-chairman

SoRTS

Philips (Netherlands), with their radiation treatment planning solutions, is part of Elekta's (Sweden) competitive landscape. In SoRTS, however, they worked together: Elekta developed the MR-linac system (Magnetic Resonance Imaging - Linac Accelerator) from MR technology, making it the only MR/RT system that integrates a premium quality (1.5 Tesla) MR scanner, while Philips developed an advanced linear accelerator and intelligently-designed software. The system allows physicians to precisely target a tumour, even when the tumour tissue change shape, location, size or composition during treatment. Thanks to this, patients can benefit from less intrusive treatment, enabling them to continue their daily lives.

"If I had chosen surgery, I could have been out of action for three months or longer, not to mention the complications that can happen with surgery. With radiotherapy, I could still carry on working as usual."

Barry Dolling
Prostate cancer patient and medical pioneer on 18 September 2018, as he was the UK's first person to be treated with Elekta Unity MR-linac
(Source: https://focus.elekta.com/2019 /03/the-era-of-mr-rt-in-the-uk/)

Competitor's collaboration

Global collaboration

"The MOS2S project has been lucky to cooperate with successful partners from the Netherlands, Belgium, Turkey as well as South Korea. Not only did this allow us to incorporate technology developments from across the globe, but it also allowed us to showcase our innovations at incredible venues and engage citizens and audiences of live events and reality situations in order to bring engagement and personalised experiences to a higher level."

Gjalt Loots
MOS2S Project leader and business consultant for TNO

MOS2S

MOS2S, involving 16 partners from the Netherlands, Belgium, Turkey and South Korea, has created world-first methods and media tools to engage citizens and audiences of live events and reality situations in order to bring engagement and personalised experiences to a higher level. For example, a soccer match was not only played live in Amsterdam but was also watched in real life and real time in Daejeon, South Korea. Viewers were offered an unparalleled live experience thanks to Ultra-Wide Vision technology developed in the project and the use of a special dedicated fibreglass connection. This was the first intercontinental broadcast using this technology, with only a 0.3 second delay.

VMAP

"The ITEA project VMAP has outstanding outcomes that will speed up the digitalisation process of all industries. By developing standards in virtual engineering, VMAP has pointed out an important need for all industries and their partners; without any standardisation, processes will take longer and solutions will be project-based."

Zeynep Sarılar
ITEA Chairwoman

VMAP created a free, open standard for the transfer of material and engineering information between simulations within a Computer Aided Engineering (CAE) process chain. This provides simulation and design engineers with a fast solution for passing information from one calculation to another without needing to create time-consuming one-off interfaces. VMAP will continue the excellent work done on the much-needed VMAP standard via a legal international association registered in Germany: the VMAP Standard Community (VMAP SC). Future guidance, collaboration, development and maintenance can be effectively managed and encouraged by this open and vendor-neutral association.

Standardisation

SCALARE

Customer involvement

The challenge taken up by SCALARE was how to support and enable organisations to scale their software capability in a proactive, systematic way. One of the key outcomes of SCALARE is the Scaling Management Framework (SMF), which enables companies to cope with the transformation challenge of scaling their software capability, as software is becoming a prime factor in delivering innovation and competitive products or services. Customers were involved from the beginning of the project, including Husqvarna, who were able to respond to increasingly demanding customer needs. Husqvarna now has 50 times as many software developers.

"In 2013, our software development organisation consisted of a handful of people. Today, it consists of over 200 people. SCALARE has been a major help on this journey."

Anders Mattsson
Project partner and lead architect for the IoT systems at Husqvarna Group

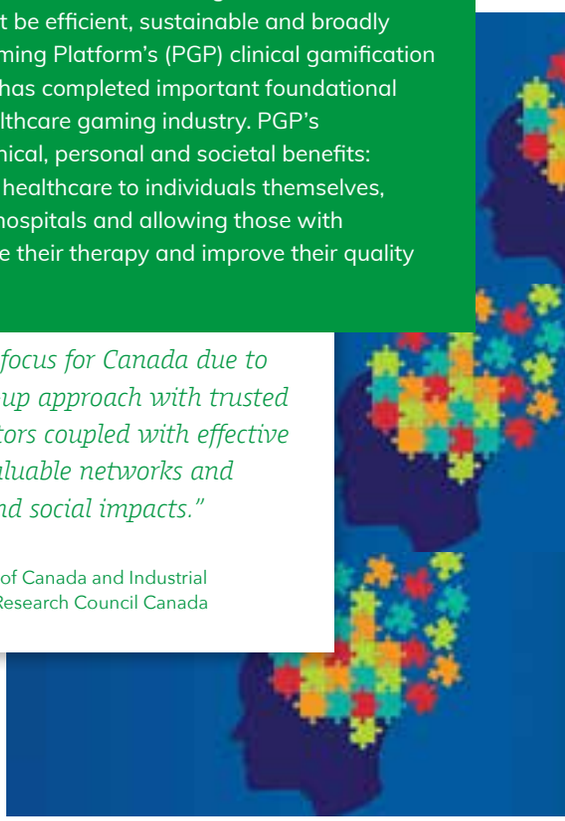
Panacea Gaming Platform

Social impact

Children with disabilities represent 13-15% of the paediatric population. For the elderly population, this figure is 40%. The incidence rate of autism spectrum disorders, meanwhile, has increased by 600% in the last ten years. When attempting to assist vulnerable individuals while reducing healthcare costs, interventions must be efficient, sustainable and broadly applicable. Panacea Gaming Platform's (PGP) clinical gamification presents a solution and has completed important foundational work for the serious healthcare gaming industry. PGP's significance lies in its clinical, personal and societal benefits: the opportunity to bring healthcare to individuals themselves, relieving the burden on hospitals and allowing those with disabilities to personalise their therapy and improve their quality of life.

"ITEA has been a particular focus for Canada due to its industry-driven, bottom-up approach with trusted and engaged innovation actors coupled with effective processes. This generates valuable networks and projects with commercial and social impacts."

Jiang Chen
ITEA Public Authority representative of Canada and Industrial Technology Advisor at the National Research Council Canada



MOSIM

MOSIM created an open-source 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. The approach helps by eliminating working conditions that negatively impact safety and worker well-being.

"This opens up a lot of new possibilities. When you can simulate humans moving realistically through assembly sequences, this provides additional opportunities to investigate optimisation potential in the factory, such as adjusting shelf positions in order to shorten walking paths. It can even be used to provide immersive training for workers on how to complete their tasks."

Felix Gaisbauer
Technical Coordinator for MOSIM and PhD Researcher at Daimler Buses - EvoBus GmbH

Happiness

PS-CRIMSON

PS-CRIMSON, a collaboration of six academic, industrial and SME partners from the Netherlands and Canada, developed a unique 3D smart digital model that combines all of the gathered data on one common platform that serves as a single entry point for city representatives. It facilitates data collection, sharing, management, analysis and dissemination from public and private urban infrastructures and resources, thereby improving public safety and disaster management. The PS-CRIMSON partners show a unique complementarity; by offering a complete smart city solution, the project has already won a tender for Smart City Hilversum (Netherlands) which is now being deployed, while similar projects are being implemented in Canada, the United States and China.

Collaborative exploitation

"Cities all over the world face similar challenges in ensuring a safe, pleasant and sustainable living environment for their citizens. Through this ITEA cross-border R&D&I collaboration, industry standards are set to tackle these city challenges while simultaneously safeguarding the unique identities of cities around the world. The Ministry of Economic Affairs and Climate Policy and the Netherlands Enterprise Agency continue to support these excellent projects."

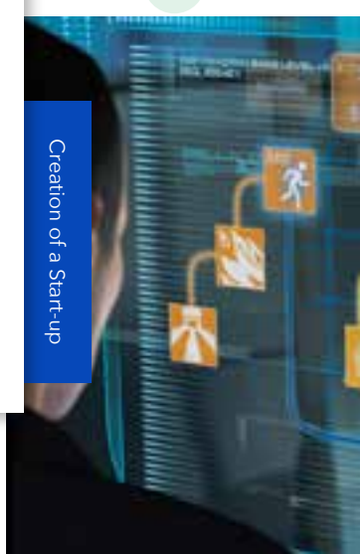
Simon Haafs
ITEA Public Authority representative of the Netherlands and Programme Manager at the Netherlands Enterprise Agency

BaaS

BaaS (Building as a Service) introduced a novel semantic IoT service framework for commercial buildings along with a reference architecture and corresponding software platform as a basis for current and future commercial building automation and management technologies. The BaaS approach can serve as a blueprint for stakeholders in future BAS ecosystems. Turkish SME and project partner Bor Software started the project as the smallest SME participant (two people) and now has 65+ employees (50+ engineers). Spin-off companies IOTIQ GmbH, Dakik and ERSTE Software Ltd were founded under the guidance of BOR Software, inspired by the BaaS knowledge gained and its IoT focus. Bor Software's name has been changed to 'IOTIQ Ankara' and has become a marketing point of the products in the eastern half of the world.

"The company has grown to 65 people, three products and five to six different service domains today, and ITEA projects have been a contributory factor to our success and subsequent growth. After the trigger of BaaS, we now operate in two countries (Germany and Turkey) and we have been doing business in Germany, Turkey, the UK, Canada, Qatar and Spain."

Özer Aydemir
Project partner and CEO & Co-Founder of Bor Software



Creation of a Start-up

ADAX

ADAX aimed to develop advanced capabilities for cyber-attack detection and countermeasure simulation and delivered a set of key innovations improving prevention, detection, decision support, countermeasure enforcement and knowledge management in order to support security operations on complex and critical IT infrastructures. Key developments deriving from the project have resulted in successful exploitation with e.g. more than 12 direct customer contracts and several future applications in security monitoring for smart critical buildings, smart grids and factories of the future. ADAX won the EUREKA Innovation Award 2017 in the category 'competitiveness' during the EUREKA Innovation week in Barcelona.

