ITEA Magazine

Country focus:
Finland

ITEA Success stories:
CyberFactory#1 & PAPUD

ITEA PO Days 2024

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ITEA is the Eureka Cluster
on software innovation

eureka

Dear ITEA Community,

When there is a lot of joy and satisfaction in what we do at work or in life, years pass quickly and memories stay fresh. This is exactly how I feel about my experience in ITEA since 2004. It has been a great pleasure to be a member, taking on many different roles within the ITEA Community.

Looking back, there are many good reasons for my dedication to ITEA and its Community, and the articles in this magazine represent these reasons well. Software innovation thrives in *an open and flexible environment*. As challenges and conditions change rapidly, RD&I must adapt quickly. In the article focusing on Finland and Bittium, you can learn how ITEA became a strong instrument for international collaboration. The ITEA Community has a *culture of open communication* that makes collaboration in projects very simple, effective, and fruitful. Examples of this can be found in the Equality and Diversity article and the Community Talk. One of my favourite aspects of ITEA is working with RD&I projects that create an impact on today's life. What starts as an idea at the beginning of a project can build a direct impact on people's lives or companies. The success stories of PAPUD and CyberFactory#1 exemplify this characteristic of ITEA. And there is *continuous change* in ITEA. Based on feedback from the ITEA Community, application forms are updated, processes are adapted, and events are changed. The ITEA Topical roadshow and the updated PO Days format are new ways to bring the ITEA Community together and to learn from each other. Beyond these factual reasons for my dedication, the more important reasons are related to the *soft skills of the ITEA Community and ITEA Office*. Friendship, continuous and positive support, trust in sharing knowledge, openness to learning new things, building social connections, working hard, and enjoying freely are some of the skills of our Community. I feel happy, lucky, and honoured to be part of it.

Now, it is time for a change. I am confident and pleased to pass the flag to Dirk Elias. Having worked together for several years within ITEA, I have witnessed his dedication. I also wish great success to Régis Cazenave, the incoming Vice-chairman. I am sure the strong roots and support of ITEA and its Office will preserve its legacy while the new ITEA Presidium will bring new waves to ITEA. I am very enthusiastic about ITEA's future.

A big thanks to the strong ITEA Community, the ITEA Office, and the supportive Public Authorities. The impactful results of ITEA projects are made possible by the belief of Public Authorities in the value of international collaboration and the efficacy of ITEA's initiatives. This global collaboration is facilitated by the structure of Eureka. Thanks to Eureka, HLRs, NPCs, and the ESE office, ITEA has a solid foundation to fulfil its mission.

ITEA will continue to create a positive impact on life. I am honoured and thankful to have played a role in its history.

I wish you a joyful read.

Zeynep Sarılar

Focus on Finland

Software enabled digital transformation

In a recent presentation Janne Järvinen, Mission Lead for Digitalisation at Business Finland, cited that "intelligent future connectivity (5G/6G) has a pivotal role in ensuring Finnish technological leadership. It needs to be combined, however, with robust data economy and key technologies like artificial intelligence, cybersecurity and quantum technologies. These are our key assets towards software enabled digital transformation leading to increased productivity and competitiveness." In this article, Janne explains Finland's software vision and how it shapes the future.

Software manifesto

"Software is a subject that is dear to my heart," Janne admits, "having done my PhD in software engineering, and it is clear to me that software is becoming increasingly important in Finland for industry. In fact, it's ranked fourth in our list of exports." In a vindication of Finland's emphasis on software-intensive products and services, a McKinsey report 'What's driving the Nordic countries' software export surge' this year stated that Nordic business in software will grow significantly towards the end of the decade. This is also reflected in the country's high level of education and competency, and where the focus of the software education and research is now even more closely related to the needs of industry. "All the software professors are working very closely with industry and there have been many industry-driven research initiatives. I personally led two of those even before coming to my current job," Janne adds. "I think that collaboration on these topics is quite typical for Finnish research and industry as we are true believers in working together. I, along with others, have been encouraging the software research community to come together and now there are 42 software professors who have joined forces to produce a software manifesto for the future for Finland, pinpointing the areas where they see the need to focus in the coming years. With generous funding for the basic research in Finland – equivalent to 50 software related doctoral theses – this is a very clear sign that we need to prioritise software."

Generative AI on the agenda

Digitalisation is top-of-mind in Finnish policy. "It's a complex topic that has many, many sides to it," Janne says, "but I personally believe that digital is the way to go for a country like Finland, as we have this high rate of development and produce added value. We are among the best, if not the best, in all the digitalisation related indexes. So I was actually happy to see that in the current government programme, digitalisation is well represented. With government support in carrying these initiatives forward, that gives us further leverage in practice, in areas like artificial intelligence, which is a major disruptive factor in the software industry that will change many things." At the time of speaking, Janne notes that "tomorrow we will witness the start of a campaign from Business Finland on this generative AI topic, with a dedicated session on how AI will change software engineering in practice. It's on many, many people's agenda at the moment."

Strategic themes

Since the last Finland focus shared in the ITEA Magazine in 2020, five new missions, or strategic themes, have been launched by Business Finland aimed at bringing future growth for Finland, following the collaborative efforts of 200 experts around the world: digitalisation, carbon neutrality, circular economy, health and wellbeing, and immersive digital life. Janne leads the digitalisation thread in which two new programmes have been established, one on data economy and another on 6G in telecommunications. In addition, smaller campaigns target quantum computing and generative AI. Furthermore, due to changing geopolitics and Finland joining the NATO, a new programme focusing on digital resilience was launched in May. "The key enabler for all of these is software," Janne says. "We are also promoting a national initiative on a software ecosystem that is aimed at bringing together people from industry and research, who we hope will be the torchbearers in these different areas for which software acts as a kind of glue. For instance in the quantum computing campaign we have a focus on the software stack. So, not the computer itself, but what happens outside the quantum computer. It's about how to use the software stack that's the tool for users to interface with the quantum computer. Of course, quantum simulators are helping in the process because we don't really have quantum computers in practical use yet. But with quantum simulators, you can start looking into what kind of problems you can solve with the quantum technology. And the software stack is key to that. There are already several new software startups forming in that space, and they will be among the leaders in the future."

Digital compass

These new technologies will be linked in with the European strategy for the digital decade aimed at finally creating a working digital single market in Europe. "I think that we are very well aligned with that. And in relation to the European digital decade, there's a requirement that all member states will build what is called a digital compass for their country. Finland is now the first country that has actually made this digital compass, in a very inclusive process involving all the stakeholders from both the private and public side. It has since been approved by the Finnish parliament and is actually also starting to steer the digitalisation related work, nationwide, providing a common goal for all of us, both in the private and public sector."

It's vital that we have instruments, like Eureka and ITEA, that enable us to work together, across the national borders.

International opportunities

Janne is convinced that in striving for these goals and ambitions, European platforms like Eureka and ITEA are key to achieving them. "We cannot do all this by ourselves and nor do we want to do that. It's vital that we have these instruments that enable us to work together, across the national borders." Business Finland has a separate unit that interfaces with customers in that sense and stays informed of what's happening at European level and promotes the benefits of involvement to industry. "One good example," Janne notes, "is Bittium (also featured in this magazine), which has shown that this is not only possible but also that they can get benefit from this collaboration. We like to see our role as facilitators in enabling this type of opportunity. For example, in our data economy programme we charted all the different possibilities on the data economy from Europe for Finnish companies. Because there are a number of different instruments, it might be difficult for a small company to navigate. So, we did a deep dive study on the most promising areas and tried to lower the threshold for a small company to enter and profit from becoming part of a wider network, gaining first-hand experience of working in these projects and demonstrating their expertise in practice. For example, I recall a startup company that immediately saw being part of a brokerage event and other such events as a promotion opportunity to raise its profile and visibility. And I also try to encourage companies to join the events outside Finland and volunteer for some activities like being a speaker. Because when your name is known, it's easier to find partners in a consortium. Personal connections are important."

Collaboration is the key

"And of course," Janne says in closing, "ITEA is no longer just European. It's becoming more global. Just look at South Korea, Canada and other countries around the world that are involved in ITEA. I definitely think this is a good thing and I am keen to promote it. Coincidentally, I'm going to a dinner with a delegation from South Korea later. I truly believe that collaboration is the key. And what better way than face to face at the dining table."

More information:

https://www.businessfinland.com/

Bittium

Where R&D is fundamental to business impact

Bittium was first established in 1985 as Elektrobit, following a number of evolutionary stages. Since 2015 Bittium has been a stock-listed company headquartered in Oulu, employing around 500 people and with offices in Finland, Germany and the USA. Jari Partanen, Head of Quality and Research, sketches a potted history.

Leveraging expertise

"Bittium's origins lie in Elektrobit as dedicated services for telecom development and over the years, two lines evolved: automotive and wireless businesses. In 2004 Elektrobit Automotive employed some 120 people with turnover of some 16 million euros annually. Growth skyrocketed over the next decade to nearly 1300 employees and close to 180 million euros in revenue. At that point the two parts of the company separated and now the Bittium we are talking about today specialises in the development of reliable, secure communications and connectivity solutions that can leverage over 35 years of expertise in advanced radio communication technologies. "Nowadays, Bittium is a high-tech company specialising in tactical and secure communications, engineering services and medical technologies, providing innovative products and services, customising solutions based on its product platforms and offering R&D services."

Trust, courage and innovation

R&D is high on Bittium's agenda; recent years bear witness to a significant investment in R&D for the company's own products and solutions. Jari: "R&D is essential to our business. Last year, for example, 27% of our net sales went to R&D. That's really high compared to European level figures. What we are talking about is having certain core competencies so that we are able to design, produce, modify and maintain the secure embedded technology that is inside a lot of products. We want to become a global player for solutions with complex environments for which trust, courage and innovation are the core values and fundamental as a key business driver, especially given the recent geopolitical uncertainty. We are expecting that it will truly support the growth of our company later on. We are witnessing the acceleration of technology development and IoT. This is visible in our engineering services."

End-to-end medical technology solutions

In the Medical segment, Bittium provides healthcare technology products and services for bio-signal measuring in the areas of cardiology and neurophysiology as well as contributes to digitalising healthcare and services for an ageing population. It is interesting to note that a majority of the revenue actually comes from outside Finland. "End-to-end diagnostics is what we aim to achieve," Jari explains. "We measure symptoms, the data coming from your heart or brain or sleep and by using medically approved devices and systems, we are able to summarise that data in a form that a doctor can examine for potential symptom areas and use the data history to make an analysis. In other words, information that can be used to target solutions. We see a really large market potential for that."

Defence and security

Another key business line is Defence and Security. "Of course," Jari concedes, "that's not an area about which we are able to go public, as it were, on all the innovations in which we are involved. It's sometimes very challenging for us to talk about those services since there is quite a degree of secrecy. But I can say that we are dealing with the defence and security, not with the warfare itself. We focus on Communications – making software-based, software-defined radios, providing the tactical communications solutions for a number of customers such as the Finnish Defence Forces and located in Estonia, Austria and lately in Croatia."

Complementing its tactical communication solutions, Bittium offers proven information security solutions for mobile devices and portable computers such as information security-related innovations like a smartphone that is one of the few security-certified mobile devices around.

The technology and ideas we develop there enable potential for revenue and export growth in the long term.