Eureka success

"The ADAX project was unique because it addressed cybersecurity in a cost-effective manner. From the start, the involvement of the customer Yapi Kredi drove us to a solution that would fit the market by design. The continuous and constructive mentoring of ITEA from project idea to exploitation, with its business impact-driven approach, helped us to reach the full potential of the project."

Adrien Bécue
ADAX project leader and Head of Research & Technology at Airbus CyberSecurity

3DPatholgy was set out to create a 3D digital pathology solution for same day diagnosis and much more personalised treatment of cancer. The project's world first 3D multi-modal pathology demonstrator 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. For Barco, 3DPathology represented the first steps into a new market. Currently, Barco has already sold several hundred optimised display systems worldwide that address a variety of pathology lab needs and, over the next few years, they expect a large increase in the sales of display systems for digital pathology.

New Business for Large Industry

"3DPathology has been a very important collaborative project for Barco Healthcare. It allowed Barco to obtain a deep understanding of the clinical needs by closely interacting with pathologists and hospitals. Together with the other project partners we have been able to co-design technology & solutions and were able to validate these in realistic international context. By means of the 3DPathology project, Barco has been able to explore and enter the digital pathology market."

Tom Kimpe
VP Technology & Innovation, Barco NV

3DPathology

Online ITEA PO Days 2021

By and for the ITEA Community

ITEA projects make a difference! This has once again been underlined through the approval of ITEA 4. Fourteen ITEA Board members endorsed the application and already sixteen countries committed to support ITEA 4 projects in the future. So, we are very pleased to announce ITEA 4's first Call, which will be launched on 13 September 2021 in conjunction with the Online ITEA Project Outline (PO) Preparation Days 2021 that will take place from 13 to 16 September 2021. This four-day networking event is the perfect opportunity to pave the way for your ITEA Call 2021 project proposal!

Online but connected

Although we would have loved to come together with the ITEA Community again, the health of our members is our number one priority. The current situation with COVID-19 still prevents us from organising a physical event this year. But last year's Call and the Online ITEA PO Days 2020 proved the agility of the ITEA Community as these delivered the same number of projects and high level of quality as previous Calls. COVID-19 certainly can't stop us from innovating, so let's meet online and get connected!

300+ potential project partners · presentations of innovative project ideas · constructive consortium building · dynamic online workgroup sessions · interactive networking opportunities

By and for the ITEA Community

The ITEA PO Days are organised for the ITEA Community in order to support them in the preparations for a successful Project Outline. ITEA provides all the tools, including the Project idea tool & Partner search, an online project idea poster & pitch overview and an interactive chat & meeting tool. All these tools support the creation of strong consortia and the development of solid project proposals. Nevertheless, this event would not be so successful without our strong, innovative Community. Each year, the devoted ITEA Community proves that they are the pillars on which ITEA is built. Large numbers of innovative, high-quality project ideas are submitted to the project idea tool and, during the PO Days, strong foundations are laid for the project proposals which are submitted later on. Each year, over 75% of the submitted Project Outlines are developed at the ITEA PO Days, clearly emphasising the importance of this event as well as the devotion and effort put forward by the participants.

Online ITEA PO Days 2021 kick-off: 26 August

We know from experience that the ITEA PO Days are completely packed and it is therefore highly recommended that you are well-prepared before the start of the event. To facilitate this, we have set up an online kick-off meeting on Thursday 26 August from 15:00 to 16:30 CEST. During this kick-off, we will explain the online process and tools of the Online ITEA PO Days 2021, from creating and checking project ideas, posters and pitches to subscribing to workgroup sessions and getting in touch with other participants. We hope to 'meet' you then!

Online ITEA PO Days 2021 in a nutshell

This event will offer participants the opportunity to:

- Present your project idea(s) and/or learn about other project ideas via uploaded posters and pitches
- Discuss your project ideas in online workgroup sessions and shape them into initial project proposals and consortia
- Set up a quick 1:1 or group conversation via implemented chat and video calling functions
- Get connected with companies and potential partners from all over Europe and beyond
- Learn more about the specific funding rules in your country well in advance, as well as how to get in touch with your Public Authorities to discuss your idea(s)
- See how the ITEA Office can support you during the full project lifetime

Country information sessions – an early dialogue to improve success rates

ITEA projects are publicly funded at a national level. Each partner of a labelled ITEA project can apply for funding from their own national Public Authority. An early dialogue between project consortia and Public Authorities from the involved countries supports an alignment with national priorities and the best possible opportunities for funding.

ITEA supports this early dialogue by offering our Public Authorities the chance to present their national priorities, eligibility criteria and funding outlook in the week before the Online ITEA PO Days 2021. On Friday 10 September, a set of interactive 'country information sessions' will be organised, during which participants can learn more about the conditions and outlook for funding and will have room for questions. This will help consortia to focus their efforts on eligible partners during the Online PO Days 2021, which is beneficial for everyone.

How to be a winner

Each year, the ITEA Board Support Group and ITEA Steering Group nominate outstanding ITEA projects for the ITEA Award of Excellence. During the ITEA Award of Excellence ceremony, which will take place on Wednesday 15 September from 14:00-15:30 CEST, project leaders will share their success stories as well as their recommendations on managing a project successfully.

This year, these awards will focus on the key achievements for ITEA: Innovation, Business impact and Standardisation. Four projects were selected for the 2021 Award of Excellence:

- BIMy will receive the ITEA Award of Excellence 2021 for Innovation:
  BIMy provides a platform for different stakeholders to share different building and city models. Several tools and a guideline book have been developed to support the exchange of different models on the platform. This BIMy innovation opens the door to strong cooperation and new innovations in the smart city domain.

- PARTNER is the winner of the ITEA Award of Excellence 2021 for Business impact:
  PARTNER has demonstrated important outcomes with a strong impact on the businesses of the project partners in the healthcare domain. The project has created solutions to share patient data in order to optimise the patient journey through the health system. This helps to give better care while managing privacy issues.

- VMAP will receive the Award of Excellence 2021 for their Standardisation efforts/impact:
  VMAP has made a great effort to promote its results as a standard and will continue this after the end of the project with the creation of the VMAP Standard Community e.V.

- EMPHYSIS will receive the special ITEA Vice-chairman Award of Excellence 2021 for outstanding results in all three categories:
  EMPHASIS has achieved great results with important innovations for embedded systems, significant business impacts for the automotive industry and a strong contribution to standardisation.

Join us and register now!

Join us at the Online ITEA PO Days 2021 and become part of ITEA 4's first Call! Block your calendar from 13-16 September and register now. The participation fee for the Online ITEA PO Days 2021 is EUR 100 but if you register before 1 August 2021, you can benefit from the early bird fee and only pay EUR 75! Fees are non-refundable.

For more information and registration, visit:
https://itea4.org/onlinepodays2021/index.html.

We look forward connecting (with) you!

Important dates in the ITEA Call 2021

- **31 July**
  Deadline for early bird registration for the Online ITEA PO Days 2021
- **10 September**
  Country information sessions for the ITEA Call 2021
- **13 September**
  Opening of the ITEA Call 2021
- **13-16 September**
  Online ITEA PO Days 2021
- **16 November**
  Submission deadline for Project Outlines for the ITEA Call 2021

ASSUME

Reducing bugs and false errors to boost efficiency

Mobility is one of today's key societal challenges and is impacted by a huge array of factors, including global warming, restrictions in the energy supply, an ageing population and security concerns. Fortunately, autonomous systems can play an important role in tackling all of these issues due to the possibilities for increased safety, reduced fuel consumption and emissions and social inclusion for the elderly or disabled.

Success story

An inherent problem, however, is the excessive amount of time taken by tools to find bugs and false errors in autonomous systems. For instance, tools using abstract interpretation to prove the absence of runtime defects typically cease to be useful above 200-300,000 lines of code (depending on the programming features and complexity), while model checking techniques are currently limited to much smaller code sizes. This is the challenge that a consortium of 38 partners set out to meet from September 2015 to December 2018 within the ITEA project ASSUME (Affordable Safe & Secure Mobility Evolution).

The challenge of public perception

By bringing together a mix of OEMs, SMEs, tool/service providers and research institutes from five countries (France, Germany, Turkey, Sweden and the Netherlands), ASSUME aimed to boost tool performance and efficiency in the mobility domain. A major step for the development of autonomous systems is the shift from assistance systems to automated (hands-off) systems which are completely responsible for their own decisions. Public perception is moving towards higher expectations regarding the safety of highly autonomous systems; as a result, greater trust is needed if automated driving is to become both applicable and acceptable. With hands-off systems, a failure rate clearly below that of a human actor is the minimum expectation. Future mobility solutions will therefore rely on smart components that continuously monitor the environment and assume an increasing amount of responsibility for convenient, safe and reliable operations.

In a nutshell, ASSUME's main goal was to enable the affordable, standard-compliant development and verification of highly automated, safety-relevant and performance-critical mobility systems. A strong focus on development methods for concurrent systems and static verification techniques allows for the cost-effective proof of the absence of problems, even in a multi-core environment. The major field of innovation for the project's industrial partners (end-users) was model-based parallel software engineering for multi- and many-core processors. By improving their existing tools and developing new ones, ASSUME ultimately enabled the effective use of formal verification and synthesis technology along the design flow.

Improved connections between companies

German partners have seen successes in terms of technical output, commercial results and ongoing

Project start
September 2015

Project end
December 2018

Project leader
Dumitru Potop Butucaru
INRIA

More information
itea4.org/project/assume.html

collaboration. Bosch, for example, worked with several ASSUME partners to develop new methods and tools for the sequential verification of very large embedded software. Through several Bosch use-cases, these lead to a threefold decrease in the time taken for verification, a reduction of the memory footprint by a factor of three and a reduction of the number of false warnings by a factor of up to ten. The methods developed in ASSUME are now routinely used for large software products with more than two million lines of code. Furthermore, the methods and tools are being applied in several other business units of Bosch, which can now use formal methods efficiently in real projects.

ASSUME has also improved connections between companies: during the project, BTC ES, MES, Daimler and OFFIS set up a collaborative toolchain for model-based, requirement-driven development which integrates the industrial tools of BTC ES and MES with an OFFIS research prototype. In an industrial use-case provided by Daimler, it has been shown that this can reduce the effort for safety verification while improving requirement traceability. From OFFIS' perspective, ASSUME demonstrated both opportunities and shortcomings for the application of formal methods in industrial settings and also had a positive impact on their overall funding status. In addition to support for several PhD positions, they were able to acquire extra projects (including ARAMiS II and PANORAMA) and improved their standing in the scientific community with various peer-reviewed publications.

The methods developed in ASSUME are now routinely used for large software products with more than two million lines of code

As for other highlights from German partners, FZI Research Center for Information Technology has extended their portfolio towards safety-critical software and their follow-up activities have financed several new staff members. Various research projects building on the discussions and outcomes of ASSUME have been initiated, particularly with the German automotive industry but also with tooling providers and national academic partners. Likewise, EXPLEO has extended its software code quality assessment and model quality assessment while continuous customer projects in both fields have resulted in a growth of two to three highly-qualified employees. Bosch aims to keep this ball rolling with new, publicly-funded projects with former ASSUME partners and has generated greater awareness of the project's results through a joint paper on sound abstract interpretation published at the SAE World Congress.

Enabling knowledge transfers

The main activities of the Swedish consortium, which was led by KTH, were focused on allowing seamless traceability and impact analysis of functional and safety properties for Scania's development environments alongside SME FindOut. The collaborations initiated in the project are still running at several levels. A KTH senior researcher for instance, has been working part-time as an external consultant for Scania's R&D team on technologies initially developed within ASSUME – a great example of sustainable cooperation focused on knowledge transfers from academia to industry. KTH also recruited a software developer, who has been following up his activities as a PhD student in their research unit. Thanks to his involvement in ASSUME, this software developer is now a co-chair of the governing board of the OSLC Open Project, an international standardisation effort related to the software integration technologies promoted by KTH and Scania in ASSUME.

KTH's goal of pragmatic technical collaborations with Swedish industry has clearly been fulfilled as activities initiated within the project resulted in a significant increase in Scania's internal efforts based on ASSUME technologies, a momentum which is still ongoing. These developments have also been felt among the smaller companies, as FindOut was able to hire two consultants for three years to develop a suite of visualisations for electrical systems, message passing structures and software structures which has now been integrated into tools for system architects at Scania. Overall, these successes have allowed project partner KTH to remain visible at an international level regarding sustainable standardisation efforts for technologies in their research agendas.

New connections for academia

In addition to collaboration between industry and academia, cross-academic links also had a crucial role to play in ASSUME. In France, Sorbonne Université and École Normale Supérieure collaborated on novel techniques to allow for the

static analysis and verification of parallel software running on multicore processors. Most notably, they developed new models and abstractions that account for the weak consistency memories of multicore systems (including Total and Partial Store Ordering models), the detection of deadlocks and the real-time scheduling policies used in multicore embedded software systems (including dynamic priorities and the priority ceiling protocol). This produced both theoretical results (accompanied with formal proofs) and proof-of-concept implementations.

For Sorbonne Université, ASSUME's impact is predominantly internal as project-related publications have consolidated the institution's reputation as an expert in the formal analysis of concurrent software. The project also led to one PhD defence, with the student subsequently hired at a company which develops static analysis tools. In regard to the intersection of academia and industry, Sorbonne Université and École Normale Supérieure's results were integrated by AbsInt into their Astrée industrial analysis tool (enhancing its scope, efficiency, and precision) and their partnerships with Airbus and AbsInt were strengthened. As a result, AbsInt was able to develop the first ever sound static analysis for embedded automotive software targeting the novel multicore AUTOSAR standard.

Benefits across Europe

Similar outcomes were seen at other partners across the Netherlands and Turkey, such as the Dutch research institute TNO. The ASSUME project afforded them the opportunity to advance their knowledge on functional safety and the systematic analysis of automotive applications in vehicle automation in order to ensure their reliability and functional safety. In turn, this allowed them to sharpen their market propositions in subsequent projects, train colleagues on these topics and attract new projects. More tangibly, they were able to develop an analysis tool based on a combination of Matlab and Enterprise Architect, which was then expanded and superseded by new efforts from a number of colleagues.

At Eindhoven University of Technology (TU/e), the project's most significant outcome was the sparking of an investigation into the use of max-plus automata to significantly enhance the scalability of performance verification of embedded stream processing systems. Following the end of ASSUME, this was extended to cyber-physical systems and manufacturing systems. In addition, ASSUME made TU/e aware of both the importance and the costs of fault-resistance, especially in the context of FPGA-based designs in the automotive domain and for space-critical operations. The advanced analysis techniques developed in the project have been consolidated into the publicly-available SDF3 (SDF For Free) toolset and the open-source tool LSAT and have been used in collaboration with ASSUME and other partners.

As one final success story from ASSUME, Turkish partner KoçSistem used the project to develop or improve various tools, including AlloyInEcore (for specifying metamodels with their static semantics to facilitate formal, automated reasoning on models) and Tarski (providing generic frameworks for automated traceability analysis). In addition to opening up a commercial revenue stream with Ford Otosan, ASSUME has led them to start a new, local R&D project based on automotive manufacturing processes and receive funding for two additional ITEA projects, XIVT and PANORAMA.

Ensuring a smooth transition

All in all, ASSUME has brought enormous technological benefits to the field of autonomous systems for mobility through the design of a Static Analysis Platform (SAP) that allows for more efficient development of safety-critical, concurrent software for different domains, as well as high-quality, fault-free code for future software systems. Thanks to the creation of a tool chain, ASSUME has enabled the use of results between different tools including:

- a 50% increase in the (run-time) performance of analysis tools
- a 60% reduction of spurious warnings in analysis tools for single cores
- an almost 100% reduction of error classes in single core analysis
- an 80% or more success rate of traceability of run-time errors back to the model level
- a 40% cut in efforts to inspect runtime errors in a typical industrial setting

Greater efficiency means lower costs for organisations in this domain, as well as the opportunity for new collaborations and increased market access via increased interoperability between different players and technologies. Around 700 developers currently use one or more tools developed in the ASSUME project and this number is set to grow, helping society as a whole to make a smooth transition to mobility which is sustainable, affordable and inclusive for all.

ITEA 4 styling

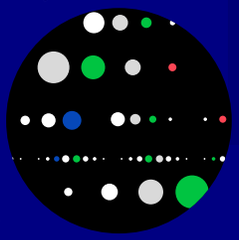
Fresh, flexible, global and dynamic

In front of you is the ITEA Magazine, which we proudly present in a newly upgraded style. As you may expect from ITEA, this new style comes with a personal story and we'd love to take you down this road.

In the design, ITEA's ambitions – innovation, business impact, customer engagement, open collaboration and happiness – were translated into a set of characteristics which could be linked to each of the following ambitions: connection, movement, energy, transformation and dynamism. By also taking into account the symbiosis of the technological and human character of ITEA and its strong Community, as well as the 'happiness factor' that clearly differentiates ITEA from other innovation programmes, a completely new style was born which nevertheless respects the strong and successful track record of ITEA.

Fresh & sustainable

Despite being based on a very strong legacy, ITEA 4 is a new beginning. The ITEA colours have therefore been refreshed. A fresh green colour reminds one of spring – the 'breeding ground' for new life representing the many new innovations (but also new ecosystems, business relations, partnerships and even friendships) that have their origins in ITEA.

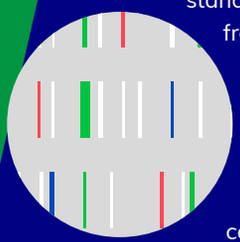


Alongside new, ground-breaking innovations, ITEA 4 also focuses on *sustainable growth*. The daily life of every human is becoming more connected and digitalised but the resources of our planet are scarce and must be used with great care. These are challenges that we all face and can only be overcome by the continuous and sustainable improvement of each process through collaboration between diverse industrial members. ITEA 4 will master the new major trends in the market that help create wellbeing and sustainability in society. ITEA 4 *Sustainability.*

The stronger contrast with the new black boosts both colours, like ITEA boosts innovations and the projects boost happiness and impact for both the economy and society.

Open to global collaboration

Since its origin, ITEA had stood for Information Technology for European Advancement. ITEA now stands for its strong and innovative Community from Europe and beyond. As 'the Masters of Digital Transformation', ITEA is the home for software innovations and a 'family' that brings happiness to the world with its game-changing solutions . And innovation doesn't stop at the border. ITEA encourages global collaboration, e.g. with our strong Canadian and Korean partners, and is also inviting new countries like Singapore to participate in our projects.



This is why ITEA's 'E', originally for 'European', is no longer highlighted in our new style, giving ITEA a strong brand and indicating openness to all interested parties worldwide.

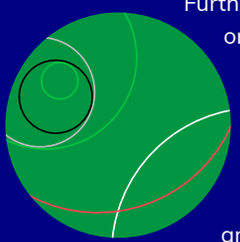
Dynamic environment

We live in a rapidly changing environment. What was ground-breaking yesterday is outdated tomorrow and adaption is needed constantly. In this world, where standing still actually means moving backwards, ITEA is also evolving and innovating itself continuously. Within the new Eureka Clusters Programme, there is no longer an eight-year mandate for the Clusters to execute their programmes. A four-year Multi-Annual Plan (MAP) is submitted in which a strategic approach on topics which are of common interest between Public Authorities and industry are developed and implemented. Each year, an Annual Operating Plan (AOP) is updated, enabling an adjustment of the programmes to current priorities in order to remain at the forefront of innovation.