Connectivity to be trusted

A common denominator for all of the business lines is the role of R&D – it enables leverage. "We started to invest more in R&D in 2017, seeing this as a vehicle to be able to make scalable solutions for products. In terms of R&D investments, on a European corporate level we are in the top thousand, number 541 actually, which is very high for the size of our company. From a perspective of R&D intensity, we are number three in Finland. This has helped us triple product-based sales during the last six years." Bittium has participated over the years in various research project collaborations and funding schemes within EU, including Eureka, Chips JU and Horizon. The key themes have been RF technology evolutions, biosignals measurement, software, digitalisation from an end-to-end perspective (from device up to cloud) and cybersecurity. Hardly surprising then that Bittium's slogan,

'Connectivity to be trusted', should prove to be a perfect fit for ITEA. Not only has Bittium been involved in ITEA for more than 15 years through participation in several ITEA projects but recent accession to the ITEA Board will enable Bittium to play an important role in the industry-driven RD&I landscape of software innovation, which can also contribute to Bittium's international growth and a better go-to-market strategy in particular.

Measurable outcomes

The first ITEA project in which Bittium took part was Flexi, in April 2007, which aimed for flexible global product development. In the ACCELERATE project, Bittium deployed an innovation management information system tool for collecting innovation ideas and covering the innovation process from idea harvesting to business validation. However, it was the CyberFactory#1 project that signalled the highlight in

Bittium's participation when it received the 2022 ITEA Award of Excellence for Business Impact. "The benefits of this kind of collaborative research are manifold: the link between technology and business creates possibilities and opportunities to validate the ideas and concepts with academia and industry, especially within the software innovation environment of ITEA. Also, the technology and ideas we develop there enable potential for revenue and export growth in the long term. So, it was natural for us to want to be involved in this major collaborative platform. Bringing us new capabilities, new types of innovations and improving in a very important area as well as having good outcomes. It's something we are always looking for – measurable outcomes from projects that can have a real tangible impact."

More information:
https://www.bittium.com/

CyberFactory#1

Addressing opportunities and threats for the Factory of the Future

Success story

The digital transformation in production is expected to bring huge benefits to industrial manufacturing but can also create new threats and risks to the Factory of the Future (FoF). Cyber risks for future factories include malware, data leakage or confiscation, adversarial machine learning and rogue devices. These attacks can disrupt industrial processes and damage products, reducing competitiveness or even threatening safety. As product and asset connectivity increase, optimisation must be reconciled with cybersecurity and addressed from an early design stage throughout the production lifecycle.
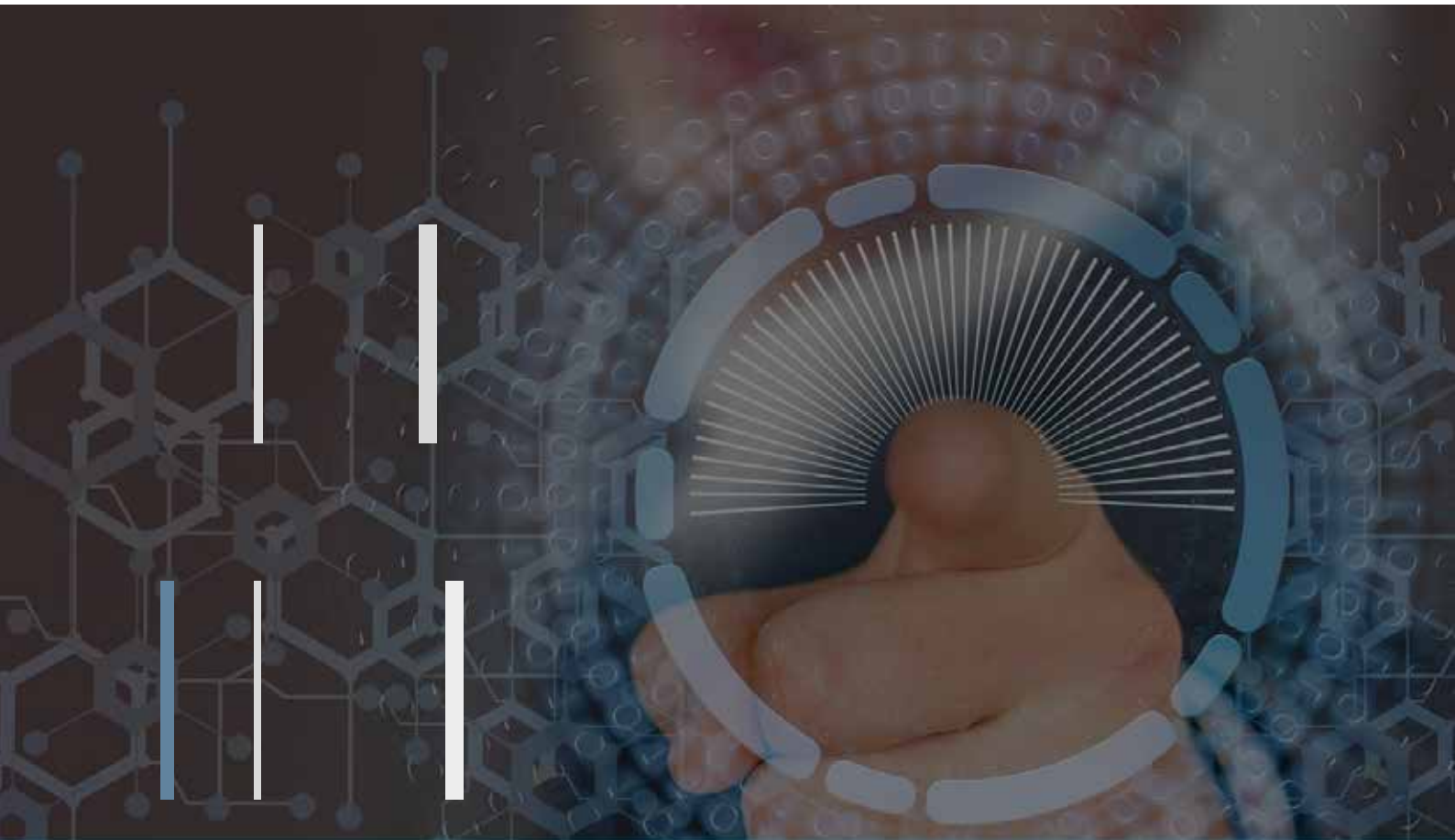
This global challenge was picked up by the ITEA project CyberFactory#1, gathering 29 partners from seven countries – Canada, Finland, France, Germany, Portugal, Spain and Türkiye. Addressing ten use-cases in transportation, automotive, electronics and machine manufacturing, CyberFactory#1 has created tools and methodologies to ensure that factories can safely adopt Industrial Internet of Things (IIoT), advanced AI analytics and collaborative robotics.

Creating simulation, optimisation and resilience
Their work has been structured in three layers: (1) modelling and simulation, (2) production optimisation, and (3) resilience enhancement. The modelling and simulation layer provides digital twins of the FoF, enabling testing-based design and validation of the other layers. The optimisation layer provides shop floor connectivity and AI-based process control for improved productivity. The resilience layer ensures protection, detection and response regarding advanced cyber and physical threats to the FoF.

Digital twins simulating manufacturing chain operations and communication processes
The project's use-case owners were predominantly factories, which have tested and demonstrated these technologies in a mix of real and simulated environments.

Project start
December 2018

Project end
June 2022

Project leader
Adrien Philippe Bécue
Airbus CyberSecurity SAS, France

More information
https://itea4.org/project/cyberfactory-1.html

In an Airbus factory in Spain, the robotic system Roboshave has been successfully demonstrated for automatic jo-bolt rivet shaving in aircraft rudders, which control an aircraft's rotation on its vertical axis. Initially a standalone piece of equipment, Roboshave was integrated into a distributed IoT platform designed to support real-time monitoring, process optimisation, and quality control. The CyberFactory#1 project has significantly enhanced Roboshave by developing its digital twin, connecting it to a secure IIoT platform and protecting it against a wide range of cyber-attacks through simulated security measures.

These advancements have led to reduced lead times, lower production and maintenance costs, decreased product defects, and mitigated security risks. The digital twin enables the simulation of numerous attacks, ensuring that robust security measures are in place. Roboshave now achieves 100% traceability of processes and products from the shop floor and provides 100% accuracy in near real-time information on dashboards - features that were not available before the project. Additionally, automating communication between machines and the manufacturing execution system has eliminated the need for manual machine data collection by human operators, thus reducing human error and improving worker satisfaction by allowing them to focus on more engaging tasks.

Roboshave has contributed to significant cost savings by preventing quality failures, with estimated annual savings of 25,000 euros. Data analysis has pinpointed areas of quality failures in Roboshave's operations, facilitating root cause identification and problem resolution. In terms of predictive maintenance, the project has leveraged historical data to analyse the behaviour of tools in the rivet shaving operation, specifically the End-Effector, resulting in reduced tool failures.

Much of CyberFactory#1's digital twin technology is based on an environment developed by Airbus (CyberRange), which simulates both manufacturing

chain operations and communication processes to examine different attack scenarios. Complex industrial automation like Roboshave can be designed, upgraded and tested without any negative impact on the real assets.

RF technology increasing security
The Turkish project partner GOHM Electronics applied another technology in the CyberFactory#1 project – radio frequency (RF) fingerprinting – to increase security in wireless communication. Following further progress on these developments, they have successfully completed an RF sniffer system for use in the defence industry. Utilising the same technology, they created a follow-up project which pioneers the development of data-driven, AI/ML-based security solutions to address the evolving challenges of 6G services and networks within the future cyber-physical continuum. Currently, they are in discussions with one of the largest cellular operators in Türkiye to co-develop spectrum sensing devices that can detect potential threats and address false base station issues. They are constantly investing in this technology and see significant potential for its future applications.

Reducing manufacturing costs, waste, efforts and lead time and enriching portfolios
For factories, the impact of CyberFactory#1's results generally consists of internal exploitation to reduce manufacturing costs, waste, efforts and lead time.

For security and technology vendors, exploitation is primarily focused on enriching their portfolios with new products and services. For example, Airbus in France collaborated with Bittium in Finland using Airbus' CyberRange system to simulate the cybersecurity of Bittium's distributed virtual manufacturing solution. The outcomes of these simulations are taken into practice and, as a consequence, the cybersecurity of Bittium's solution is improved. These virtual manufacturing solutions are used in all manufacturing events of Bittium to control the manufacturing process, product quality and all production phases of the

The project has been recognised as a pioneer of Industry 5.0

distributed manufacturing network. Bittium's manufacturing needs vary from very small batches up to mass market deliveries in medical products.

Vestel has built a new Manufacturing Execution System (MES/MOM) in order to leverage new capabilities such as real-time tracking and traceability tools. Scrapped electronics components from SMT machines in production lines could not be estimated correctly in previous versions of MES. Due to these new tools, scraped material quantities are now tracked in a much better way. With the help of this new MES, easier material logistics, improved efficiency and process resilience can be achieved. Vestel is employing both development and maintenance engineers to improve the newly built MES traceability, maintenance and real-time tracking tools.

Across the project, commercialisation will target the digital twin, Industry 4.0 and IIoT security markets, with impressive results expected in each: by 2025, partners can expect revenues of eight million euros and more than 80 new jobs in the digital twin domain, 28 million euros and over 100 jobs in Industry 4.0 and 114 million euros and more than 250 jobs in IIoT security. This total impact equals 150 million euros and >450 jobs across the consortium.

Paving the way to the next industrial revolution
Meanwhile, dissemination of this vital technology is ongoing. Alongside many presentations at conferences and contributions to a book, the University of Applied Sciences of Berlin has launched PhDs on topics like the formalisation of collaborative objectives in heterogeneous systems of systems and the safety and certifiability of safety-critical systems based on machine learning.

Crucially, the project has been recognised as a pioneer of Industry 5.0, which goes beyond efficiency and productivity and reinforces industry's contribution to societal goals. With its focus on a sustainable, human-centric and resilient industry, CyberFactory#1 has paved the way to the next industrial revolution.
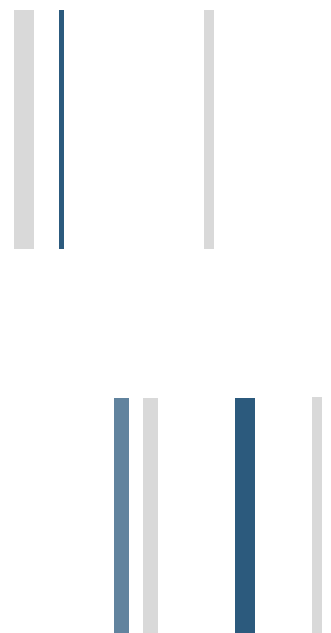
Inclusivity and diversity driving innovation in the ITEA Community

Insights from the VMAP project

In the past decade, we have learned a lot on how including diverse perspectives boosts innovation and results. As underscored in McKinsey & Company's May 2020 study titled 'Diversity Wins – How Inclusion Matters', half a decade of their research consistently demonstrates a positive correlation between financial outperformance of a company and diversity on the dimensions of both gender and ethnicity. Notably, this correlation continues to strengthen with time.

At the heart of diversity is the cultivation of equality, openness, and a sense of belonging. These fundamental principles are also important in the ITEA Community, often referred to as the ITEA Family. The term 'family' conveys notions of inclusivity, support, and connection. Within the ITEA Community, innovative ideas thrive in an open and familial culture; individuals of different nationalities, cultures, levels of experience, and backgrounds come together, stimulating each other to create impactful innovations.

Exemplifying this commitment to diversity is the ITEA project VMAP (2017-2020), which united six different countries, a wide range of backgrounds, and various other aspects of diversity. We invited project leaders Klaus Wolf and Priyanka Gulati of Fraunhofer to share how inclusivity and diversity drove innovation and contributed to their project and beyond.

The origins of VMAP

As the largest public research organisation in Europe, comprising 76 institutes across Germany, Fraunhofer has taken part in dozens of ITEA projects since the very first Call. Klaus and Priyanka belong to the Fraunhofer Institute for Algorithms and Scientific Computing (SCAI), which focuses on mathematics and IT software for a variety of engineering fields. "We are more like a software company, so we are a typical partner for many ITEA projects," begins Klaus. "That's one reason that we initiated the VMAP project. We provide interface solutions to connect different software tools together but did not have a standard before VMAP. On our side, we had enough pain knowing what interfacing means, so that was the kick-off to say that we should try to create a standard. And that's how it started some eight years ago."

The project was an enormous success, resulting in the first ever open, vendor-neutral standard for computer-aided engineering data storage to enhance the interoperability of software tools. This would not have been possible without a connection between the world of software and the physical manufacturing environments of end-users, which was where Priyanka stepped in. "I'm a mechanical engineer and I had worked mostly in computational engineering until then. When I joined, VMAP had been running for almost a year. After three months, I was made a work package leader, where I was then responsible for talking to the software and industry partners to translate the requirements from the mechanical side to the software side. It was a very big step for me because I came from being just an engineer to talking to 15 software vendors from all over the world and delegating work, so it was quite an interesting opportunity."

At the heart of diversity is the cultivation of equality, openness, and a sense of belonging.

Establishing respect

In one sense, ITEA projects are always diverse: consortia draw partners from at least two participating countries, requiring the navigation of different languages, cultures and working methods. VMAP was no exception, and Klaus and Priyanka agree that this challenge ultimately brought major benefits.

"Even in the regions of Germany, people have different ways of talking to each other," Klaus notes. "Now, we had people coming from Germany, Canada, Belgium, the Netherlands, Switzerland, and Austria, all with different personal backgrounds. We had some who were really direct in their speech and others who took some time to get their ideas across. This was a challenge, but it was also a plus for the project because the goal was to establish a standard that would need to be accepted by many different people and engineering communities. You need to find compromise for that, so we should listen to the human side and transfer this to the technical side."

Crucial to this was a structured and diplomatic environment, which Priyanka sought to establish in all project meetings. "I did a lot of homework before I went into these meetings, so I was prepared and neutral. I never took sides, even when I knew there would be conflict or that everybody would have a different opinion. When we saw there were more than two opinions with very strong, intense feelings, we would just take a poll. Everybody had two or three weeks to answer, and it was a democratic decision that we went ahead with. Very often, there was also an agenda plan and I adhered to

^ Priyanka Gulati

^ Klaus Wolf

the timelines, so I respected everybody's time. And I knew that I didn't know everything, so I would ask in the meetings if there were better ways to do things. This brought a lot of respect to me and to what I was working on."

An open approach
As an example of these processes in action, Priyanka looks to the challenge of COVID-19, which affected the end of the project and prevented a final demonstrator from taking place in the Netherlands. The solution lay in online video demonstrators, an idea that she attributes to giving space to more creatively-oriented engineers to speak up.

"What I've learned is that it's good to have people from different backgrounds because diverse opinions help you to think from different perspectives instead of just one focus that might work in a case, country or domain but not when somebody else wants to use it," Priyanka continues. "One thing that becomes really important with diversity is the fact that the project proposal is written before the project is approved. But as the project progresses, there are always unforeseen changes – like corona. You actually need differences of opinion instead of just a few people with a small mindset saying, 'No, we will finish it the old way'. That's a closed approach that is not helpful for the project."

"Any new project should definitely be open-minded and let people in," agrees Klaus. "When I started to find supporters for the project, I looked in my own address book. I was maybe not narrow-minded, but

not too wide-minded either. But then I found a partner in the Netherlands that brought a lot of friends, so the community grew. That was good. If only I had selected the partners, it probably would not have worked out because I didn't know most of those partners before. And if you compare ITEA projects to other European ones, many other projects stick to work packages and tasks defined one year before the real work starts. ITEA is much more flexible. They accept good reasons for changes, which is a positive reaction to the input coming from all these diverse opinions. It opens the mind towards different ideas on how to solve a problem. It's a challenge, but also a chance."

Success story
This was a chance that paid off for VMAP, which would go on to win the ITEA Award of Excellence for Standardisation in 2021. Most important, however, was the establishment of the VMAP Standards Community as a registered association by the majority of the consortium. Within this, the partners push for the further standardisation of VMAP's results in a non-profit manner due to their unwavering belief in the project's long-term benefits. "There's a friendly commodity between us now," says Priyanka. "Even if you write them an email just for marketing purposes, you get a nice hello from everyone. So, there's a community and, for future projects, it isn't difficult to contact them because we are already connected."

Klaus also considers the project's success from a political dimension, serving as a counterargument to the rise of anti-immigration parties in Germany

and the Netherlands. "If we were limited to those who are just native German or Dutch people and we didn't want anybody else, we wouldn't have Priyanka on board, for example. We need to show that very skilled people come from all over the world and can work closely together without any problems. I would like to see this visualised by ITEA, such as by highlighting personal backgrounds on the website or in interviews. I would like people to know that ITEA is open to anybody who wants to join from any technical discipline and from its regions. I cannot see any limits."

The gender gap
Nonetheless, there is room for improvement. In spite of VMAP's diversity in cultural backgrounds, both Priyanka and Klaus are conscious of a lack of gender equality. "There were only two or three women, including Priyanka," admits Klaus. "But my perspective after a long time in the software business is that 95% of people are (old) white men. It was really helpful to have Priyanka to give me a different perspective: a young woman trying to convince older, experienced software engineers to follow her organisation. It took one or two meetings, but then they fully respected her. Thanks again, Priyanka!"

As for raising the number of women in technology in general, Fraunhofer already operates a range of schemes and policies, including a day in which girls can visit them to build an interest in science from an early age. The internal TALENTA programme is another key element, aiming to recruit more women to applied research and to develop their soft and technical skills with courses and qualifications. This is open even to women on fixed-term contracts, who may then take their skills to a higher position elsewhere. While Fraunhofer aims to retain such talent, it also recognises the benefits that this can have in bringing ever more talented women into the innovation ecosystem as a whole.

Inspiration from ITEA
Such efforts to boost gender diversity are a long-term endeavour in which ITEA also has a role to play. "Recently, I went through the ITEA website and saw only one project with a woman leader out of about 24 on the first page. I think that this is because the companies themselves do not have women in these roles who are able to manage the projects," Priyanka explains. "To help with this, I think that the most inspiring thing that ITEA did was to have a woman chairperson, Zeynep Sarılar. I spoke to her once personally when she came for a review and it was a very interesting conversation. It was short, but it was very inspiring. This kind of representation is important. If ITEA has a woman

I would like people to know that ITEA is open to anybody who wants to join from any technical discipline and from its regions. I cannot see any limits.

representative, then other women may see and be inspired to join projects."

Klaus nods. "Currently, we list the country flags and the diversity of engineering fields, but it might be possible to show more detail. If there is a woman working at a high level anywhere in the ITEA Community, it would be beneficial to highlight this as much as possible. And it makes sense to have more interviews during the project – not just at the end – to let more people know about how diversity works in it."

"For women in tech, I have one last piece of advice: be assertive," Priyanka concludes. "When you speak about the skills you've gathered in the past, be confident about them. Very often, women come with the assumption that they will be treated differently, but often it's not true."

More information
https://itea4.org/project/vmap.html
https://www.fraunhofer.de/

ITEA Project Outline Preparation Days 2024

10-12 September, Antwerp

Spark the next ground-breaking innovation!

10 September
Exhibition, Awards, Workshop & B2B

On 10 September, ITEA Call 2024 for project proposals will open in conjunction with the ITEA Project Outline Preparation Days (ITEA PO Days) in Antwerp, on 10-12 September.

PO Days 2024: Shape your Project Outline and find your partners
The ITEA PO Days event has proven to be the perfect stepping stone for initiating your new RD&I project in the software innovation domain. Historically, over 70% of the Project Outlines submitted to ITEA originated from this lively event. Building new projects and partnerships are best done in a physical environment, as face-to-face interaction has demonstrated to be the most effective way when forging new projects and partnerships.

The ITEA PO Days 2024 event will integrate the best practices from past events and several new elements, all aimed at preparing your next ITEA Project Outline and ensuring you get the most out of your participation!

Preparation is key
Based on experience we know that the ITEA PO Days are fully-packed days, and therefore it is highly recommended to be well prepared well before the start of the event. That is the reason why a few sessions related to the ITEA PO Days will already take place online again before the physical event in Antwerp on 10-12 September. This will optimise the time for networking and consortium building during the event.

Online ITEA PO Days 2024 Preparation session
On Thursday 27 June ITEA set up an online ITEA PO Days 2024 Preparation session to explain the process and online project idea tools for ITEA Call 2024 and the ITEA PO Days 2024, like the Project idea tool and the ITEA Partner search tool. The recording of this session is available on https://itea4.org/podays2024/preparation-session.html.