Our new identity shows movement in this dynamic environment. Each design is changing, demonstrating transformation and dynamism. None of the designs use an element that stays the same; there are all evolving.

Flexible

The ITEA 4 Programme will be even more flexible than its predecessors, easily adapting to urgent needs. It will be a toolbox for Public Authorities and industry and enables the possibility to design new Call type(s) or new events in order to take action if desired by our stakeholders. For example, there will be cross-domain Calls together with other Eureka Clusters on important current challenges like AI, the green transition and sustainability.



Furthermore, we will focus even more on customer orientation and involvement to make sure that innovations are based on actual needs and to stay close to the market. ITEA will ensure participation in customer-oriented events in order to prepare the market for upcoming cutting-edge products and services and thereby accelerate market acceptance. In addition, Customer Advisory Boards will be set up for a set of key challenges of ITEA, to create a continuous dialogue between the customers and the ITEA Community.

Like the ITEA 4 Programme, the ITEA 4 style is flexible as well. Taking the main set of characteristics into account, the style elements leave plenty of room for adaptations while still remaining recognisable as ITEA 4. This way, we can adjust each means of communication to support (y)our message in the best possible way.

ITEA *4 the future*

ITEA is ready for the future and so is our identity. Of course, the 4 stands for the successor of ITEA 3, but it is much more than that. This is why the 4 in ITEA 4 is different. ITEA stands for innovation, digital transformation, happiness, impact, customer involvement, flexibility, etc. ITEA 4 software innovation, ITEA 4 digital transformation, ITEA 4 happiness...in other words: ITEA 4 the future!

ITEA 3 measured in milestones

2014

Launch of ITEA 3 (with dedicated Launch events)

Big Data Technology from IMPONET enables more efficient electricity supply in Spain

MoU Eureka Clusters on Smart City

First Canadian participation in ITEA PO Days

High level vision 2030 presented to EC Vice-President Neelie Kroes

ISO 9001 Certification

—

Dekra label

2015

MEDIATE awarded for supporting healthcare professionals in the transition from invasive open surgery to minimally invasive, image-guided interventions

Co-summit with ARTEMIS-IA (Berlin)

CO·SUMMIT 2015

Eureka Clusters present at SCEWC

Open Source Software from ITEA projects OPENPROD and MODRIO generates control software for German power production

1st ITEA customer workshop (Smart cities)

1st visit of Canada

Start of Vice-chairman's blog

KoçSistem joins ITEA Board

14 ITEA 3 Call 1 projects labelled

2016

Diamonds wins Eureka Innovation Award

H4H awarded for closing the gap from the simulated to the real world and made HPC technologies more accessible

1st Digital Transformation Master Class

First big Eureka Innovation week (Sweden) incl ITEA Event

2nd ITEA customer workshop (Smart health)

2nd visit to Canada

Indra joins ITEA Board

20 ITEA 3 Call 2 projects labelled

Zeynep Sarılar becomes Chairwoman

2017

ADAX wins Eureka Award

AVANTI awarded for creating a manufacturing solution, with virtual commissioning to facilitate components-based engineering in a virtual orchestration of physical properties.

1st Digital Innovation Forum with ARTEMIS-IA

DIF2017

ITEA Impact stream released

First cancer patient successfully treated with Elekta Unity developed in SoRTS project

Turkcell Teknoloji CEO highlights importance CAP project

Materna founded a dedicated R&D department inspired by successful participation to ITEA projects

3rd ITEA customer workshop (Smart industry)

First interaction with VCs and Start-ups at DIF

18 ITEA 3 Call 3 projects labelled

ISO 9001 Recertification

Happiness · Business impact · Customer orientation · Cooperation · Innovation · ITEA Office

2018

20 years of ITEA

MEDIATE wins Eureka Award

IDEA4SWIFT awarded for safe and secure border control that is quick and convenient

Eureka Innovation Days (Finland) incl ITEA Event

4th ITEA customer workshop (Smart communities)

Initiation work on preparation of ITEA 4

Korea-ITEA networking event

Software AG joins ITEA Board

19 ITEA 3 Call 4 projects labelled

2019

MOS2S results win the '2020 Dutch Eurovision Song Contest Innovation Challenge'

100th ITEA STG meeting

Reflexion and ACOSAR receive Eureka Award

Eureka Global Innovation Summit (United Kingdom)

Eureka Stakeholder Conference (The Netherlands)

Co-organisation of Smart City Business Forum with Dutch & Nordics

ITEA and 12 projects present at SCEWC

Hilversum is becoming a Smart City thanks to partners of the ITEA 3 project PS-CRIMSON

APPSTACLE project announces Eclipse Kuksa Platform for car to car to cloud

5th ITEA customer workshop (Smart mobility)

Launch of the ITEA Smart City Advisory Board with 1st meeting

3rd visit to Canada and visits to Canadian SuperClusters

Initiation of concept of ECP Analysis of Eureka Clusters

Saab AB joins ITEA Board

Enerim (Empower) joins ITEA Board

17 ITEA 3 Call 5 projects labelled

Jan Jonker becomes Office Director

2020

Flex4Apps awarded for creating a full loop that allows companies to offer more complex services while advancing the digital transition

Co-organisation of Smart City Business Event with Dutch & Nordics

OPTIMUM project at Hannover Digital Days

ITEA Panacea Gaming Platform spin-off Kids Digital Health™ launched

VISDOM project developed open-source Roadmap planning and visualisation tool

6th customer workshop (Cyber Security)

1st Eureka Clusters AI Call

Approval of concept of ECP

First partner from Singapore

Esri Canada joins ITEA Board

NXP joins ITEA Board

VMAP (project) Standard Community to become a legal association

20 ITEA 3 Call 6 projects labelled

ISO 9001 Recertification

—

Jean-François Lavignon becomes Vice-chairman

2021

Approval of ECP and ITEA 4

1st ITEA Cyber Security Day

1st ITEA Smart City Day

Global Innovation Summit (Austria)

7th customer workshop (Smart energy)

Launch of the ITEA Cyber Security Advisory Board + 1st meeting

Extension of the Smart City Advisory Board + 2nd meeting

2nd Eureka Clusters AI Call

16 ITEA 3 Call 7 projects labelled

We are the future!

In this age where the importance of software is increasing tremendously and where globalisation provides huge opportunities, ITEA is ready to be at the forefront of Software innovation and Digital transformation in the global arena, building and enhancing on the basis of well-established roots!

ready 4

The impact plan for ITEA 4

Digitalisation is changing our lives radically; every object carries more and more software in its structure. Each and every organisation has an evolving need for software innovation to become more efficient, more effective and more resilient. Furthermore, the daily life of every human is more connected and digitalised. In addition, the resources of our planet are scarce and so they must be used with great care. These are the challenges that we face, and they can only be overcome by continuous and sustainable improvement of each process through innovation and collaboration among diverse industrial members.

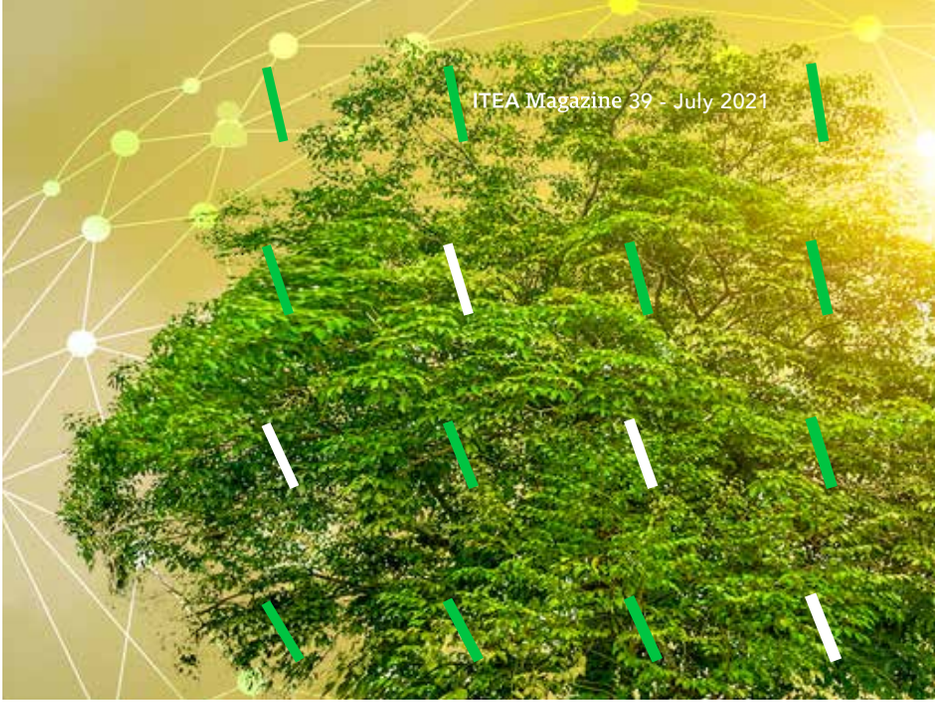
Unique opportunity

Software innovation in B2C is being mastered by the USA while China is mastering big data analytics and management. ITEA presents Eureka countries with a unique opportunity to stay at the forefront of software innovation through establishing international consortia from 45 countries using a bottom-up approach.