Online Country information sessions
An early dialogue between project teams and Public Authorities supports alignment with national priorities and the best possible opportunities for funding that lead to high success rates. That is why, different online Country information sessions will be held ahead of the PO Days, on 29 August and 2 and 6 September. During these sessions, the

Public Authorities will inform the participants about their national priorities, eligibility criteria and funding outlook.

Online Project idea pitch sessions
In order to enable participants to learn about the project ideas upfront and optimise the time in Antwerp for fruitful discussions and consortia building, two Online Project idea pitch sessions will be organised on Thursday 5 September, 10:00 - 15:00 CEST, in the week before the physical event. During these 2 consecutive sessions, Project idea proposers are able to pitch their idea, and via the Project idea tool, first contacts can already be made with interested partners. This will jump-start the discussions in Antwerp.

(New) features to maximise your PO Days participation
On 10 September we will organise several (new) elements that allow you to get the most out of your PO Days participation:

Exhibition 'Highlights of the ITEA impact'
The ITEA PO Days 2024 will start with the ITEA project exhibition, from 13:00 - 15:30 CEST, during which we will highlight the impact of running and recently finished ITEA projects. The exhibition will be open, without extra charges, to all ITEA PO Days 2024 participants.

ITEA Award of Excellence 2024
The ITEA project exhibition will be followed by the ITEA Awards of Excellence 2024 ceremony, taking place from 15:30 – 16:30 CEST. Project leaders from this year's completed outstanding ITEA projects will share their success stories as well as their recommendations on managing a project successfully. Three projects were selected for the 2024 Award of Excellence:
> SMART is the winner of the ITEA Award 2024 for Exceptional Excellence, as they excelled in innovation, business impact and in standardisation
> INNO4HEALTH will receive an ITEA Award of Excellence 2024 for Innovation
> AIToC is the winner of the ITEA Award of Excellence 2024 for Business impact

NEW: B2B sessions
We are excited to introduce a new opportunity for the PO Days: our one-on-one B2B sessions that will be held on 10 September from 16:30 – 18:00 CEST. These sessions will help you connect with potential future partners and explore collaborations. The B2B sessions provide dedicated time for focused interactions and networking during the PO Days.

NEW: 'Newcomers' workshop
To give newcomers a head start, we are introducing a hands-on workshop focused on essential managerial topics for setting up an ITEA project proposal. During

300+ potential project partners | presentation of innovative project ideas | effective working groups | constructive consortium building | exhibition | award ceremony | interactive B2B meetings | and more…

In short, the ITEA PO Days 2024, including the ITEA project exhibition, will enable you to:

> Present your project idea(s) and/or learn about other project ideas

> Discuss and work on your project ideas in constructive working group sessions

> Meet organisations and potential partners from all over Europe and beyond

> Meet Public Authorities to discuss your idea(s) and learn more about the specific funding rules in your country well in advance

> Learn from the best during the ITEA Awards of Excellence ceremony 2024

> Get inspired by the ITEA projects at the exhibition 'Highlights of the ITEA impact'

> And see how the ITEA Office can support you during the full project lifetime

> **NEW THIS YEAR:** B2B sessions and a (newcomers) workshop on managerial topics in the afternoon of 10 September!

the workshop we will explain how to shape your PO, we will give a demo of the PO submission tool and share insights in the financial and legal aspects of an ITEA project. Finally, experienced project leaders will share their tips and tricks. This workshop will be held in parallel with the B2B session, from 16:30 – 18:00 CEST.

Join us and register now!
Join us at the ITEA PO Preparation Days 2024. The participation fee for the ITEA PO Days 2024 is EUR 195, excluding VAT (non-refundable). This fee also enables you to visit the ITEA exhibition 'Highlights of the ITEA impact' and the sessions and workshop on 10 September.
Don't miss this great networking opportunity! Available spots are limited, and last year's event was fully booked, so please make sure you register in time!

For more information and registration, visit: https://itea4.org/podays2024

We are looking forward to meeting you in Antwerp!

Important dates in the ITEA Call 2024:

› **29 August, 2 and 6 September**
  National priorities and eligibility criteria presented by Public Authorities

› **5 September**
  Online ITEA Call 2024 Project idea pitch sessions

› **10-12 September**
  ITEA PO Days 2024

› **11 November**
  Submission deadline for Project Outlines for ITEA Call 2024

Community Talk with **Alexander Viehl**

Motivated by real-life challenges and impactful solutions

Alexander Viehl studied computer science at the University of Karlsruhe, now the Karlsruhe Institute of Technology (KIT), from 1999 to 2004, focusing on the architecture and security of software systems and the design and architecture of embedded systems and microprocessors. After gaining some experience in the industry as a software architect in parallel to his studies, he began his career at the FZI Research Center for Information Technology in 2004. Following his PhD in Computer Science from the University of Tübingen, he headed the Microelectronic System Design department. Since 2016, he has headed the Intelligent Systems and Production Engineering (ISPE) division and coordinated the mobility research at the FZI. Alexander has been around the ITEA circuit for the past 15 years. As experienced and successful participant in ITEA projects, he recalls the point in his career when ITEA entered the picture.

The point of no return

During his studies, Alexander had a lot of colleagues who were already working in industry, but he always resisted that temptation, wanting to concentrate on his study but, as things happened, in the final year of his master's, he and a colleague got chatting over a beer and again the question of going into industry arose. "It was at that point that I said to myself, 'Maybe I should, just to see if I could learn something.' After all," Alexander says, "I knew I was able to do software engineering at a very high level. I had also won an AI software

competition during my studies. So, I took the plunge, joined my colleague's company for a while as a freelancer and then got my first project more or less straightaway. Not that it was particularly interesting – just designing a test framework and writing tests for software components. I worked through the weekend and then on Monday at noon I told the company that I was finished with the test and the framework. Everything worked. They were astonished – the guy before me had worked on it for months without finding a solution. More assignments like this followed, but all without any

underlying vision. In short, I lost interest, and after completing my master's thesis, I applied for and got a PhD position at FZI. That signalled my entry into this research world. I was also quite successful in publishing my research. Maybe one year after I started, my boss asked whether I would like to become a project manager. I said, yes but after successfully finishing my first project, I needed a new one. So off I went to a brokerage event and presented some of my ideas. I was 27 then and most people around me were 50 and older. While this was not an ITEA brokerage event, a guy peered around from behind

that they felt we hardly had anything to discuss in the afternoon. In short, the project was accepted and I became the national coordinator. It was really exciting for me because this level of project management was new, as was this European structure, the different styles of working, scheduling a meeting for one hour that ended up being three hours or more, with people talking French in the corner. It was fascinating, but we had very productive workshops, very intelligent partners, and targets with fast, exploitable results. This really motivated me because this was a very good fit with our objectives at FZI. I was also working on my own research and finishing my PhD at the time. On top of that, we also acquired a very good FP7 project, and I also had the lead in that. I finally managed to finish my PhD, which allowed me the time and opportunity to take over the department."

Proof of the pudding

Alexander ramped up the ITEA collaboration in 2012 when he attended ITEA Project Outline (PO) Preparation Days in Madrid that was "full of very interesting discussions," he recalls. "I'd never been to Madrid before or maybe not inside the city. Not only was I treated to a mix of new cultures and ideas but it was also very constructive. A year and a half later, the project MACH got started. A long wait, but things are much faster now. After all, the needs of the industry might already shift within that long period. When that project ended, I proposed ideas to ITEA in three consecutive years and all of those got funded. In 2016, my career took a new turn when I was promoted to become Division Manager for the Intelligent Systems and Production Engineering Division, which included not only a focus on embedded hardware/software systems and model-based systems engineering, but also on AI and intelligent systems in general. Like engineering methods or better generalisation tools, algorithms for autonomous driving, algorithms or concepts for robots. Always in very close collaboration with industry. We put theory to the test. In my division, we have, for example, autonomous vehicles that are allowed to drive on open roads as well as a lot of robots

and robotic components that can be deployed to industrial settings as well as on space missions. We have real labs for mobility, robotics and energy systems. It's all about improving the state of the art for solutions that have real impact and that bring benefits." The link with the ITEA vision is clear. "ITEA projects are important," Alexander explains, "because they are actually the proof of the pudding. They put concepts into applications that have been proven to work, to benefit industry and society. And industry understands the necessity."

Lean, flexible process

"Our approach is to find other partners in Europe, whether the same end-user domains or technology, and then search for the next breakthrough in some specific AI technologies in a fast and lean application process. ITEA provides this. It's more digital, no longer 100 pages of proposal. Now, for example, you have a portal where you can do the lean reporting, entering and reusing data for different proposals and roles. This means you don't have to write everything in a document. It generates the entire proposal, in a technical sense of course, but it helps a lot. I guess if I had to suggest one area for improvement, it would be the issue of alignment with the Public Authorities of all the countries. In Germany, the Public Authority is really helping us but at some point after submitting the proposal, when you create a consortium, you may find out that some other funding construction in one of the partner countries collapses. So, a little bit more predictability would help because you're including or onboarding 20 or 30 partners under the impression that the funding prospects are high, only to discover that several partners drop out. Then, to keep the label, you have to track back. Which partner wanted to do what and how do we have to reshape the work packages? That being said, I really like the higher degree of freedom you're given in ITEA to adapt to changes during the project and the willingness of partners to collaborate after the project. So, for us it's also about finding strong partners for long-term collaboration. It's a form of happiness; it provides the motivation to push on, to improve, to be better."

a palm tree and asked whether I had heard of ITEA. Because the topics I had presented were quite interesting for the programme. And that began, quite by coincidence, a wonderful relationship."

An exciting time

FZI is not just about academic research but especially about applied research and technology transfer. "We're always having discussions with industry, what they really want to have and what is missing. For that reason, the topic I had presented was in demand in this particular ITEA project VERDE. So, I wrote a proposal and went off to Paris armed with only two slides and some text. In the morning, we met and discussed the work package structure and objectives and so on. And then it was time for lunch and the culture shock of the southern European way – plenty of red wine and socialising. Was this also the ITEA way, I asked myself. The morning had been so productive

RaySearch Laboratories

Bringing machine learning to radiation therapy

Radiation therapy and artificial intelligence may not be typically linked in the minds of the general public, but cancer treatment is one of the most important and innovative applications of machine learning technology. As the Director of Machine Learning at RaySearch Laboratories AB, Fredrik Löfman discusses how their AI applications speed up treatment planning and how their experience and expertise have contributed to the running ITEA project ASSIST.

SME in the spotlight

Always evolving

Founded in 2000 as a spin-off of the Karolinska Institute in Stockholm, RaySearch Laboratories AB has since evolved into a global player with subsidiaries in Europe, Asia, and the USA. At the centre of their work is RayStation, a treatment planning system that optimises care and has been installed in over a thousand clinics worldwide. In 2003, Fredrik came to the company as a PhD student working on the optimisation of radiation therapy, later joining RaySearch full-time to work on RayStation. After six years away in financial risk modelling, he returned to establish the machine learning department in 2017. Across four teams, 22 people work on the development of machine learning models for clinical use in the segmentation of medical image data, machine learning models for automatic treatment planning in radiotherapy, clinical input for model development and validation, and an oncology analytics system called RayIntelligence.

More time for patients

Radiation therapy treatment planning is a highly technical process. It starts with medical image acquisition, after which these images are imported into a treatment planning system to be segmented to present the 3D volumes of organs and target volumes. However, the manual or semi-automatic segmentation of medical images is extremely time-consuming. "This is where our first AI application comes in, which automatically segments organs and lymph node areas in the medical image data in less than a minute – currently down to 10 to 20 seconds," Fredrik explains. "Our model catalogue consists of 130 different structures. This rapid segmentation allows users to focus on reviewing and fine-tuning the results, saving significant time compared to starting from scratch for each patient. Time savings per patient range from 15 minutes to over an hour, significantly improving clinic efficiency, especially for clinics handling thousands of patients annually."

Every second counts

RaySearch's second AI application concerns the creation of treatment plans for individual patients, which involves finding optimal treatment delivery parameters to deliver the radiation. Whereas traditional solutions deal with this iteratively – setting up optimisation functions, generating solutions, and refining the optimisation until the plan is approved – RaySearch automates it by using deep learning to predict the dose distribution based on

user prescriptions and automatically triggering an optimisation problem to get as close as possible to the predicted dose. "This automated process usually takes only a few minutes, with optimisation time being the bulk of it. The result is an automatically generated treatment plan ready for review, refinement, quality assurance and delivery, saving considerable time," says Fredrik. "By combining the two applications, the process from image acquisition to automatically generating a deliverable treatment plan can be significantly streamlined, allowing clinicians to focus on reviewing and refining the end result before approval."

"One notable aspect is that we integrate AI functionality directly into the code base, allowing for incredibly fast processing without needing to transfer data elsewhere. This not only provides a fascinating technical capability but also offers clinical benefits, particularly for adaptive treatments where patients are waiting on the treatment couch during computations. Every second counts, and our ability to process data quickly sets us apart. And this emphasis on speed is central to the ASSIST project's focus on automation and AI."

First of a kind
ASSIST marks RaySearch's first ITEA project and the motivation for this came initially from the

opportunity to build partnerships with hospitals, universities, and other companies. But, as they dug into its details on optimising and simplifying image-guided therapy workflows, two aspects came to the fore: federated learning and automated workflows that use just magnetic resonance imaging (MRI). For the latter, they teamed up with fellow Swedish company Spectronic Medical to combine their software capabilities to achieve an MRI-only flow, thereby skipping the standard, time-consuming computed tomography (CT) scan.

Federated learning, meanwhile, is particularly relevant to industries with regulations and legal aspects that make it challenging to access data. Instead of bringing data to the AI algorithm, the AI algorithm goes to the data. Within ASSIST, RaySearch conducted a pilot to train their dose prediction model by splitting a dataset into different nodes and sending the algorithm to these nodes before combining the results into a model. "Now, we are involving Swedish university hospitals in this exercise, making it the first time a dose prediction model has been trained this way," notes Fredrik. "Hospitals publish data for a certain treatment protocol, and we use our dose prediction algorithm to train on these nodes without the data leaving the hospital, ensuring privacy and regulatory compliance. Training on data from different hospitals
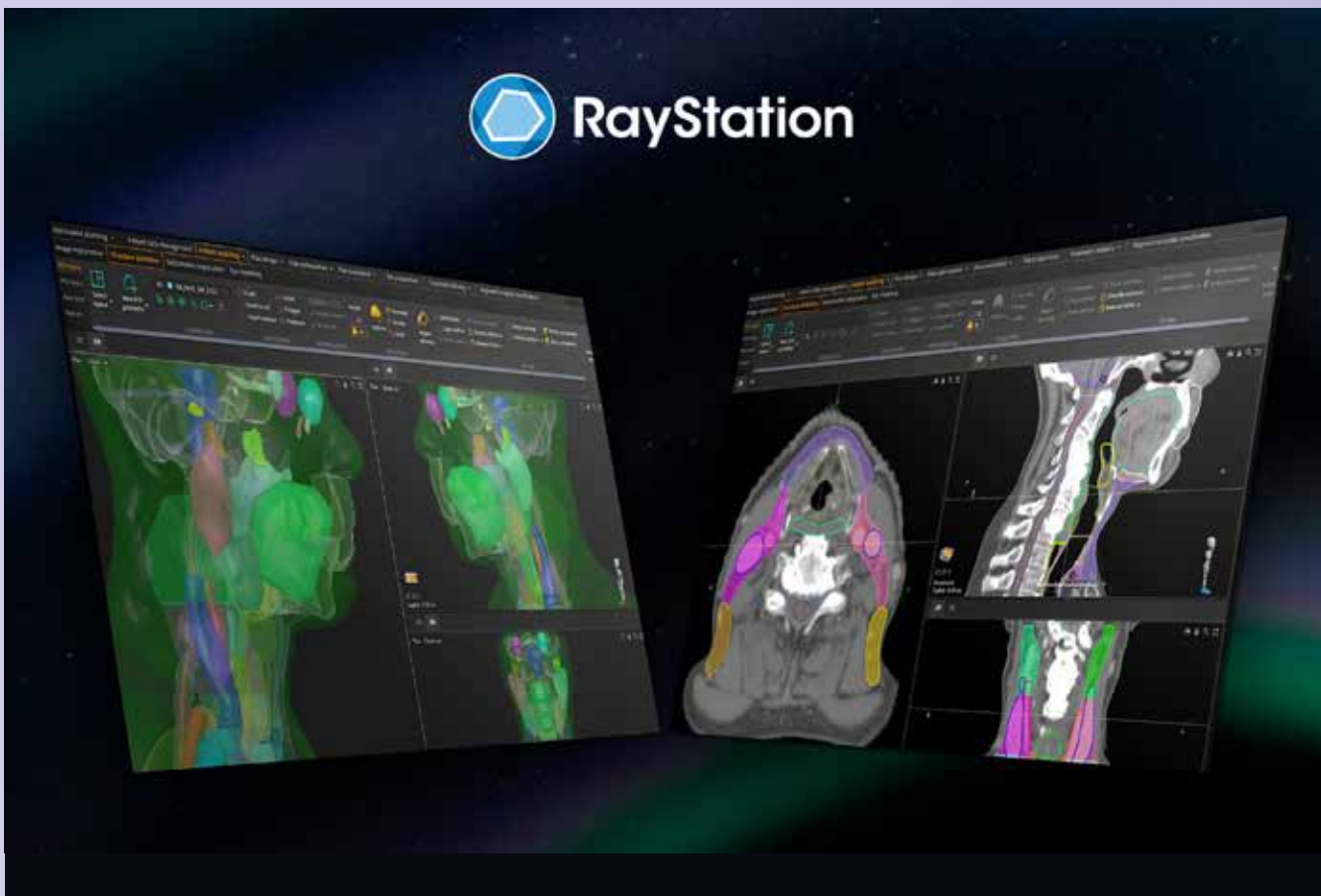
also makes the model more robust than training on data from a single source."

Positive partnerships

In addition to the work in their own field, Fredrik values the project's insights into other areas of healthcare, including hardware to get a better view of patient geometry and the use of automation and AI in surgery. And although they were already accustomed to working with clinics in Europe, North America, and Asia-Pacific, involvement in ITEA added a new dimension to their work through collaboration with international companies and universities – something that Fredrik expects to have long-lasting benefits even after the project comes to a close in September 2024.

"The project management team, led by Philips, has done a superb job in driving this project efficiently and transparently despite involving a complex ecosystem of participants. It's been a valuable experience witnessing such effective project management. We've also engaged in discussions with clinics and companies outside of Sweden, including hospitals that we have collaborated with before. Additionally, before this project, we had only limited contact with Linköping University, which is driving the Swedish part of the consortium. Establishing this connection has been very positive,

and we anticipate continued collaboration with them after the project ends."

The competitive edge

As for the ITEA experience, Fredrik is quick to highlight positive structural elements that helped make the project a success. "One notable aspect is its smooth project management and reasonable yet clear reporting setup. This has been a refreshing change from the overwhelming legal and reporting aspects often encountered in such projects," he concludes. "Speaking on a personal level, European projects are incredibly important in the healthcare research field. In Sweden alone, we often lack the necessary resources to drive significant innovation. EU-wide projects therefore allow us to combine knowledge from various countries, resulting in innovations that can compete with those from America and Asia. Projects like in ITEA enable us to leverage diverse expertise and resources to achieve impactful results, ultimately contributing to Europe's capability to compete internationally in healthcare innovation."

More information

https://www.raysearchlabs.com/

ITEA news

AIToC showcases its innovations in project videos

To showcase its innovative solutions and advancements, the ITEA project AIToC created two project videos, that serve as a valuable resource for understanding the project's impact and practical applications.

AIToC (Artificial Intelligence supported Tool Chain in Manufacturing Engineering) uses AI to integrate new and existing tools into a cohesive toolchain, enhancing early-phase decision-making in manufacturing. Utilising neutral, standardised data formats, AIToC combines digital manufacturing tools and formal methods to simultaneously develop reliable control systems and production system simulations. Watch the AIToC project videos to learn more:

AI-based assistance in generation of process plans and instructions
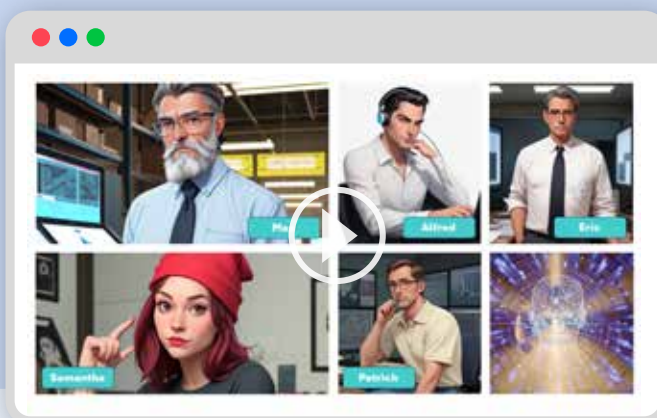
AI-generated models and support for co-simulation of humans and machines

More information:
https://aitoc.eu/
https://itea4.org/project/AIToC.html

Your project video in an upcoming ITEA Magazine?
Would you like to see your project video featured in an upcoming issue of the ITEA Magazine? Submit your videos to communications@itea4.org and we will help you to reach a broader audience!

ITEA Topical roa

Your voice, your topics, inspiring the ITEA Community

This year, we launched the 'ITEA Topical roadshow', a series of webinars to share knowledge, experience and best practices within the ITEA Community covering technical and managerial topics to enhance ongoing projects and inspire new ones. Each webinar contains a brief introduction, testimonials from ITEA Community members, and open discussions on dedicated topics.

On 26 March and 20 June 2024, we organised the first two sessions on the topics of 'Large Language Models: From research to business value creation' and 'The legal consequences of using AI in healthcare.'

Large Language Models
26 March 2024
The use of Large Language Models has strongly increased since 2023 as a very interesting technology. As an illustration, the ITEA Call 2023 showed strong interest, with 10 out of 24 Full Project Proposals intending to use LLMs. In today's fast evolving landscape, LLMs offer many opportunities for innovation and business growth. The main challenge is how to use these models effectively to create value.

The 140 registrations for this webinar confirmed the strong interest from the ITEA Community in LLMs. This webinar provided an excellent opportunity for participants to learn more about LLMs, exchange ideas, and collaborate to maximise the potential of this exciting technology.