While globalisation was often felt as a threat to local industries it should be regarded as a unique opportunity with markets becoming less and less protected, and continuous (open) innovation leading to the disappearance of such markets. Furthermore, the current COVID-19 crisis clearly shows the need to be able to react very quickly at a global level and underlines the importance of investing in open partnerships that bring large companies, SMEs, universities and research institutes to collaborate together. ITEA is a strong enabler in achieving this.

Instrument for fruitful partnerships

It is recognised that ITEA is a very successful R&D&I programme whose projects have a proven track record of impactful innovation, providing unique solutions to respond to the current trends and having the potential to impact society and the market. These successes have been made possible through the different 'assets' that have been built and validated within ITEA year after year:



- **Dynamic ecosystem** in which new members have come into the ITEA Community via highly recommended events and which has shown its capacity for creativity and openness towards international collaboration with a unique spirit of trust.
- **Agile methodology**, with a clear definition of the targeted customers, a focus on the importance of the market and technology value chain, a low level of bureaucracy and a high level of flexibility towards cooperation on new, industry-led topics.
- **Toolset to support the methodology**, including international customer workshops, coaching project reviews, project progress reporting, participation in customer-oriented, thematic fairs and Customer Advisory Boards.
- **Effective and efficient Office** that holds an ISO 9001 certificate of quality and a very rich, agile and stable information system that supports the ITEA Community in each process.

Enabling Sustainable Growth through Innovation through Collaboration

While co-building an innovative solution in each project, the ITEA Community accesses the powerful attributes of each Community member:

- SMEs bring out-of-box thinking, agility and flexibility
- Industry leaders / large industry companies enable big thinking, global impact and market access worldwide
- Research institutes and academia open doors to a deep knowledge base to go a step beyond the State-of-the-Art

Together they create the trusted openness of the ITEA Community and innovative solutions for real customers of industry. And, as crossovers, they can lead to new and unexpected innovations.

For ITEA 4, there is one purpose agreed by all stakeholders, to create impact to enable Sustainable Growth through Innovation, which is only possible through Collaboration.

ITEA 4 Scope

ITEA 3 has shown strong impact in many industries that are crucial for the economic and competitive position of our partners. Besides economic impact via employment growth, revenue growth and new investments, ITEA projects have delivered societal solutions and impact for the following key challenges:

- Smart cities
- Smart communities
- Smart health
- Smart mobility
- Smart industry
- Smart engineering
- Safety and Security

In addition to these challenges, which will remain key for future ITEA projects, an extra challenge has been defined for ITEA 4:

- Smart energy

These areas are closely related and contribute to two main challenges defined by many countries around the world for the coming decade: Sustainability/Green Economy and Digital Transition. The Digital Transition will contribute to many aspects of sustainability in society: not only renewable energy and power distribution, but also sustainable means of mobility, durable future concepts for health and more.

Mission

ITEA's mission is to spawn innovative, funded projects of high quality that, catalysed by the ITEA label and coaching, deliver game-changing solutions through software innovation and ensure fast as well as long-term exploitation of results. ITEA wants to cover software innovation for the full stack, from user experience to embedded software and to self-innovate continuously to help the ITEA Community deliver new products, services and technologies in an efficient way.

Ambitions

The ambition for ITEA projects is to:

- Provide concrete global solutions with tangible results to tackle the urgent challenges and trends of society defined by international consortia to the benefit of all stakeholders
- Accelerate the sustainable growth of industry through innovative products, platforms and standards
- Push for new and emerging trends in software innovation including AI, Big Data, Machine Learning, etc.
- Create crossover innovations through ITEA's open innovation Community and by cooperating with other Eureka Clusters

For ITEA 4, there is one purpose agreed by all stakeholders, to create impact to enable Sustainable Growth through Innovation, which is only possible through Collaboration

The ambition for the ITEA programme management is to steer R&D&I to achieve optimal impact starting from the concrete needs of customers, end users and society, and to support the sustainable growth of European enterprises. Therefore, it is ITEA 4's ambition to enlarge its Community with stakeholders from the market in order to support this mission. They can be a determining factor for the added value of project results and the follow-up of project results.

ITEA 4 will build a global Customer Advisory Board for specific challenges and demands of a group of stakeholders, for customer validation and market introduction. It is in the customer's interest to become aware of innovation trends and to identify the right partners that can solve their challenges. It is in ITEA's interest to achieve impactful projects with fast exploitation.

Finally, ITEA 4 will strive to have a strong role in the Eureka Clusters Programme launched in July 2021. First of all, this means that ITEA 4 will remain an exemplary Community that fosters and strengthens the bottom-up approach by maintaining the so-called bottom-up single Cluster Calls, but also by facilitating and giving a bottom-up colour to the Joint Calls. The Joint Calls will lead to new combinations between Eureka Clusters, and can also act as a springboard for newcomers to participate in single Cluster Calls.

ITEA 4 will commit to:

- Actively approaching new countries involved in the ECP Calls to become part of the ITEA Community
- Stimulating countries to allocate extra country budgets for the ECP Calls to support the thematic Calls over and above the single industry-driven Cluster Calls
- Implementing evaluation methods and schemes that result in a balance between high-quality proposals and a short time to contract; the organisation of Joint Calls is expected to increase this alignment and streamlining,

Building further on a strong legacy

ITEA 4 will build further on its strong legacy from ITEA 3, including its:

- Bottom-up project generation in support of different types and phases of software innovation
- Flexibility to maximise business results and impact
- Market-oriented way of working
- Inter-governmental approach
- Multi-dimensional concept of excellence for project selection
- Strong sense of an open Community, easily accessible by industry, SMEs and RTOs
- Unique coaching culture from industry
- Strong history of success stories as a basis of trust for the future

To further improve, ITEA 4 under the Eureka Clusters Programme will focus on:

- Continuously increasing customer orientation and accelerating market impact
- More support for innovative SMEs
- Better system overview
- Being a toolbox for Public Authorities and industry
- Joining forces with the Eureka Clusters

ITEA 4 will stimulate and boost innovative changes and partnerships that will further strengthen our international ecosystem and lead to massive impact and a leading position in Software innovation and Digital Transition. ITEA 4 will actively push for cross-border, disruptive innovations in the new Eureka Clusters environment, in close cooperation with Public Authorities and other Eureka Clusters.

In conclusion, ITEA 4 will master the new massive trends in the market that help create wellbeing and sustainability in society.

Customers are partners in our mission

ITEA Customer Advisory Boards

Since 2015, ITEA had a strong customer orientation, which is underlined by the participation of customers in ITEA projects, the yearly customer workshop on a specific theme and the participation in different customer-oriented fairs. To further improve this customer orientation, ITEA has established the Smart City Advisory Board (2019) and the Cyber Security Advisory Board (2021) together with a set of forward-thinking customers. These boards are a platform where customers can easily meet their international peers in an open discussion and directly exchange with the ITEA R&D&I Community in a trusted environment.

The ITEA Smart City Advisory Board

The ITEA Smart City Advisory Board (SCAB) was established in 2019 with the purpose to create continuous dialogue between cities and innovative Smart City technology developers by sharing best practices, challenges and innovative solutions on an international level, to finally make the cities a better place to live in.
During an online meeting on 27 May 2021, representatives of the cities of Antwerp, Brno, Dortmund, Istanbul, region of Northern

Hesse, Stockholm, Tampere and Zaragoza have signed an MoU with ITEA to become part of the ITEA Smart City Advisory Board (SCAB). This shows their strong commitment to stay at the forefront of Smart City innovation to create a better city for their citizens. Ghent, Rennes and Zwolle also joined the meeting. The main objective of the session was to share the urgent requirements of each city and to find potential collaboration opportunities among the cities. More details of these challenges will be presented during the ITEA PO Days that will take place online in September 2021, as input for potential new project proposals.

"ITEA SC Advisory Board's first session was a unique opportunity to realise some common interests between cities, namely in the field of urban data, where it appears that most cities are willing to grasp the vast array of opportunities that it may bring to improve decision-making and economic development in our cities. Excited for the next session and the ideas that the industry will bring onto the table to help us cities seize this great opportunity".

Daniel Sarasa Funes
Urban Innovation planner at Zaragoza

The ITEA SCAB will continue to grow and stimulate Smart City innovations through international collaboration. Are you a city representative and interested to become a SCAB member? Contact the ITEA Office at info@itea4.org.

The ITEA Cyber Security Advisory Board

In addition, ITEA has established the Cyber Security Advisory Board (CySAB) in July 2021, with the similar purpose to create a dialogue between Cyber Security customers and Cyber Security technology developers, to identify the current challenges and possible solutions, that may already exist or are to be developed.

At present, the CySAB consists of 11 members and additional interest has been shown by several others. The Advisory Boards will meet (online) twice a year, where one meeting will focus on discussing the customer needs and the other one on innovative results of ITEA projects. The first online CySAB meeting took place on 6 July 2021 with all 11 members. Outcomes of this meeting shall also be shared during the Online ITEA PO Days 2021.

"ITEA emphasises the importance of Market Value chain in R&D&I projects to create economic and social impact. Therefore, I am very grateful for the trust and dedication of the municipalities to join SCAB. As it is obvious in the outcomes of the SCAB meeting, software innovation is mandatory for Smart Cities. The challenges shared by the cities need integrated solutions and international collaboration to build not only a Smart City concept but an 'Agile and Living City' via online decision-making systems."

Zeynep Sarılar
ITEA Chairwoman

We are very excited about these initiatives that are gaining shape and we are convinced that both customers and the ITEA R&D&I Community can strongly benefit from this new collaboration.