Topics addressed
› Generative AI for the software development life cycle by Robin Gröpler - Institut for Automation und Kommunication (IFAK)
› LLMs for new services by Abdelkrim Boujraf - ALT-F1
› Trustworthiness and ethical topics of LLM by Mikko Raatikainen - University of Helsinki
› Generative AI in media: challenges and learnings by Karim Dahdah – VRT

Outcomes
From the different presentations, it is obvious that even if LLMs is now a mature technology, its integration in business applications needs to be carefully planned. The general-purpose offering is not always able to create business value. The tools need to be tailored to the objectives of your application and some human checks are important. The session also showed that many experiments are ongoing and that the field will continue to progress rapidly. The ITEA research Community is very active in this domain and will continue to exchange on the topic to progress faster thanks to experience and knowledge sharing.

"Generative AI based on Large Language Models have shown great potentials to transform industries, improve productivity, and enhance overall business operations in new ways not possible before. At the same time, there are still lots of challenges and also hypes that need to be carefully addressed to facilitate industrial adoption of such powerful technologies. The ITEA Topical roadshow session on Large Language Models was an excellent event where different experts from the ITEA Community shared their insights and hands-on experiences in applying LLMs in various industrial applications and domains, and also discussed the gaps and needs for further research."

Mehrdad Saadatmand
RISE Research Institutes of Sweden

All presentations and recordings can be found at: https://itea4.org/itea-topical-roadshow/large-language-models.html

dshow 2024

The legal consequences of using AI in healthcare
20 June 2024

AI is invading our daily lives, and more AI applications are used every day. This is also the case in the healthcare sector where a high number of applications and tools are developed to support medical staff in its decision making. This current trend is also seen and growing among ITEA projects focusing on Smart Health. In this ITEA Topical roadshow, that was co-organised with Jan-Marc Verlinden, founder of Medrecord and HealthTalk from the Netherlands, the legal consequences of using AI in healthcare, also in relation with the AI Act, were discussed.

Topics addressed
> eHealth apps and certification by Jan-Marc Verlinden - Medrecord
> Legal: no showstopper by Jos van der Wijst - BG.Legal
> Value creation in healthcare through AI by Milan Petkovic - Philips

Outcomes
During the session, we delved into the AI Act and the associated risks of using AI in healthcare, which remains a grey area for many. The pyramid of risk calculation was explained in more detail and more insights were given in the (categorisation of and requirements for) high risk cases and in what you can or cannot do.

Through various examples, it became clear that many aspects are still ambiguous, leaving room for legal challenges. Consequently, it is advised to ensure accountability and company-wide awareness of obligations, as even developers will be held responsible. Preparation for the AI Act's impact should involve AI mapping, classification, risk assessments, and corresponding actions.

In the (near) future, guidelines will come to further clarify the AI Act and standards are being extended and created to ensure compliance. Finally, the opportunities of using AI in healthcare were presented while keeping patient's safety as the most important aspect of healthcare.

 "As an innovative SME in the healthcare domain we deal with a lot of practical challenges to the adoption of technology, including AI. We believe that while most people see the potential, few are willing to assume the risk associated with the adoption of new tools and solutions. It was interesting to hear the perspectives of other companies and healthcare organizations on this matter in the ITEA Topical Roadshow, and it shows the necessity of a joint approach to ensure AI innovations are developed and implemented in accordance with European values and policies."

Jan Kraaijeveld
Almende BV

All presentations and recordings can be found at: https://itea4.org/itea-topical-roadshow/legal-consequences-ai-in-healthcare.html

Engage and propose your preferred topics for future sessions!

The recent sessions, 'Large Language Models' and 'The legal consequences of using AI in healthcare' provided insights and experiences presented by ITEA Community members and lively discussions with participants, with the aim to share knowledge, enhance currently running ITEA projects, and encourage the creation of new projects.

As we want to organise ITEA Topical roadshow sessions that are most relevant for the ITEA Community, you can decide on the topics of the future sessions.

So if you want to co-organise an ITEA Topical roadshow session with us, fill in the 'Application template' that you can find on https://itea4.org/itea-topical-roadshow.html.

You can take care of the content (with our support) and we will manage the registration process, provide a presentation platform, and promote the session via our channels.

We look forward to going on the road with you and create more impactful sessions with and for the ITEA Community!

PAPUD

A unified approach to heterogenous data

Large Language Models have become a ubiquitous presence in our daily lives since their public debut, notably with the introduction of ChatGPT in November 2022. However, the attempt to extract meaningful insights from diverse datasets is not new; it has been an innovation topic for many years already. The ITEA project PAPUD exemplifies this pursuit. Running from 2018 to 2020, PAPUD united 16 partners from Belgium, France, Romania, Spain and Türkiye with the aim to empower companies in exploiting their large amounts of heterogenous data using Deep Learning.

Success story

Businesses are faced with a huge variety of autonomous, heterogeneous data sources - from social media to Internet of Things. The corresponding 'data deluge' is too much for most to handle, yet almost every industry can benefit from the competitive insights that Deep Learning-based data analysis can unlock. Recognising that the value of Deep Learning lies not in independent analytics processes but rather in a unified approach to different types of heterogenous data, PAPUD

(Profiling and Analysis Platform Using Deep learning) therefore created a unique software platform and new Deep Learning algorithms to optimise the processing of this data. Five use-cases demonstrated the project's success: e-Commerce, Call centre operations, Recommendation system for human resources, Behaviour analysis for reverse efficient Modelling, and Prescriptive maintenance for High Performance Computing (HPC).

PAPUD's technological innovations were divided between the hardware of the platform, the Deep Learning software and the domain-specific use-case tools. The process began with the acquisition of data from diverse sources such as surveys, reviews or calls; this was fed into the platform via application programming interfaces and adaptors. Data could then be defined and characterised through HPC infrastructure and AI tools like TensorFlow, PyTorch and other open-source software libraries. In order to provide a complete application, PAPUD took privacy into account, with the use of Docker to bundle data into separate containers that allow partners the exclusive protection and control of their own information.

Following the pre-processing, the Atos-hosted PAPUD platform carried out the data analysis. A combination of Deep Learning, Machine Learning and Data Mining tools, libraries and resources produced models which were stored and visualised for end-users via a dashboard. The result was a series of recommendations which businesses could use to optimise or improve their processes and services.

A concrete example was the Call centre operations use-case, for which KU Leuven had developed Deep Learning text models. 4C Consulting integrated these into its AI platform TellMi which automates the analyses of all text-based customer interactions across different languages, in real time. 4C's objective was to help companies become customer centric and, by extracting the insights from text-based customer interactions, understand their customers better as well as improve service provision. TellMi has been offered as a consulting service and a standalone product:

1. **Consulting mode:** 4C offered consulting services to train and apply models to provide an overview of the deep insights hidden in text. This is often a one-off analysis and an easy way for customers to dip their toes into the wonderful world of AI.
2. **Product mode:** The TellMi platform was offered as a self-service AI product which customers can easily use to train models to extract deep insights across different languages themselves. TellMi can be fully integrated into the customer's work environment.

In July 2020, 4C was acquired by Wipro, a leading global company in the field of information technology, consulting and business process services. The acquisition significantly strengthened Wipro's position as a leading provider of salesforce solutions in the United Kingdom, France, Benelux, the Nordic countries and the United Arab Emirates regions, where 4C already had a strong position.

In tangible terms, PAPUD's main contribution to businesses is greater efficiency achieved through sizeable improvements in Deep Learning. For example, the Area Under the Curve (AUC) – the ability of a classifier to distinguish between classes – stood at 0% for keyword extraction at the start of the project in 2018 but is now 93.7%. Similarly, the accuracy of Deep Learning-based models for HPC prescriptive maintenance was increased from 50% to 95%.

Project start
January 2018

Project end
December 2020

Project leader
Cornel Crisan
Bull, France

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

those virtual assistants; processing this quickly and correctly is becoming more critical than ever. In the PAPUD project, Turkgen had the chance to collaborate with its partners' Turkish text data and this helped Turkgen to improve its Turkish text mining algorithm, which is part of Turkgen's current main solution. Over time, the business has improved and the team that is working on it has increased in parallel. Currently, the biggest banks of Türkiye and many big companies and organisations prefer Turkgen's virtual assistant solution for their customers, including İşbank, Ziraat Bank, MediaMarkt, McDonald's, Türk Telekom, PepsiCo, Bayer and İstanbul Metropolitan Municipality. The PAPUD project therefore helped Turkgen a lot.

Pertimm developed an AI-based recommendation module that serves as an added value module for its existing e-commerce platform Pertimm Search suite and which takes into account data from baskets. Currently, this module has been sold to several customers but serves especially as an incentive to sell the Pertimm Search suite which is one of the company's main businesses. A sales boost has allowed Pertimm to hire two new engineers.

In addition, Atos has integrated some of the results into its Codex AI Suite to tackle the most resource and performance demanding use-cases. One aspect is overheating: with PAPUD, 70% of overheating events can be predicted and preventive actions can reduce the costs of this by 65%.

The results of PAPUD also provide precious input for Eviden, an Atos Group company, as it has been integrated into the company's Proactive Maintenance product, which is part of Eviden's Smart Maintenance Management Suite. The targeted use cases addressed by this product will contribute to predicting and anticipating key and complex issues happening in the HPC world, such as interconnect contention, overheating, and energy savings. The value brought to the market by this product will be available by November 2024.

Less tangibly, PAPUD also represented a message to industry as a whole:

PAPUD made it significantly easier for companies to benefit from data analytics. Use of the PAPUD platform and the creation of domain-specific Deep Learning tools allow businesses to bypass huge organisations which have dominated the field, saving them time and money while also allowing them to tailor resources more specifically to their own internal or commercial needs.

PAPUD's activities were primarily centred around predictive AI, a prevailing subject during the project's lifetime. However, several of PAPUD's findings are now transferable to the latest wave of generative AI. Firstly, the PAPUD platform, comprising both software and hardware, utilises containers to encapsulate computing tasks and GPU for enhanced performance, making it highly suitable for any generative AI application requiring a controlled execution environment and intensive processing capabilities. Secondly, the expertise acquired in customising general models to specific objectives is very relevant for generative AI, where the business will be created by exploitation of these large models for specific tasks.

In conclusion, the PAPUD project yielded direct benefits for its partners in the predictive AI domain and has well prepared them to leverage their know-how in the context of the new generative AI applications wave. Ultimately, PAPUD has demonstrated that greater efficiency translates into cost savings and increased sales, and so provides an opportunity for businesses of all sizes.

For HI Iberia Ingenieria y Proyectos, these kinds of improvements have cut the time taken to find a perfect match through CV processing from five days to three. The tool developed in PAPUD continues to be actively utilised by HI-Iberia's HR department. Through recent updates integrating the latest advancements in Deep Learning for Natural Language Processing, this tool plays a pivotal role in identifying fresh talent within highly competitive domains such as ICT. Its continued evolution enables the company's department to stay ahead, effectively scouting and nurturing talent in this rapidly evolving sector.

Other beneficiaries of PAPUD include Turkgen, which is very active in the fintech domain with its virtual assistant solution CBOT. Over the past decade, this virtual assistant solution has been implemented in huge Turkish banks with more than 10 million customers. A huge amount of data is coming to

Calendar

3 -8 AUG 2024
33rd International Joint Conference on Artificial Intelligence
Jeju, South Korea
https://ijcai24.org/

10-12 SEPT 2024
ITEA PO Days 2024
(ITEA 4 Call 2024)
Antwerp, Belgium
https://itea4.org/podays2024

11-12 SEPT 2024
Intelligent Health 2024
Basel, Switzerland
https://intelligenthealth.ai/

19-21 SEPT 2024
Urbis The Smart Cities Meetup
Brno, Czech Republic
https://www.bvv.cz/en/urbis/

24-25 SEPT 2024
International Cyber Expo
London, UK
https://www.internationalcyberexpo.com/

26 SEPT 2024
Graz Symposium Virtual Vehicle
Graz, Austria
https://www.gsvf.at

1-2 OCT 2024
Cyber Security & Cloud Expo Europe
Amsterdam, the Netherlands
https://cybersecuritycloudexpo.com/europe

8-11 OCT 2024
42st Motek
Stuttgart, Germany
https://www.motek-messe.de/en/

9-10 OCT 2024
World Summit AI 2024
Amsterdam, Netherlands
https://worldsummit.ai/

11 NOV 2024
ITEA Call 2024 PO submission
Deadline submission of Project Outlines
https://itea4.org/

REGISTER NOW!

ITEA Project Outline Preparation Days 2024

10 -12 September Antwerp

10 September
Exhibition, Awards, Workshop & B2B

Labelled ITEA Call 2023 projects

Strong focus on healthcare and generative AI

The ITEA Community has actively participated in ITEA Call 2023, submitting very interesting and high-quality proposals. Nineteen of them were labelled by the ITEA Board in March 2024, representing an effort of more than 2,650 person years and involving partners from 22 countries. As usual, we see a good balance between SMEs that have the agility to innovate - representing more than half of the effort - along with large industries, which can quickly bring the outcomes of the projects to the market, and research centres that provide beyond state-of-the-art research.

The level of international cooperation is very high this year, with at least four countries involved in all the projects and at least six countries represented in nine of the 19 projects. Türkiye is involved in 14 projects, and we also see very good participation of organisations coming from Portugal, the Netherlands, Great Britain and Germany, all of whom have partners in at least 10 labelled projects.

Four of the eight ITEA key challenges are well addressed by the ITEA Call 2023 projects. Smart Health is the most important topic in this Call, with six projects, closely followed by Smart Engineering with five projects. Smart Communities and Smart Industry are well addressed with three projects each.

The most noticeable aspect of ITEA call 2023 is the technical focus of the projects on generative AI. This new technology, which took off in 2023 and has since matured, will be researched and used by at least nine of the labelled projects. The ITEA programme has been agile in allowing consortia to address this technology very quickly, helping the ITEA Community to benefit from new innovations based on generative AI. In this Call we see also quite a few projects developing innovations based on remote monitoring of patients or people for healthy living. The other technical topics are Artificial Intelligence (besides generative AI), Internet of Things, Digital Twins and Robotics. Some of the projects also have ambitious objectives to contribute to more sustainable solutions in software engineering and industry.

In summary, the ITEA 2023 Call is composed of very ambitious and international projects. It has shown the ability of ITEA to quickly react to the emergence of generative AI technology. We wish all projects good luck for the national applications and hope to see them kick off soon.

AdOff   23048

Adaptive Office

Project leader: Innova (Türkiye)

In current office environments employees express dissatisfaction with their (shared) office design, which risks harming their health, well-being, productivity and social relations. Current adaptive technologies tend to operate independently, neglect user needs and lack evidence of their combined impact. The AdOff project proposes integrating automated and voluntary data to identify office risks, consider worker preferences and measure impact objectively. New sensing solutions will monitor the office and occupants, while a data platform will collect and analyse data for evidence-based design and management. These innovations will put the user central in office management decision-making.

ADVISOR   23014

Cooperative Missions of Autonomous Vehicle Swarms for Surveillance Tasks

Project leader: DEMCON (the Netherlands)

The ADVISOR project addresses a multifaceted problem in the autonomous vehicle (AV) industry – the lack of seamless interoperability between different classes of AVs: airborne, under- and on- water. The ADVISOR framework enables efficient development, testing and execution of AV/swarm-based inspection systems. It provides capabilities to manage various aspects of intricate processes, workflows and interactions, contributing to the early detection of issues, ensuring the reliable and safe operation of AV/swarms. With solutions that boost efficiency, cut costs, enhance security and reduce environmental impact, the project promises substantial industry impact across sectors.

AIDESL   23042

Fully Automated AI Data Extraction from Scientific Literature

Project leader: DistillerSR Inc. (Canada)

The AIDESL project aims to automate text extraction from scientific literature using AI models, reducing time and errors in systematic literature reviews (SLRs). By leveraging AI and workflow automation, the project seeks to speed up SLRs, improve accuracy and lower reviewer fatigue and burnout. This initiative targets key challenges in healthcare, such as timely data access, safety surveillance and innovation. AIDESL's goal is to establish standards for AI in research and accelerating the accessibility of data to improve the equitable development of new health innovation and knowledge for all.

CHS-Care   23035

Integrated Platform for the Provision of Health and Social Care in the Community

Project leader: HIGOE (United Kingdom)

The CHS-Care project aims to address the challenges posed by the growing elderly population in Europe, focusing on the delivery of efficient health and social care. CHS-Care is focused on developing a patient centred, open and integrated remote monitoring platform to provide health and social care for the elderly. By leveraging digital health tech, wearables, sensors and AI, the platform empowers caregivers, reduces hospitalisations and enhances care outcomes. This patient-centric, AI-driven platform targets seamless collaboration among stakeholders, improving data analysis, optimising workflows and ultimately enhancing patient care while supporting healthcare professionals.

ELFMo   23004

Engineering Large Foundational Models for Enterprise Integration

Project leader: University of Helsinki (Finland)

The integration of Large Foundation Models (LFMs) and Generative AI into business, while expansive, introduces a wide array of risks and challenges due to costs, compliance issues and technical complexities. The ELFMo project aims to address these challenges by providing a framework for effective integration, also enabling enterprises to navigate legal, security and ethical concerns while aligning with European regulations. ELFMo empowers organisations to reliably integrate LFMs and Generative AI into their infrastructures and offerings, allowing them to maintain control over risks, challenges and opportunities.

EngagedUser   23038

Digitalized user engagement evaluation systems using event-based user analytics

Project leader: RNware Co., Ltd. (Republic of Korea)

Traditional methods struggle to capture user experience (UX) in immersive media and online content. This lack of real-world data hinders efforts to improve user satisfaction and the design process. The EngagedUser project tackles this by using a solution to recognise the user experience of digital content created for specific purposes, using high-performance sensors and AI algorithms. The solution can be applied to targeted education and training as well as interactive art installations, and can be scaled to healthcare, counselling and more.

GENIUS   23026

Generative AI for the Software Development Life Cycle

Project leader: Institut für Automation und Kommunikation (IFAK), (Germany)

Generative AI represents a breakthrough in AI and will significantly increase productivity in software development. However the direct implementation of generative AI in software development processes remains experimental, with critical uncertainties surrounding security, data privacy and accuracy. The GENIUS project aims to develop automated solutions and customised tools to enhance the different phases of the software development life cycle, leveraging the advanced capabilities of generative AI and Large Language Models. These innovative methods and tools will support software engineers to enhance efficiency, reduce manual efforts and elevate the overall quality of software products.

GreenCode   23016

AI/ML Driven Software Optimisation to Reduce Cost and Climate Impact

Project leader: Digital Tactics Ltd. (United Kingdom)

The climate and economic impact of sub-optimal software is a high-scale problem, one that poses a further societal risk in times of energy stress. The GreenCode project addresses the problem of software and platform optimisation by leveraging specialised generative AI and Machine Learning to optimise and certify software for energy efficiency, enhancing developer productivity, code longevity and ICT system value. Deployable to new and legacy systems, it performs quality assurance, modernisation, maintainability, documentation and security checks, reducing climate impact while increasing economic value for businesses, public institutions and end users.

HOMEPOT   23022

Homogenous Cyber Management of End-Points and OT

Project leader: ERSTE Software Limited (Türkiye)

In today's tech landscape, where each device comes with unique software and hardware, staying in control is increasingly challenging. The HOMEPOT project aims to develop a single, secure platform that makes managing these diverse devices easy, benefiting both manufacturers and users. The goal is to simplify the management of a wide array of Operational Technology (OT) and Internet of Things (IoT) devices, offering streamlined, secure management, enhanced deployment speed, security, resource management, and advancing smart, connected ecosystems. This could revolutionise device management in home automation, enterprise IT and smart cities.

MedGPT   23020

Medical GPT Revolutionizing Healthcare with Ethical AI

Project leader: ARD GROUP INFORMATION TECHNOLOGIES INC. (Türkiye)

Large Language Models (LLM) tools have made significant advancements in the healthcare industry, but European healthcare faces challenges in complying with new AI regulations while ensuring responsible use of advanced GPT LLM technology. The MedGPT project is addressing privacy and ethical concerns by embedding ethical AI and European GDPR & MDR compliance into its platform, utilising European-based LLM with the aim of setting the standard for medical GPT applications globally. This marks a paradigm shift towards smarter health applications, superior efficiency, accuracy and scalability, potentially disrupting current high-maintenance, rigid healthcare systems.

MONA LISA   23028

Monitoring and Analytics for the whole Lifecycle, on Models, Hardware, and Software

Project leader: KTH (Royal Institute of Technology) (Sweden)

Cyber-physical systems (CPS) are inherently complex due to a tight coupling between software and hardware. Such systems affect our safety, so they must be trustworthy. The fragmentation of tools across the system development lifecycle results in loss of knowledge, prolonged time-to-market and increased costs. The MONA LISA project integrates hardware-software co-design across the lifecycle, connecting and improving existing tools with visual analytics. By integrating systems, it improves safety, diagnostics and validation across different environments. Additionally, it contributes to open-source projects, advancing monitoring solutions not available today.

PROSPECT   23011

Autonomous Prognostics of Integrated Systems using AI and ultra-Compact Digital Twinning

Project leader: NXP Semiconductors (the Netherlands)

In the rapidly advancing landscape of high-tech systems, the integration of components into systems poses significant reliability challenges. The PROSPECT project aims to address these challenges by developing an innovative method for the co-design of autonomous monitoring software. The project is dedicated to establishing a real-time Prognostics and Health Management (PHM) methodology using digital twinning and AI-based fault recognition. The primary objective is to predict the Remaining Useful Life (RUL) of components or systems, thereby reducing redundancy and enabling proactive maintenance.

Narrate   23036

Providing trustful and ethical personalised conversational interfaces on top of news and information

Project leader: VRT (Belgium)

There is a current need to adapt content for conversational interfaces like ChatGPT, ensuring interaction, personalisation and ethical AI responses. The Narrate project will create an innovative AI platform that can adapt to evolving AI technology and domain-specific market demands. It will explore the feasibility of specialised models designed for specific domain contexts and the integration of domain-specific knowledge with large-scale, general-purpose language models. Narrate will employ narrative design to create and evaluate ethical, user-centred multimodal conversational interfaces tailored to various use cases in media, human resources and engineering software services.

REMO   23005

Remote patient-targeted health monitoring to reduce clinical workload

Project leader: Philips Electronics Nederland BV (the Netherlands)

Shortages in healthcare workers and changing demographics require the use of home-based care, which improves monitoring and patient compliance as well as reduces costs and frees up healthcare facilities for critical needs. The REMO project will innovate continuous and unobtrusive monitoring in professional healthcare and provide support to clinicians, patients in their treatment and optimal recovery at home by providing the right information at the right time for the right person. REMO will address three healthcare market segments: the Healthcare market in general, the Remote patient monitoring market and the Healthcare AI market.