* Title based on Shep Hyken's quote

Reflexion

Reflexion introduced another perspective of data exploitation providing a new added value

Nourishing high-tech manufacturing with valuable high-quality data

Success story

The next step forward for the high-tech systems manufacturing domain is to integrate operational data into a product's development lifecycle. However, as industry increasingly shifts towards complex, digitised systems in which every component generates data, R&D remains largely dependent on legacy engineering choices. Typically, more than 20% of R&D budgets is spent on issues caused by poor quality, sometimes amounting to over 5% of total revenues. Industry executives are thus entering the 'awareness' stage: while there is an understanding that data can lead to improved processes, less is understood about the necessary roadmaps to get there. Many companies now operate data pipelines to send information back to headquarters, yet this data is often low quality and delivers no value in generating new business models. Domain-specific knowledge *and* data science must be combined.

The challenge taken up by the ITEA project Reflexion, comprising eight partners from Belgium and the Netherlands, was to support the paradigm shift emerging in high-tech industry from selling 'boxes' to supporting 'integrated solutions', by providing significant improvements in quality and stability during early product rollout.

The objectives were defined as follows: to react to unforeseen problems or emerging needs in a fast, cost-effective way by augmenting products with an introspective layer of data sensing and data analytics, thereby creating value out of the high-tech system's operational data which is still characterised by legacy choices based on infrastructural and analytical approaches. Then propagate this knowledge (automatically) back into the product development lifecycle and the service & maintenance flow.

Project start
September 2015

Project end
February 2019

Project leader
Bas Huijbrechts
TNO

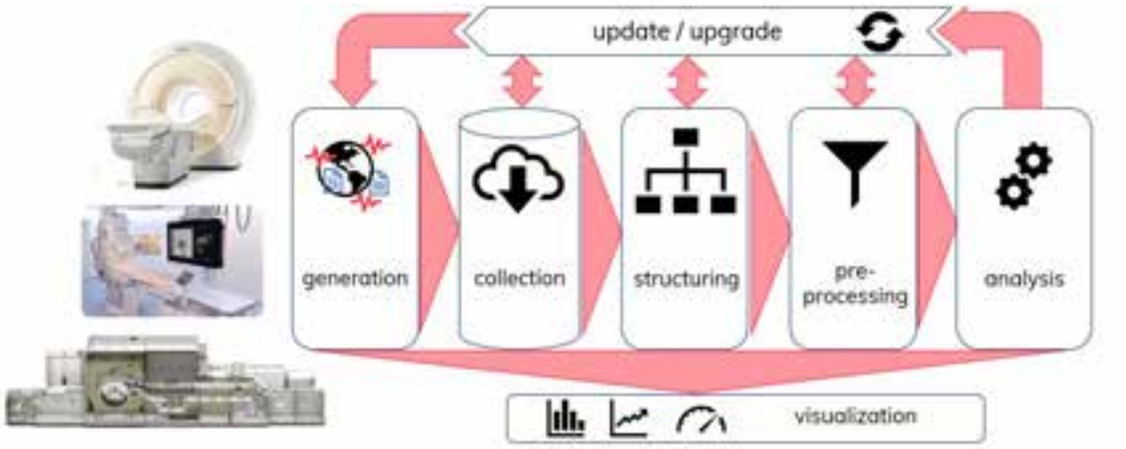
More information
itea4.org/project/reflexion.html

'Digital loop'

Reflexion's success does not lie in a product – a non-existent 'silver bullet' to be applied in all circumstances – but in integrating pre-existing frameworks to improve the consortium partners' processes. There are a wide number of open-source frameworks that specialise in data science, backed by huge communities. Through Reflexion, high-tech systems companies were exposed to these frameworks, helping them to understand what exists and how it can be used to improve their own data management. By augmenting their products with an introspective layer of data sensing and analytics, partners had the opportunity to valorise their operational data and to propagate newfound knowledge back into the development cycle, services and maintenance.

This creates a so-called 'digital loop' in which data is fed back to the ecosystem. Former ITEA Vice-chairman, Philippe Letellier emphasised the importance of this 'digital loop': *"Unique results are emerging at the very beginning of the industry chain, at the design level. But it is more revolutionary than that. There is no more start or end."*

Thanks to the emergence of cheap sensors and affordable large-scale data storage, terabytes of data are acquired daily from complex systems that are characteristic of



the high-tech industry. Whether it is about intelligent equipment in operating rooms, sensors in industrial printing systems or smart energy meters, the trick is to filter the data in such a way that only relevant, valuable information remains that can be used to create overviews and insights. The partners of the Reflexion project have achieved exceptional results in this area and have been rewarded with two awards in 2019 - the ITEA Award of Excellence and a Eureka award.

Tangible profits for manufacturing in terms of time and money

The application of data science in manufacturing was new back in 2015 when data use predominantly targeted the control engineering of mechatronic systems. Reflexion introduced another perspective of data exploitation providing a new added value. Already during the project enormous gains were realised by the project partners as data science was introduced in as yet unexplored domains. As a result, the market penetration for the participating tool and service providers grew by 10% in terms of both improved product offering and extended services.

The Dutch SME Axini has further developed and improved its platform for scriptless test automation. The unique property of the Axini approach is that programmers, who are few and far between, do not need to program test cases and test data. Instead, AI and formal method algorithms automate the entire test process: test case generation, execution and evaluation. As an achievement resulting from Reflexion, Axini refined and optimised its platform for calculation engines, for example as used in pension and insurance calculations. Axini has productised the project's prototypes into its platform and has proven that the new approach is 50% faster and more effective than all other alternatives in the market. Thanks to these achievements, Axini aims to realise an additional € 2.5 m of revenue between 2020-2025 and company growth of 20%.

The Belgian SME Yazzoom has further developed and improved the algorithms in its Yanomaly software for anomaly detection and predictive analytics on machine data. In particular, algorithms were created and validated for semi-automatic parsing and anomaly detection in log files. Aside from the visibility and reference cases offered by its participation in Reflexion, Yazzoom expects that the results of the Reflexion project will lead to an additional revenue of €2.5 m in the five years after the project.

The Dutch SME SynerScope undertook, amongst others, a Stedin Smart Meter customer case, since difficulties existed in planning maintenance staff to replace meters because not all data was readily available. The tabular data contained gaps, making it difficult to send the right person to the right household. Bridging the existing tabular data with log, text and image data allowed SynerScope to bring the first-time-right percentage up from 90% to 99.5%, saving an effective 40 FTE. In general, SynerScope saw a 30% reduction in time spent troubleshooting performance issues at the customer site by using structured log analysis and analytics on interaction logs. This is now part of its user experience monitoring, reducing the time from initial problem to pinpointed bottleneck at least by half. In addition, the structured log analysis has opened up exploitation in new verticals Energy and Oil & Gas, which represents a multimillion-euro market opportunity.

Additionally, for the OEMs the impact of Reflexion on the growth in turnover and / or market penetration for selected applications was projected at 20%.

On a more concrete level, Canon Production Printing (formerly known as Océ) did agile development with its launching customers for its new inkjet printer, the VarioPrint i300. To determine the actual specification of the new product, the daily 4GB of data produced by the

As a result, the market penetration for the participating tool and service providers grew by 10%

printer's 300 sensors and 150 actuators was exploited with the development of an Optimal Diagnosis Analysis System (ODAS). Beyond automatic analysis, the key was to support quick knowledge sharing between the company's different specialists to reach a common understanding of the situation and decide together on what to enhance. To support its teams, Canon Production Printing generalised the usage of the open source Jupyter Notebooks which easily enables information, models and code to be mixed, allowing all the engineers - not only the software experts - to express their viewpoints. For example, when confronted with an alarm coming from the automatic usage data analysis, designers from different disciplines can quickly share their analysis and together propose a solution that can be realised through an agile approach. During Reflexion, Canon Production Printing developed an incredible maturity on this full digital loop and a set of products and methodologies that can be useful for many other European players. Thanks to this new approach, Canon Production Printing has improved its mean time to repair (MTTR) for all new machines by 50%.

Philips and Barco improved products with a significant impact on wider society. By exploiting data more efficiently, for instance, both can now create medical equipment with a higher uptime, meaning the possibility to diagnose or operate on more patients per day. In addition, thanks to Reflexion, Philips partnered up with Yazzoom for further research resulting in the development of a platform for both further research and new services.

For Barco and TNO, new business models (e.g. the NEXXIS Care Plan) were introduced, the value of which at the end of the project in 2019 was estimated at 20 million euros in the next 5 years.

Siemens Industry Software has made its first steps into machine learning during the project. It resulted in the development of the new Simcenter Studio tool released in 2021 as a completely new solution in the Simcenter portfolio. The methods of the new tool have been in commercial use for several years already in the automotive, aerospace, and other industries. Primary use has been in the context of Generative Engineering assisting the preliminary design of systems. Support of machine learning in design workflows, which are continuously being extended through running R&D projects, is one of its important features. As proven in Reflexion, the tool offers excellent integration with behavioural simulation tools to train machine learning algorithms in a simulation-driven way.

A winner ahead of the game

Apart from the incredible industrial impact, already during the project 25 data science jobs were created among the project partners. This workforce is continuing to work on the Reflexion agenda and address several Smart industry challenges such as effective use of scarce human expert capital by exploiting data to assist the realisation of better operational solutions and designed systems.

For all partners Reflexion turned out to be genuine successful collaboration. Ronald Begeer, involved from the beginning in Reflexion on behalf of ITEA, summarises this nicely: "As mentor of the Reflexion project I am proud of the results achieved by the partners in the project. Due to the fact that only two countries received funding the Reflexion project had a challenging start in defining the goals of the project. The ESI (TNO) project leader managed to align the partners well and achieved excellent results, creating an impressive impact on digitalisation and tool development for big data analysis. Especially new market opportunities for the industrial partners and SMEs were recognised by the ITEA organisation, which made the Reflexion project a justified ITEA and Eureka award winner."