PHRESH   23010

Patient Health Response in Emergent and Secure Habitats for Connected Healthcare

Project leader: ARD GROUP INFORMATION TECHNOLOGIES INC. (Türkiye)

Promoting health equity requires overcoming barriers with remote digital health technologies, ensuring secure data exchange and regulatory alignment. The PHRESH project aims to improve health risk assessment, emergency response and treatment by integrating advanced technologies like sensors, real-time analysis, advanced data and network connectivity and quantum-secure encryption, prioritising privacy and precision. This innovative approach holds the potential to unlock infinite possibilities, optimising emergency response and treatment procedures.

ResilientEnterprise 23046

Improving Resilience of Enterprise Workforce and AI to Operational Challenges

Project leader: VTT Technical Research Centre of Finland Ltd. (Finland)

Resilience is the ability to adapt easily to changes. AI can support the human workforce in dynamic operational environments, but it can also impose high cognitive demands on human employees, especially if the AI itself is inflexible. The main challenge addressed by this project is: How can humans and AI adapt to each other and to changes in operational environments in practical ways? Solutions include implementing a "resilience by design" framework in use cases such as perceptive sustainable workplaces, hospital robots and elderly driver assistance.

SIREN 23033

Safety & Incident Response for building Emergency Networks

Project leader: KoçSistem (Türkiye)

To improve the efficiency and effectiveness of humanitarian aid operations and ensure timely assistance for the most vulnerable populations during disaster situations, the SIREN project focuses on enhancing disaster management and humanitarian aid logistics for fire, flood and earthquake scenarios. The project seamlessly integrates Geographic Information Systems (GIS) and an advanced Disaster Management System, including case coordination, resource mapping and AI support for data analysis. Additionally, the project incorporates a robust communication network support system, providing expanded emergency connectivity coverage and quality of service assurance to disaster effected area.

Valid3D 23001

Valid generative design for 3D printing

Project leader: IMA Materialforschung und Anwendungstechnik GmbH (Germany)

Quality assurance is an important issue in bringing 3D-printed components to market. The Valid3D project enables flexible manufacturing processes for the medical and aviation industries. By integrating data across the production chain, including virtual testing and AI-driven feedback, Valid3D streamlines quality assurance and accelerates approval processes. This enhances design flexibility, cost reduction and ensures compliance within industry standards, and has a positive impact on the environment by drastically reducing material and energy use.

VISION 23031

Virtual Integrated Supply-chain Improvement with Optimized Networking

Project leader: Electronic Media Services Ltd. (United Kingdom)

Supply chain management faces challenges like material tracking issues, delays and increased costs. The VISION project focuses on the construction, mining and aerospace sectors, integrating advanced technologies like Digital Twins, Augmented Reality (AR), and Ultra-Wideband (UWB) to establish a connected, intelligent supply chain system. By leveraging innovative technologies and industry-specific insights, the project is well-positioned to transform supply chain management and set new standards in efficiency, traceability, resilience, sustainability and security.

ITEA news

B3 Systems reduces costs and waste thanks to advanced predictive maintenance

As a key participant in the ITEA project PIANiSM, B3 Systems has distinguished itself as a foremost technology provider, driving innovation in the manufacturing sector. Leveraging its expertise in data analytics and machine learning, B3 Systems played a crucial role in advanced predictive maintenance models that have been instrumental in enhancing manufacturing efficiencies.

Innovative solutions tailored to industry needs

Within PIANiSM, B3 Systems developed customised algorithms that not only predict equipment failures but also prescribe preventive measures, thereby reducing downtime and maintenance costs. This capability has enabled manufacturers to transition from traditional, reactive maintenance strategies to proactive, predictive approaches. For instance, clients have reported a reduction in unplanned downtime by up to 40% and maintenance cost savings of 20-30%, significantly enhancing operational efficiency and productivity.

Contributing to sustainable manufacturing practices

B3 Systems is committed to sustainability and, through the PIANiSM project, they have facilitated more sustainable manufacturing practices by optimising resource utilisation and minimising waste. For example, by implementing predictive maintenance algorithms, B3 Systems helped a major automotive manufacturer to notably reduce their energy consumption and material waste. These algorithms accurately predict equipment failures, allowing for timely maintenance and preventing machines from operating inefficiently. This directly supports their environmental goals while improving their overall cost-effectiveness.

A relatable success story

Imagine a large automotive manufacturer for which an hour of unplanned downtime can cost up to $250,000 due to halted production lines. In this high-stakes environment, the traditional approach was to maintain a large inventory of parts to quickly swap out at the first sign of trouble – an expensive and often inefficient method. By implementing B3 Systems' predictive maintenance solutions developed in the PIANiSM project, this manufacturer could shift from a reactive to a proactive maintenance strategy. The algorithms developed were able to accurately predict equipment failures before they occurred, allowing the manufacturer to prepare and perform maintenance during scheduled downtimes. This shift not only saved the company millions in potential lost production but also reduced the need to keep a massive stockpile of parts on hand. The reduction in parts inventory alone significantly cut costs and freed up capital for other strategic investments, demonstrating the clear value of predictive maintenance.

Expanding impact and fostering industry collaboration

The success of the PIANiSM project has positioned B3 Systems as a leader in the predictive maintenance domain, helping more businesses achieve operational excellence through smart technology. Since the project's completion, B3 Systems has acquired over 20 new clients across various industries, such as automotive, mining, and manufacturing. The company has also expanded its reach into new geographical markets, including North America, Europe, and Asia. This expansion has driven significant revenue growth and increase in workforce over the past two years. Looking ahead, B3 Systems aims to introduce next-generation solutions that will further transform the manufacturing landscape, making it smarter, more efficient, and increasingly adaptive to the challenges of modern industrial environments.

More information

https://itea4.org/project/pianism.html
https://www.pianism.eu
https://runb3.com/
https://www.linkedin.com/company/b3systems

VMAP analytics

Energy-saving furnace control enhances sustainability and quality in the steel industry

In industries that produce steel and other metal products, achieving optimal heating and quality control is crucial for ensuring efficient production and minimising defects. The Furnace Optimisation Control System (FOCS), co-developed by VMAP analytics project partners Prevas and Swerim together with Swedish industry organisations, offers advanced features such as precise temperature calculations, zone temperature control, and intelligent pacing control. 90% of all steel produced in Scandinavia is heated in furnaces controlled by FOCS. However, even with such sophisticated capabilities, challenges like skid marks (insufficiently heated spots) on reheated slabs in walking beam furnaces persist, causing quality issues during subsequent processing stages such as hot rolling.

The 'Furnace use case' developed by Prevas and Swerim in the ITEA project VMAP analytics addressed the skid mark problem using FOCS. The FOCS solution is a specialised 3D model to handle skid marks during slab heating. This model works online with the factory machine, accurately calculating temperature differences and quickly figuring out where the skid marks are making things too cold. Then, FOCS adjusts how the furnace heats things up to avoid making skid marks.

Fixing skid marks with FOCS helps a lot of people. It means the metal coming out of the furnace is better quality and there's less waste. Factories save energy too because they don't have to redo things. Implementing the FOCS system on an existing furnace typically leads to 5-10 % energy savings, making the metal-making process smoother and more cost-effective. Additionally, the use of a digital twin allows FOCS to continuously optimise its performance, helping the steel industry becoming more robust and environmentally friendly.

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

End-user happiness

Eureka Global Innovation Summit 2024

Building bridges for global challenges

On 13-14 June, Eureka's Global Innovation Summit (GIS) themed 'Bridging Green and Digital Transformation' took place at the Haliç Congress Centre in Istanbul, organised by the Scientific and Technological Research Council of Türkiye (TÜBİTAK). With 2,500 registrations and 35 degrees outside, it was literally and metaphorically hot and happening at GIS, gathering the full Eureka family, from Canada to Korea and Finland to South Africa.

This year's event offered a diverse set of sessions, including thematic discussions, pitching sessions, country presentations and a dedicated Eureka Clusters session. Additionally, there were B2B meetings and the exhibition, showcasing stands from various countries, the Eureka funding instruments - including the Clusters - and Eureka projects, provided attendees with an excellent opportunity to learn about the different Eureka RD&I instruments and their impact.

∧ Panellists of the Clusters session at the Global Innovation Summit clearly explained the Clusters' benefits

Canada and Germany co-leading Eureka in 2024/2025

During the High Level Group meeting held on 12 June, it was officially announced that Canada and Germany will serve as co-Chairs of the Eureka Network for 2024–2025, following the Turkish Chairmanship. This marks the first time in Eureka's nearly 40-year history that two countries will jointly lead the network.

The Eureka Clusters at GIS2024

As one of the Eureka funding instruments, the Clusters were well represented in this year's event, providing attendees with insights into their operations and how organisations can benefit from participation in Eureka Cluster projects. Interest was very high, resulting in a constant flow of potential new project partners at the two shared Eureka Clusters booths of CELTIC-NEXT, Eurogia, ITEA, SMART and Xecs.

On 13 June, the Eureka Clusters jointly organised the fully booked session 'Turkish companies and Eureka Clusters: A mutual synergy'. The session explained the Clusters in more detail and highlighted the mutual benefits and synergy between the Clusters and Turkish partners, through testimonials from various Turkish project partners and Cluster Board members.

In addition, the digital poster exhibition attracted a lot of attention to the 21 ITEA projects displayed there. Finally, we are grateful for the presence of the Public Authorities who also explained the opportunities of Clusters at their two combined booths and during their country sessions.

Building connections and future collaborations

It was great to reconnect with 'old friends' and to make new valuable connections in Istanbul. GIS 2024 also offered the perfect opportunity to promote ITEA Call 2024 and the upcoming ITEA PO Days.

We warmly thank the Türikye Chairmanship team for organising this successful edition of GIS and their dedication over the past year! We look forward to collaborating with Canada and Germany in the forthcoming year.

eureka

Funding opportunities in Lithuania

Lithuania, with partners participating in eight projects in several Calls since ITEA 2 Call 3, has committed to supporting Eureka Cluster Calls with an open budget for the following year. Eligible Lithuanian applicants can receive funding if they meet the evaluation criteria of the Research Council.

Collaborative projects can be funded by the Research Council of Lithuania. Up to 300,000 euros might be allocated to each project. Funding rates for SMEs can reach up to 80% depending on the size of the partner, and for research institutions - up to 100%.

The Eureka programme and its associated Eureka Clusters, including ITEA, play significant roles in fostering innovation, research, and development across Europe and beyond. These initiatives are crucial for Lithuania in achieving its national goals related to technological advancement, economic growth, and international collaboration. Participation in these programmes allows Lithuania to enhance its R&D capabilities, improve its competitive edge in global markets, and contribute to sustainable development.

This funding will strengthen the position of current Lithuanian ITEA participants and we hope it will encourage more Lithuanian companies to become active in future ITEA Calls.

More information: https://lmt.lrv.lt/lt/veiklos-sritys/mokslo-finansavimas/mokslo-ir-verslo-bendradarbiavimo-priemones/.

Eureka Clusters Call dates

ITEA4	10 – 12 Sept 2024	ITEA PO Days 2024	https://itea4.org/podays2024
	11 Nov 2024	Deadline for submission of Project Outlines	https://itea4.org/
Xecs	15 Oct 2024	Xecs Call 4 Matchmaking event	https://eureka-xecs.com/

Colophon

ITEA4