The Eureka Clusters Programme

Jan Jonker, ITEA Office Director, and Frans Verkaart, former Eureka High-Level Representative at the Dutch Ministry of Economic Affairs and Climate Policy and current Eureka Chief Operations Officer, got together to discuss the future of the Clusters in a changing world. As one of the architects of the 'new' Eureka Clusters Programme, Frans is well placed to provide insight on the how, the what and the why.

The connections between Clusters and with Public Authorities create a stronger whole

Need for change

Frans pinpoints the moment of 'shift' as being just prior to the Dutch Chairmanship of Eureka, when talk centred around a lack of upward or forward momentum in the interest being shown in the Eureka Clusters. "To put it bluntly, we were witnessing somewhat of a stagnation and some things were not running smoothly. Cause for concern. The Clusters were clearly not always performing as well as they could, and this consensus was apparent among the various High-Level Representatives I spoke with at the time. Something needed to be done to ensure that this valuable asset – the Clusters – could be reinvigorated. After all, Eurostars and the Clusters form the backbone of Eureka. So, following an analysis to identify where the problems lay, the Dutch Chairmanship got to grips with a SWOT analysis undertaken by the UK Chair and began to lay the foundation for a Clusters Programme, primed and ready for the future. Of course, as you might expect, the path of this process encountered a few potholes and cracks, and reservations had to be overcome on the path towards a common position. It took a tremendous effort from everyone to identify the points that needed addressing for us to ultimately say, with conviction, that this is the way forward, the way that will secure the role of the Eureka Clusters in tackling the challenges of the future."

A coherent whole

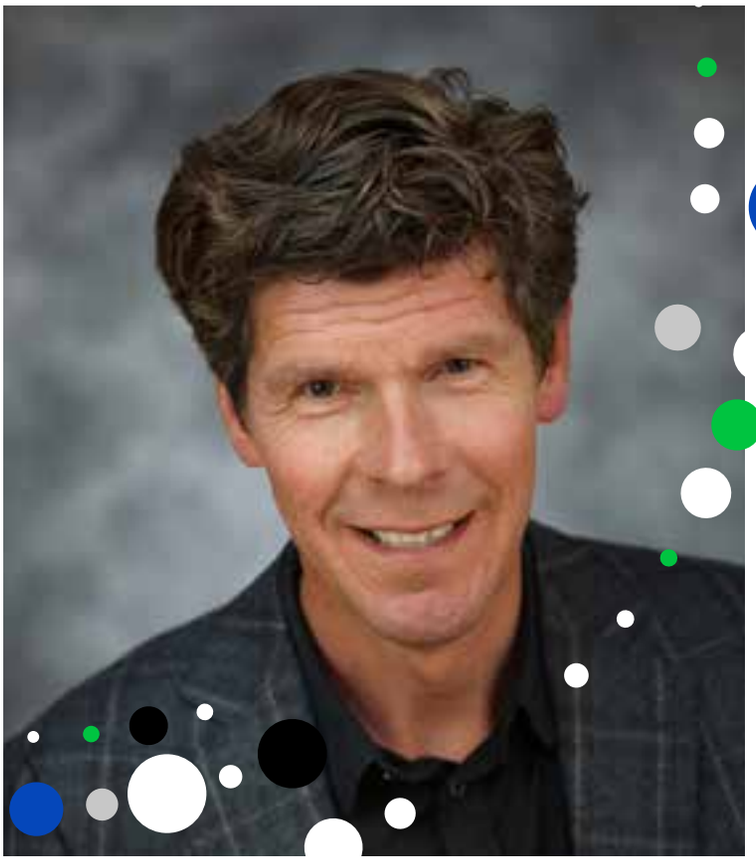
"And what were those specific points you mention?" Jan asks. "For a start," says Frans, "there was a funding issue. The 'lack of', to be precise. This prompted the question: why was this the case? The culprit appeared to be a lack of coherence between Clusters. In other words, no shared vision or goal. The countries were being presented with a collection of independent Clusters, each with its own secretariat and organisation, but no common whole. When a High-Level Representative is at a loss about where to go within the Eureka network for a specific issue and you are unable to make any clear statements about the identity, coherence and goal of the programme, then that's a difficult sell to the representatives and industries we want to serve. Secondly, I think we need to initiate a policy shift whereby opportunities can be created for funding by attracting and involving more - and different, players. For instance, take Artificial Intelligence. Individual Clusters do their bit, but as for the joint approach such a topic demands, this was pretty much absent. When a Joint AI call was organised, it was clear there was an appetite for such an approach based on a theme and which attracts funding. So, one, let's get the story clear; two, let's get aligned with the peripheral political and policy priorities; three, streamline the public-private interaction at strategic level. This is necessary to remove the fragmentation that existed in the relationship and the communication between the ministries and agencies towards the Clusters. There were too many who, what, where questions. A coherent whole paves the way for a clearer, streamlined relationship between Eureka and the Public Authorities in the various countries, and this is a real opportunity heading towards the future for Eureka to establish the Clusters as a brand and an instrument."

Identity, alignment, cooperation

"So, to sum it up," Jan suggests, "it came down to a lack of clustering among the Clusters. This can be said for the Public Authority side, too. So, if the new goal is to create coherence, where do you think we stand in terms of support for the new programme, which has been given the official stamp recently?"

"I think really good progress has been made in forming a common identity. The Cluster Support Group is helping to create coherence among the Clusters," Frans explains. "There has been a lot of Cluster interaction recently and this has enabled the Clusters to bring focus to their identity and story. There is a very clear vision and mission. A sense of 'we' is emerging. To an outsider looking in, the newly developed Annual Operating Plan provides a strong impression of the Eureka Clusters Programme. The next thing is how you align this with the changing political and policy priorities of the different countries. Again, progress has been made here and pilot calls have been set in motion, with a sustainability Call in the offing. Of course, countries have to show their commitment through appropriate funding. The signals I am getting are favourable and it will still take another couple of years before we can draw a conclusion, but I'm hopeful. And the third aspect, public-private cooperation, is also heading

Frans Verkaart



Jan Jonker

in the right direction with a growing sense of ownership, on both sides, for the Programme as a whole and for the future of the Eureka Clusters."

Greater than the sum of its parts

"We notice within ITEA that collaboration with other Clusters is growing. We each have our own identity, culture and focus in content, of course, but I think we all realise the value of creating a chain of strong links," Jan adds.

"I agree," Frans says. "The programme is not about discarding the individual communities but about giving the individual communities a more defined place within the whole. ITEA is a very good example of a Community with a strong industrial base whose collaboration is founded on trust and visionary research. This is all facilitated by a network that enables people to find each other and work together - and is well supported by the ITEA Office. Such elements are very valuable and must be retained. They are the essence of a Cluster community. And the community is part of a broader Eureka whole, working together with other communities and with the Public Authorities. And it's this link that is vital and lies at the root of the Eureka Clusters Programme."

Communication is key

Jan: "How do you think we can use the strength of the Cluster committees to enhance this link between them?" "Two years ago, questions such as how do we establish a new Cluster or how do we deal with a new theme were unanswerable, and this occasionally resulted in wrong choices being made. But now the Clusters are organised and this means that new themes and topics can be tackled better, without automatically having to establish a new Cluster. Collaboration between Clusters makes answers and solutions possible."

Jan confirms this. "That is true. We are communicating more and more with each other. We're more aware of who does what. From a content perspective, we can identify better which Calls are suitable for bottom-up or joint Calls." "Indeed," Frans agrees. "Dialogue – between all the partners – lies at the heart of establishing initiatives. In this way you form a relationship, and through the relationship you create your identity. You can only gain from seeking out and strengthening these relationships. A good example of this is Portugal and its space initiative." "That's right," Jan adds. "At ITEA, we asked what we could do to add value. And among each other, as Clusters, we

discussed how we could add something, whether through a Joint Call or whatever. At the end of the day, we want to contribute for the good of our Community, society and our planet. To do that we need to have impact. And to achieve that we need to stimulate innovation. How do Eureka countries view innovation and the impact they want to see from the Clusters? And what can the Eureka Clusters Programme contribute?"

Sustainability

"As a general remark, we are seeing a shift towards more sustainability in society. Mobility, energy, the environment. It's evident that political choices are taking ever greater account of this in their manifestos. Just look at the growing influence of the Green Party in Germany. I think that this trend will be reflected in the private-public dialogue between Eureka and the Public Authorities, which will result in a win-win. Both in terms of economic value and in terms of sustainability – in what state do we want future generations to inherit the planet? I think that through this programme, the Clusters are better able to provide answers to this question."

Dialogue based on equality

"The Clusters are driven by a bottom-up approach. Do you see the private-public dialogue as an added pillar that will strengthen the Eureka landscape?" Jan asks. "I think so," Frans replies. "For me, it's a matter of building on the dialogue between the parties within a Cluster, between the Clusters themselves and with the Public Authorities. On the basis of equality, Eureka offers the scope for dialogue to be the driver. This is a new point of departure, a cultural shift as it were, that must be developed. I mentioned earlier the example of AI. Dialogue is a much more beneficial driver of response than a purely bottom-up push by a couple of industry players and the establishment of a new Cluster."

"I understand the programmatic perspective you are coming from. That's not to say that bottom-up doesn't have its merits and strong draw for many industry players. Perhaps we should talk more about the concept of l low-threshold accessibility for industry-driven innovation, where the Clusters can really add value," Jan suggests.

"At project level you want industry and academia to take the lead, of course," Frans says. "Because that's where the innovation takes place. It's at strategic level that the kind of dialogue I've been talking about extends and enhances the opportunities for and by the Clusters. I think if we can achieve this, then the Eureka Clusters, whether individually or together, can offer the solutions for the societal challenges of today and tomorrow. The scepticism there was when the Eureka Clusters Programme was first mooted is gradually being replaced by a realisation that the change will enhance the Eureka role and help enable our children to inherit a better Earth."

Calendar

19-26 AUG 2021
30th International Joint Conference on Artificial Intelligence
Online
https://ijcai-21.org

1-2 SEPT 2021
14TH GRAZ SYMPOSIUM VIRTUAL VEHICLE
Graz, Austria
https://www.gsvf.at

13-16 SEPT 2021
Online ITEA PO Preparation Days 2021
Online
https://itea4.org/onlinepodays2021/index.html

12 OCT 2021
Intelligent Health 2021
Amsterdam, Netherlands
https://intelligenthealth.ai

16 NOV 2021
ITEA 4 Call 2021
Deadline submission of Project Outlines
https://itea4.org

23-24 NOV 2021
Cyber Security & Cloud Expo Europe 2021
Amsterdam, Netherlands
https://cybersecuritycloudexpo.com/europe

Smart energy – a new

y challenge accepted!

Insights into the new ITEA key challenge and the 2021 customer workshop

From 3 June to 24 June 2021, ITEA organised its 7th international customer workshop, and this year the focus was on Smart energy. Before sharing some of the highlights of this event, let us explain why Smart energy has been chosen as a new challenge for ITEA 4.

Smart energy as a new challenge for ITEA 4

Energy is everywhere in our life. As soon as we want to move, to transform, to heat or to process something, we need energy. Energy is at the heart of every economic activity and the availability of energy has always been a concern for humankind. Energy is also a very large industrial sector, representing around 5% of the total world gross domestic product and employing around 60 million people. It is expected that this number will grow in the future with the development of the green energies (a European Commission study forecasts that moving to a greener economy may lead to net effect of 18 million extra jobs).

The energy sector is currently undertaking important transformations. First, due to the global warming problem, there is a strong move towards the carbon-free production of energy. There is an urgent need to find alternatives to fossil energies (coal, oil, gas) that emit greenhouse gas, which are responsible for the increase of the average global temperature. The development of renewable energy sources is a key trend that has a strong impact on the energy sector. Second, especially in Europe, there is a move towards a more competitive market with some new regulations to open the market to new players. Again, we see this trend exerting a powerful impact on the organisation of the energy sector that is being transformed from a market dominated by national operators to a more competitive field. Third, both the need to move towards a greener economy and the will of organisations and citizens to use energy in an accountable way has created a trend towards better control of the energy usage. The continuous introduction of a carbon cost in the economy governed by new regulations (e.g. carbon trading) is a strong incentive, especially for large industrial sectors. In addition, we see the rise of the notion of sustainable development in society and economy. Consequently, everyone wants to be accountable for the energy he or she uses, and we see the emergence of the new notion of “value per energy unit” in our society.

Software is an important technology for the transformation of the energy sector. Of course, it cannot be the solution to all the challenges, but software is clearly an enabler that will help to tackle the problems in moving towards a greener and efficient energy sector. Software can be a good means to manage the complexity coming from the new energy sources or the emergence of more players by allowing the interactions of many players in more heterogeneous contexts. It can also help to introduce more automation in the complex challenge to balance the production and demand of energy. It can introduce new

optimisation capability in most of the energy systems that will lead to greater efficiency. It can transform the new data sources that are collected into valuable information that will help the energy players. All in all, software innovation is a key technology for the evolution of the energy sector.

For all these reasons - importance of the energy sector for the economy and society, strong ongoing transformations, potential of software to enable this transformation - ITEA 4 has decided to add 'Smart energy' as a new smart challenge to the seven existing ones.

Smart energy customer workshop

The 2021 international customer workshop attracted a high level of interest as the first ITEA event aimed at bringing together several energy stakeholders – some new to ITEA – and discussing how this new challenge could be impacted by potential ITEA projects.

This event gathered around twenty major players in the energy sector representing the energy value chain – energy providers, Transmission System Operators (TSO), Distribution System Operators (DSO) and large energy users – and around twenty solution providers – large companies and SMEs – of the energy sector.

The event was organised over three weeks with a kick-off session to set up the objectives and to present the way to work together in an online environment. Afterwards, four 'Challenges sessions' were organised dedicated to the presentation of the needs and pain points of the energy sector players. Next, there was some brainstorming to generate ideas for potential collaborative research projects that could solve some of the challenges expressed during the previous phase. Included in this online brainstorming were live sessions gathering people interested in an idea proposed by a participant. Finally, the customer workshop was concluded by a Closing session that presented the summary of the exchanges and a keynote on how to address the energy challenges together. This format was designed to allow for the flexible participation of the attendees and to maximise the interaction despite the absence of physical meetings.

The four sessions on the challenges were organised around a central topic that was of common interest for all the participants of the session. The subjects covered were:

- 'New usages' to discuss how to benefit from the energy sector transformations – more flexible grids, the development of electric vehicles, the development of simulation – to create new business;
- 'Flexibility' to address the relationship between the electricity markets players, congestion management, new businesses, new forecasting tools and the trends for IT systems to support the electricity grid;
- 'Optimisation of the energy usage' to share experience on the best practices to optimise the usage of energy and to discuss how to improve energy efficiency in industrial sectors such as automotive, the forging industry, manufacturing plants, telecom and cloud;
- 'Multi-energy' to analyse the impact of renewable energy sources – wind energy and photovoltaic energy – and the evolution towards a more complex and distributed energy system.

After all these sessions, the workshop produced some interesting ideas that may give birth to future ITEA research projects. Some of the ideas were focused on new opportunities generated by the availability of data, the control and the simulation of complex and heterogenous systems or the facilitation of transactions between the energy value chain partners.

In addition to the emergence of these solid ideas and of some collaborations, the workshop has helped to establish progress towards a shared vision of the research priorities to address the important transformation underway in the energy sector. The participants have developed new connections that will be important as no single player can tackle the current energy challenges alone. In conclusion, this workshop was very valuable in initiating ITEA's activity in this new Smart energy challenge.

A full report of the Smart energy customer workshop can be downloaded from the ITEA Call 2021 Project idea tool (login required).

Colophon

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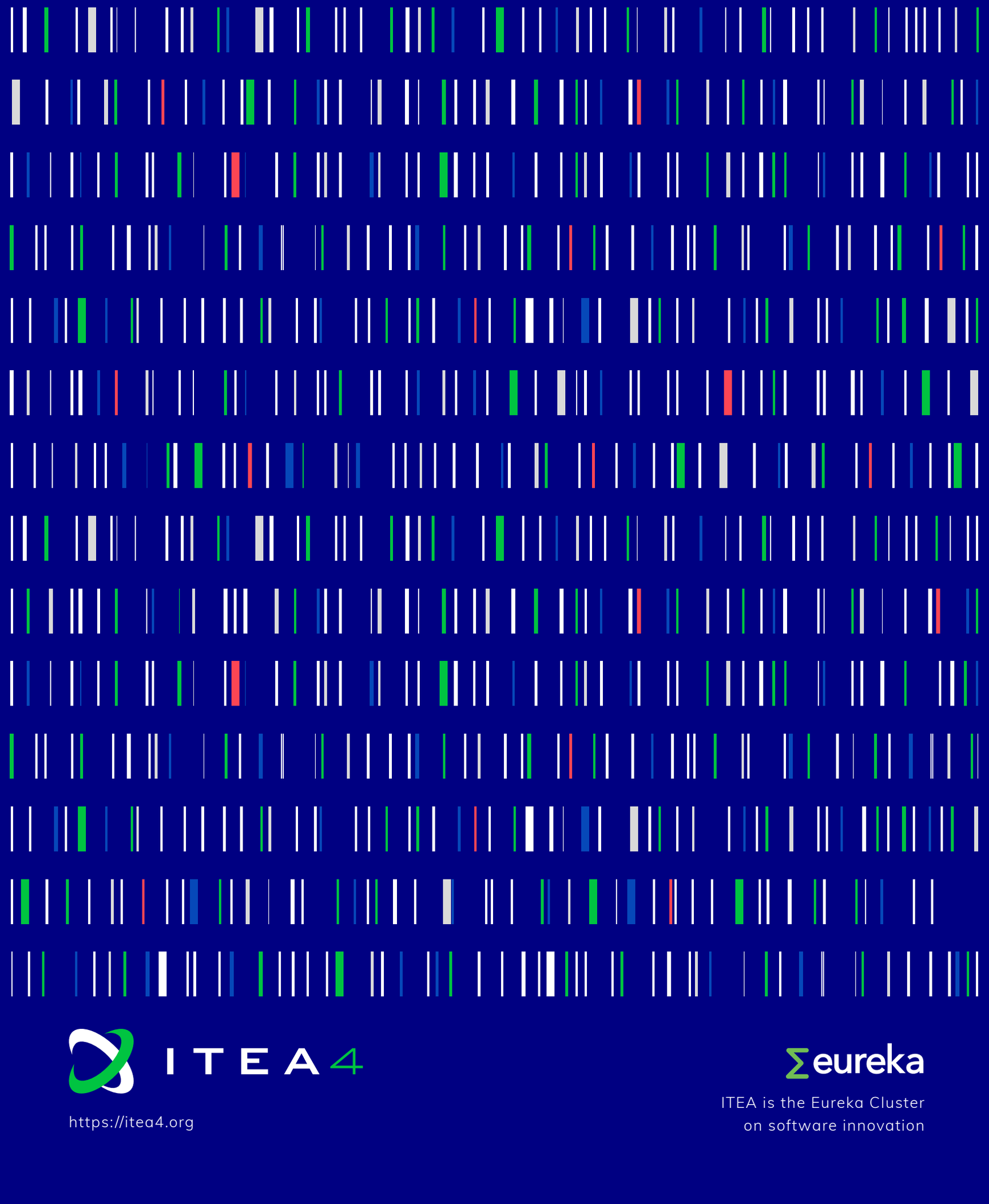

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